pISSN 2671-8790
eISSN 2671-8804

KJT
KOREAN JOURNAL OF TRANSPLANTATION

VOLUME 37
SUPPLEMENT 1
NOVEMBER 2023

KJT KOREAN JOURNAL OF TRANSPLANTATION
VOLUME 37 • SUPPLEMENT 1 • NOVEMBER 2023 Pages 1-320
The Korean Society for Transplantation

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www.ekjt.org

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Published on 15 November 2023

Aims & Scope

The aim of the Korean Journal of Transplantation (Journal Abbreviation, Korean J Transplant; Acronym, KJT) is to publish articles of up-to-date and high-quality in organ and tissue transplantation and the related clinical and basic sciences that can contribute to saving lives and curing diseases in patients needing transplantation. The journal pursues its advancement through original/special articles, reviews, case reports, study protocols, editorials, and letters to the editor. The journal is concerned not only with clinicians and scientists in transplantation but also with those in other fields who are interested in transplantation.

The scope covers transplantation internationally as a separate discipline. This includes but does not limited to organ and tissue donation and preservation; tissue injury, repair, inflammation, and aging; immune recognition, regulation, effector mechanisms, and opportunities for induction of tolerance; histocompatibility; drugs and pharmacology relevant to transplantation; graft survival and prevention of graft dysfunction and failure; clinical trials and population analyses; transplant complications; xenotransplantation; and ethical and societal issues. Also included are the relevant sciences of medicine, surgery, pediatrics, cell biology, and infectious diseases. The journal includes thoracic transplantation (heart, lung), abdominal transplantation (kidney, liver, pancreas, islets), transplantation of tissues, and related topics. The KJT serves as a platform for debate and reassessment, a trigger of innovation, and a major pedestal for promoting understanding, improving outcomes, and advancing knowledge and technique in this dynamic area. Published quarterly, the KJT furnishes an indispensable resource for researchers and clinicians around the world.

About the Journal

The Korean Journal of Transplantation is the official journal of the Korean Society for Transplantation (http://www.mykst.org/). It was first launched in December 1987, and is published quarterly (on the last day of March, June, September, and December). In March 2019, the name of the official publication was changed from Journal of the Korean Society for Transplantation to Korean Journal of Transplantation (Korean J Transplant, KJT) and articles were published exclusively in English. A part of articles, metadata, or full text is available from KoreaMed (1991–), CrossRef metadata (2010–), Korea Citation Index (2015–), PubMed Central (2019–), PubMed (2019–), Scopus (2019–), and Directory of Open Access Journals. Full-text articles are freely available from: http://www.ekjt.org/. There is no page charge or article processing charge on the author's side.

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The Korean Society for Transplantation will send KJT for free to some relevant individuals and institutions. Full-text PDF files are also available at the official website (http://www.ekjt.org). To order a subscription to KJT, please contact our editorial office.

Publisher The Korean Society for Transplantation
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Printing Office MEDrang Inc.
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E-mail: info@medrang.co.kr, Home Page: www.medrang.co.kr

This paper meets the requirements of KS X ISO 9706, ISO 9706-1994 and ANSI/NISO Z.39.48-1992 (Permanence of Paper).

Editorial Board

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ASIAN TRANSPLANTATION WEEK 2023

November 15 (Wed)

08:00-13:00 Live Surgery for Robotic Kidney Transplantation - Severance Hospital
Seoam Auditoruim, B3, Yonsei Cancer Center

Recipient surgeon : Kyu Ha Huh (Yonsei University, Korea)

Donor surgeon : Juhan Lee (Yonsei University, Korea)

Assistant : Hyun Jeong Kim (Yonsei University, Korea)

CHAIR(S) Wooju Jeong (Henry Ford Hospital, USA)
Myoung Soo Kim (Yonsei University, USA)

08:30-08:40 Opening Remark
Myoung Soo Kim (Yonsei University, Korea)

08:40-08:50 Introduction: Kidney transplantation at Severance Hospital + Case Report
Eunki Min (Yonsei University, Korea)

08:50-09:10 Introduction: Robotic kidney transplantation (RKT)
Eunki Min (Yonsei University, Korea)

09:30-10:10 RKT - application of IDEAL guideline to develop a surgical technique
Wooju Jeong (Henry Ford Hospital, USA)

10:20-11:00 Surgical complications of kidney transplant (open vs robotic)
Wooju Jeong (Henry Ford Hospital, USA)

11:10-11:30 RKT experience at Severance Hospital
Seung Hyuk Yim (Yonsei University, Korea)

12:00-12:50 Live discussion
All speakers

12:50-13:00 Closing Remark
Myoung Soo Kim (Yonsei University, Korea)

Day 1 – November 15 (Wed)

08:00-12:00	**Live Surgery for Robotic Kidney Transplantation - Seoul National University Hospital** Yoon Duck Byung Hall (First Floor), Seoul National University Hospital Biomedical Research Institute
Recipient surgeon : Jongwon Ha (Seoul National University, Korea)	
Donor surgeon : Chang Wook Jeong (Seoul National University, Korea)	
Assistant: Ahram Han (Seoul National University, Korea)	
CHAIR(S)	Chandra Bhati (University of Maryland School of Medicine, USA) Sangil Min (Seoul National University, Korea)
08:50-08:55	Opening remark Jongwon Ha (Seoul National University, Korea)
08:55-09:00	Congratulatory Address Nam-Joon Yi (Seoul National University, Korea)
09:00-	Donor case presentation Chang Wook Jeong (Seoul National University, Korea)
09:00-09:20	Robot-assisted donor nephrectomy: SNUH experiences Chang Wook Jeong (Seoul National University, Korea)
09:20-09:40	Living donor nephrectomy: open, HALS, Pure laparoscopic, and robot-assisted Jang Hee Han (Seoul National University, Korea)
09:40-09:45	Recipient case presentation Hye Young Woo (Seoul National University, Korea)
09:45-09:50	Live discussion with donor surgeon Chang Wook Jeong (Seoul National University, Korea)
09:50-09:55	Live discussion with recipient surgeon Jongwon Ha (Seoul National University, Korea)
09:55-10:10	History and indication of RAKT Eun-Ah Jo (Seoul National University, Korea)
10:10-10:25	Tips for initiation of RAKT program Ahram Han (Seoul National University, Korea)
10:25-10:30	Live recap: Donor
10:30-10:45	Robot-assisted living donor kidney transplantation: SNUH experience Sangil Min (Seoul National University, Korea)
10:45-10:55	Live recap: Bench
10:55-11:25	UM experience and technical tips Chandra Bhati (University of Maryland, USA)

Day 1 – November 15 (Wed)

11:25-11:45	Anestheological consideration Susie Yoon (Seoul National University, Korea)
11:45-12:05	Live recap: Recipient
12:05	Closing remark Sangil Min (Seoul National University, Korea)

09:00-12:00 Live Surgery for Robotic Kidney Transplantation - Asan Medical Center

Main Auditorium (East Building, 6F), Asan Medical Center

Recipient surgeon : Sung Shin (Asan Medical Center, Korea)

Donor surgeon : Youngmin Ko (Asan Medical Center, Korea)

Assistant : Hye Eun Kwon (Asan Medical Center, Korea)

CHAIR(S)	Young Hoon Kim (Asan Medical Center, Korea) Sang Hoon Song (Asan Medical Center, Korea)
09:00-09:05	Opening Remark Young Hoon Kim (Asan Medical Center, Korea), Sang Hoon Song (Asan Medical Center, Korea)
09:05-10:00	Single-port robot-assisted kidney transplantation Mohamed Eltemamy (Cleveland Clinic, USA)
10:00-10:30	Comparison of clinical outcomes between robot-assisted and open kidney transplantation according to an immunological risk Hyunwook Kwon (Asan Medical Center, Korea)
10:30-11:00	Anesthetistic evaluation and management for robot-assisted kidney transplantation Sang-Wook Lee (Asan Medical Center, Korea)
11:00-12:00	Live Discussion Mohamed Eltemamy (Cleveland Clinic, USA) Young Hoon Kim (Asan Medical Center, Korea) Sang Hoon Song (Asan Medical Center, Korea) Hyunwook Kwon (Asan Medical Center, Korea) Sang-Wook Lee (Asan Medical Center, Korea)
12:00-12:30	Long-term outcomes of kidney transplantation at Asan Medical Center Youngmin Ko (Asan Medical Center, Korea)
12:30	Closing Remark Young Hoon Kim (Asan Medical Center, Korea) Sang Hoon Song (Asan Medical Center, Korea)

Day 2 – November 16 (Thu)

08:30-10:00	**Postgraduate Course 1 (Liver)** How do I do (RL donor): Hilar dissection & RL mobilization	Room 3F-1
CHAIR(S)	Roberto I. Troisi (University of Naples Federico II, Italy) Young Kyoung You (The Catholic University of Korea, Korea)	
	Lap approach	
08:30-08:40	How I do laparoscopic donor right hemihepatectomy independent to an assistant : hilum exposure and parenchymal dissection Dai Hoon Han (Yonsei University, Korea)	
08:40-08:50	Glissonean pedicle approach for donor hepatectomy Yasushi Hasegawa (Keio University, Japan)	
08:50-09:00	How do I do(RL donor): Hilar dissection & RL mobilization Gyu-Seong Choi (Sungkyunkwan University, Korea)	
09:00-09:15	Discussion All speakers	
	Robotic approach	
09:15-09:25	To Hang Or Not To Hang Unnikrishnan Gopalakrishnan (Amrita Vishwa Vidyapeetham, India)	
09:25-09:35	Robotic hilar dissection and right lobe mobilization Yee Lee Cheah (Houston Methodist Hospital, USA)	
09:35-09:45	Safe unilateral Hilar dissection for implementing new robotic donor programs Yasir Alnemary (King Faisal Specialist Hospital & Research Centre, Saudi Arabia)	
09:45-10:00	Discussion All speakers	

08:30-10:00	**Postgraduate Course 2 (Organ recovery)** Organ Recovery and Bench Procedures in deceased donor transplantation	Room 5F-1
CHAIR(S)	Tae-Seok Kim (Keimyung University, Korea) Seokjin Haam (Ajou University, Korea)	
08:30-08:48	Heart Ji Seong Kim (Seoul National University, Korea)	
08:48-09:06	Lung Samina Park (Seoul National University, Korea)	
09:06-09:24	Liver and abdominal perfusion Jinsoo Rhu (Sungkyunkwan University, Korea)	

Day 2 – November 16 (Thu)

09:24-09:42	Pancreas Youngmin Ko (Asan Medical Center, Korea)	
09:42-10:00	Kidney Mi Hyeong Kim (The Catholic University of Korea, Korea)	
08:30-10:00	**Vitallink Symposium 1** **Organ Transplantation state in Southeast Asia**	Room 5F-2
CHAIR(S)	Khin Maung Htay (ARYU Hospital, Myanmar) Curie Ahn (National Medical Center, Korea)	
08:30-08:50	Organ Transplantation state in Laos Noot Sengthavisouk (Mittaphab Hospital, Laos)	
08:50-09:10	Organ Transplantation state in Cambodia Rith Sovannara (Khmer Soviet Friendship Hospital, Cambodia)	
09:10-09:30	Organ Transplantation state in Vietnam Dong Van He (Viet Duc University Hospital, Vietnam)	
09:30-09:50	Organ Transplantation state in Philippines Glenda Eleanor P. Pamugas (National Kidney and Transplant Institute, Philippines)	
09:50-10:00	Q&A	
10:00-10:30	Coffee Break	
10:30-12:00	**Postgraduate Course 3 (Liver)** **How do I do (Lap/Robotic RL): Parenchymal division & BD division**	Room 3F-1
CHAIR(S)	Gyu-Seong Choi (Sungkyunkwan University, Korea) Po-Da Chen (National Taiwan University Hospital, Taiwan)	
	Lap approach	
10:30-10:40	How do I do - laparoscopic left hepatectomy with caudate lobe Choon Hyuck D. Kwon (Cleveland Clinic, USA)	
10:40-10:50	Laparoscopic living donor hepatectomy: experiences from West China Hospital Yong-gang Wei (West China Hospital of Sichuan University, China)	
10:50-11:00	Key consideration in parenchymal transection in laparoscopic liver right lobe operation Alfred Kow Wei Chieh (National University Hospital, Singapore)	
11:00-11:15	Discussion All speakers	

Day 2 – November 16 (Thu)

Robotic approach

11:15-11:25	Methods for parenchymal transection and bile duct division in robotic donor right hepatectomy Kwan-Woo Kim (Dong-A University, Korea)
11:25-11:35	Robotic parenchymal division (using robotic instruments) and bile duct division Yee Lee Cheah (Houston Methodist Hospital, USA)
11:35-11:45	Individualized bile duct division angle Yasir Alnemary (King Faisal Specialist Hospital & Research Centre, Saudi Arabia)
11:45-12:00	Discussion All speakers

10:30-12:00	**Postgraduate Course 4 (Kidney/Pancreas)** **Donor and recipient evaluation in kidney transplantation**	Room 5F-1
CHAIR(S)	Hye Ryoun Jang (Sungkyunkwan University, Korea) Germaine Wong (Sydney University, Australia)	
10:30-11:00	Selection of expanded criteria living and deceased donor Dorry Segev (New York University, USA)	
11:00-11:30	Preparation of suboptimal recipient candidate Natavudh Townamchai (Chulalongkorn University, Thailand)	
11:30-12:00	How to manage waitlist patients for deceased donor kidney transplantation Myung Gyu Kim (Korea University, Korea)	

10:30-12:00	**Vitallink Symposium 2** **Deceased Organ Donation and Transplantation Education (Medical Students)**	Room 5F-2
CHAIR(S)	Ghazali Ahmad (National Heart Institute, Malaysia) Yeong Hoon Kim (Inje University, Korea)	
10:30-10:50	Deceased Organ Donation and Transplantation Education in Vitallink Samuel Lee (Hallym University, Korea)	
10:50-11:10	Deceased Organ Donation and Transplantation Education in KODA In-Sung Moon (Korea Organ Donation Agency, Korea)	
11:10-11:30	Deceased Organ Donation and Transplantation Education in Mongolia Lkhaakhuu Od-Erdene (First Central Hospital, Mongolia)	
11:30-11:50	Deceased Organ Donation and Transplantation Education in Malaysia Ghazali Ahmad (National Heart Institute, Malaysia)	
11:50-12:00	Q&A	

Day 2 – November 16 (Thu)

12:00-13:00	**Luncheon Symposium 1** GC Biopharma	Room 3F-1
CHAIR(S)	Jaeseok Yang (Yonsei University, Korea)	
12:00-13:00	A new paradigm in the prevention of shingles Hanbi Lee (The Catholic University of Korea, Korea)	

12:00-13:00	**Luncheon Symposium 2** Sanofi	Room 5F-1
CHAIR(S)	Sun Cheol Park (The Catholic University of Korea, Korea)	
12:00-13:00	Optimized ATG Induction Strategy for Kidney Transplant Observed from 10 years of Real World Cases Jeong-Kye Hwang (The Catholic University of Korea, Korea)	

13:00-14:30	**Postgraduate Course 5 (Liver)** The State of Art Video in minimally invasive donor hepatectomy	Room 3F-1
CHAIR(S)	Kang He (Shanghai Jiao Tong University School of Medicine, China) Unnikrishnan Gopalakrishnan (Amrita Vishwa Vidyapeetham, India)	
13:00-13:15	Robotic donor right hemihepatectomy Po-Da Chen (National Taiwan University Hospital, Taiwan)	
13:15-13:30	Laparoscopic donor right hemihepatectomy Kyung-Suk Suh (Seoul National University, Korea)	
13:30-13:45	Laparoscopic donor posterior sectionectomy Hiroyuki Nitta (Iwate Medical University, Japan)	
13:45-14:00	Laparoscopic donor left hemihepatectomy Roberto I. Troisi (University of Naples Federico II, Italy)	
14:00-14:15	Interrelationship between laparoscoy and robotic donor liver resection Gi Hong Choi (Yonsei University, Korea)	
14:15-14:30	Discussion All speakers	

Day 2 – November 16 (Thu)

13:00-14:30	**Postgraduate Course 6 (Kidney/Pancreas)** **Post-transplant care in kidney transplantation**	Room 5F-1
CHAIR(S)	Jong Soo Lee (Ulsan University, Korea) Chandra Bhati (University of Maryland School of Medicine, USA)	
13:00-13:30	Monitoring on a regular basis and in special situations Ahram Han (Seoul National University, Korea)	
13:30-14:00	Personalized immunosuppression after kidney transplantation Chi Yuen Cheung (Queen Elizabeth Hospital, Hong Kong)	
14:00-14:30	Non-immunosuppressant medication Shang-Feng Tsai (Taichung Veterans General Hospital, Taiwan)	

13:00-14:30	**Postgraduate Course 7 (Basic)** **Newly emerging immune cells**	Room 6F-1
CHAIR(S)	Eui-Cheol Shin (KAIST, Korea) Hye Young Kim (Seoul National University, Korea)	
13:00-13:22	Innate lymphoid cells Hye Young Kim (Seoul National University, Korea)	
13:22-13:44	MAIT cells Min-Seok Rha (Yonsei University, Korea)	
13:44-14:06	Regulatory B cells Ji Eun Oh (KAIST, Korea)	
14:06-14:28	CD8+ regulatory T cells June-Young Koh (Genome Insight, Korea)	

13:00-14:30	**Postgraduate Course 8 (Pathology)** **Interesting Biopsy Cases**	Room 5F-2
Clinical Discussant: Juhan Lee (Yonsei University, Korea)		
CHAIR(S)	Yong-Jin Kim (Kyungpook National University, Korea) Sun Hee Sung (Ewha Womans University, Korea)	
13:00-13:18	Case 1 Paisit Paueksakon (Vanderbilt University Medical Center, USA)	
13:18-13:36	Case 2 Paisit Paueksakon (Vanderbilt University Medical Center, USA)	
13:36-13:54	Case 3 Yong-Jin Kim (Kyungpook National University, Korea)	

Day 2 – November 16 (Thu)

13:54-14:12	Case 4 Shigeo Hara (Kobe City Medical Center General Hospital, Japan)	
14:12-14:30	Case 5 Beom Jin Lim (Yonsei University, Korea)	
13:00-14:30	**Postgraduate Course 9 (Laboratory)** **Transplant Immunology: Practical issues in HLA Eplets and Desensitization Monitoring**	Room 6F-2
CHAIR(S)	Dae-Hyun Ko (Asan Medical Center, Korea) Eun-Suk Kang (Sungkyunkwan University, Korea)	
	Exploring HLA Eplet Analysis: From Basics to Applications	
13:00-13:22	Basic of HLA Eplet Analysis Soo-Kyung Kim (Ewha Womans University, Korea)	
13:22-13:44	Clinical Application of HLA Eplet Analysis Hyeyoung Lee (Catholic Kwandong University, Korea)	
	Current Advances and Best Practices in Laboratory Monitoring for Organ Transplant Desensitization	
13:44-14:06	Laboratory Issues in Desensitization for ABO Incompatible Transplant Hyun Ji Lee (Pusan National University, Korea)	
14:06-14:28	Laboratory Issues in Desensitization for HLA Incompatible Transplant John Jeongseok Yang (Korea University, Korea)	
14:30-15:00	Coffee Break	
15:00-16:30	**Postgraduate Course 10 (Liver)** **Present & future perspectives of minimal invasive donor hepatectomy**	Room 3F-1
CHAIR(S)	Gi-Won Song (Asan Medical Center, Korea) Choon Hyuck D. Kwon (Cleveland Clinic, USA)	
15:00-15:20	Advantages or difference compared to open Kenneth Chok (Hong Kong University, Hong Kong)	
15:20-15:40	Advancement of instrument and visualization (3D/Flexible/ICG, etc) Claire Goumard (AP-HP Pitié-Salpêtrière Hospital, Sorbonne University, France)	
15:40-16:00	How to cope with intra-operative accidents Young-Seok Han (Daegu Catholic University, Korea)	

Day 2 – November 16 (Thu)

16:00-16:20	Scar management Jong-Woo Choi (Asan Medical Center, Korea)
16:20-16:30	Discussion All speakers

15:00-16:30	**Postgraduate Course 11 (Kidney/Pancreas)** **Pre-transplant screening and post-transplant consideration for complications**	Room 5F-1
CHAIR(S)	Seungyeup Han (Keimyung University, Korea) Chi Yuen Cheung (Queen Elizabeth Hospital, Hong Kong)	
15:00-15:30	Pre-transplant screening and post-transplant monitoring of cardiovascular complications Junghwa Ryu (Ewha Womans University, Korea)	
15:30-16:00	Pre-transplant screening and post-transplant monitoring of malignancy Germaine Wong (Sydney University, Australia)	
16:00-16:30	Consideration of immune checkpoint inhibitor use after transplantation Kenar Dinesh Jhaveri (Northwell Health, Zucker School of Medicine, USA)	

15:00-16:30	**Postgraduate Course 12 (Basic)** **Single cell biology in transplantation**	Room 6F-1
CHAIR(S)	Eun Young Choi (Seoul National University, Korea) Jihwan Park (GIST, Korea)	
15:00-15:22	Introduction of single-cell RNA sequencing Jihwan Park (GIST, Korea)	
15:22-15:44	Single cell transcriptomics in kidney transplantation Valeria R. Mas (University of Maryland School of Medicine, USA)	
15:44-16:06	Single cell transcriptomics in heart transplantation Weihua Gong (Zhejiang University Medical Center, China)	
16:06-16:28	Introduction of spatial multi-omics analysis Jong Hoon Kim (Yonsei University, Korea)	

15:00-16:30	**Postgraduate Course 13 (Infection)** **Key issues: when the patient is febrile after transplantation**	Room 5F-2
CHAIR(S)	Tan Ban Hock (Duke-NUS Medical School, Singapore) Sang Il Kim (The Catholic University of Korea, Korea)	
15:00-15:22	Fever: how to evaluate the patient Sang-Oh Lee (Asan Medical Center, Korea)	

Day 2 – November 16 (Thu)

15:22-15:44	Must know issues before using antibiotics empiricaly Pyoeng Gyun Choe (Seoul National University, Korea)	
15:44-16:06	Basic interpretation of antibiogram Hyeri Seok (Korea University, Korea)	
16:06-16:28	Not small adults: what is different in pediatric SOT recipients Ji-Man Kang (Yonsei University, Korea)	
16:30-17:00	**Opening Ceremony**	Room 3F-1
17:00-17:30	**Special Lecture 1**	Room 3F-1
CHAIR(S)	Jongwon Ha (Seoul National University, Korea)	
17:00-17:30	Biological sex impacts transplant outcomes Stefan G. Tullius (Harvard Medical School, USA)	
17:30-18:30	**KST Board Meeting**	Room 6F-1

Day 3 – November 17 (Fri)

08:00-09:30	**Concurrent Symposium 1 (Kidney/Pancreas)** **Kidney allograft in multi-organ transplantation**	Room 3F-1
CHAIR(S)	Sangil Min (Seoul National University, Korea) Dorry Segev (New York University, USA)	
08:00-08:30	Indication and outcomes of simultaneous kidney transplantation with other organ transplantation Sung Shin (Asan Medical Center, Korea)	
08:30-09:00	How to manage kidney allograft in liver-kidney transplantation Liver: Dong Jin Joo (Yonsei University, Korea) Kidney: Byung Ha Chung (The Catholic University of Korea, Korea)	
09:00-09:30	How to manage heart allograft in heart-kidney transplantation Heart: Jong-Chan Youn (The Catholic University of Korea, Korea) Kidney: Hye Young Woo (Seoul National University, Korea)	

08:00-09:30	**Concurrent Symposium 2 (Liver)** **Long-term outcome of LT**	Room 5F-1
CHAIR(S)	Gi-Won Song (Asan Medical Center, Korea) Kenneth Chok (Hong Kong University, Hong Kong)	
08:00-08:15	Immunosuppression & Metabolic syndrome Iman Fawzy Montesser (Ain Shams University, Egypt)	
08:15-08:30	De-novo malignancy Toru Ikegami (The Jikei University, Japan)	
08:30-08:45	Re-transplantation for late allograft dysfunction Deok-Bog Moon (Asan Medical Center, Korea)	
08:45-09:00	Immunosuppression withdrawal Sandy Feng (University of California, San Francisco, USA)	
09:00-09:15	Pregnancy and delivery Ja-Young Kwon (Yonsei University, Korea)	
09:15-09:30	Discussion All speakers	

Day 3 – November 17 (Fri)

08:00-09:00	**International Research Grant Session**	Room 6F-2
CHAIR(S)	Beom Seok Kim (Yonsei University, Korea) Sang Ho Lee (Kyung Hee University, Korea)	
08:00-08:15	Expanding Brain death donor transplantation in Mongolia Battsetseg Gonchigjav (Center for Health development, Mongolia)	
08:15-08:30	The role of passive HBV immunisation in HDV-reactivation in transplant patients Anar Ganbold (First Central Hospital of Mongolia, Mongolia)	
08:30-08:45	Study on the influence of donor-specific anti-HLA antibody (DSA) to the viral antibody titer associated with vaccination after pediatric liver Seiichi Shimizu (National Center for Child Health and Development, Japan)	
08:45-09:00	Retrograde reperfusion of renal graft to reduce ischemic-reperfusion injury Myltykbay Rysmakhanov (West-Kazakhstan State Medical University, Kazakhstan)	
09:30-10:00	Coffee Break	
10:00-10:30	**Special Lecture 2**	Room 3F-1
CHAIR(S)	Kyung-Suk Suh (Seoul National University, Korea)	
10:00-10:30	Ex vivo normothermic repair of damaged liver grafts. Is regeneration possible? Pierre-Alain Clavien (University Hospital Zurich, Switzerland)	
10:30-11:00	**Keynote Lecture**	Room 3F-1
CHAIR(S)	Myoung Soo Kim (Yonsei University, Korea)	
10:30-11:00	Current progress of transplant genetics Brendan James Keating (University of Pennsylvania, USA)	
11:00-12:00	**Plenary Session 1 (Best papers)**	Room 3F-1
CHAIR(S)	Jae Won Joh (Sungkyunkwan University, Korea) Stefan G. Tullius (Harvard Medical School, USA)	
11:00-11:15	Phase 1/2 Donor Antigen Specific Treg Based Cell Therapy Clinical Trial To Induce Operational Tolerance In Living Donor Liver Transplant Patients Koichiro Uchida (Juntendo University, Japan)	

Day 3 – November 17 (Fri)

11:15-11:30	Unveiling the Molecular Signature of Acute T Cell-Mediated Rejection in Human Renal Transplantation: A Comparative Analysis of Pre- and Post-Transplant PBMCs and Transplant Tissues Using Single-Cell RNA Sequencing and Spatial Transcriptomics Minji Kang (Seoul National University graduate school, Korea)
11:30-11:45	Prevention and Management of Portal Vein Complications after Pediatric Living Donor Liver Transplantation Itsuko Chihyi Chen (Kaohsiung Chang Gung Memorial Hospital, Taiwan)
11:45-12:00	The First Successful Uterus Transplantation in Korea: From a Longing Wish to Become a Mother Jae Berm Park (Samsung Medical Center, Korea)

12:00-12:25	**Living Legend Session** **Professor Ki Il Park**	Room 3F-1
CHAIR(S)	Kyu Ha Huh (Yonsei University, Korea)	
12:00-12:05	Introduction of Prof. Ki Il Park Kyu Ha Huh (Yonsei University, Korea)	
12:05-12:15	Pioneering transplant surgeon: Giving patients a new life (movie)	
12:15-12:20	Award ceremony	
12:20-12:25	Acceptance speech Ki Il Park (Yonsei University, Korea)	

12:30-13:00	**General Assembly**	Room 6F-1

12:40-12:50	**Luncheon Symposium 3** **Astellas Korea Inc.**	Room 3F-1
CHAIR(S)	Jong Soo Lee (Ulsan University, Korea) Sangil Min (Seoul National University, Korea)	
12:40-12:50	Opening Remarks Jong Soo Lee (Ulsan University, Korea) Sangil Min (Seoul National University, Korea)	
12:50-13:15	Optimal Level of Tacrolimus to Prevent Rejection in Kidney Transplantation Jang Hee Cho (Kyungpook National University, Korea)	

Day 3 – November 17 (Fri)

13:15-13:40	Tacrolimus exposure and its association with outcomes in kidney transplant patients based on KR population Ahram Han (Seoul National University, Korea)	
12:40-13:40	**Luncheon Symposium 4** **Novartis Korea**	Room 5F-1
CHAIR(S)	Dong Jin Joo (Yonsei University, Korea)	
12:40-13:40	Real practice of Certican in Liver Transplantation : What can we expect from Everolimus? Jinsoo Rhu (Sungkyunkwan University, Korea)	
13:40-14:40	**Oral Presentation 1 (Kidney/Pancreas)**	Room 3F-1
CHAIR(S)	Beom Seok Kim (Yonsei University, Korea) Young Hoon Kim (Asan Medical Center, Korea)	
13:40-13:50	The effects of physical activity on fracture in kidney transplant recipients in South Korea : based on Korean National Health Insurance service data Sungmi Kim (Samsung Medical Center, Korea)	
13:50-14:00	Optimal Tacrolimus Trough Levels and Allograft Outcomes in Kidney Transplant Recipients: Insights from a Multicenter Real-World Study in South Korea Ahram Han (Seoul National University, Korea)	
14:00-14:10	Comparative Analysis of Kidney Transplantation Outcomes between Extended Criteria Donors and Waiting List in Patients Aged 60 and Above Jae Jun Lee (Asan Medical Center, University of Ulsan, Korea)	
14:10-14:20	Factors affecting Discard of Deceased Donor Kidneys of Korea Suhyun Oh (Severance Hospital, Yonsei University, Korea)	
14:20-14:30	Index Cases Of Intracranial Aneurysms In Autosomal Dominant Polycystic Kidney Disease: Longitudinal Experience From A Single Renal Transplantation Centre Santosh Antony Olakkengil (Royal Adelaide Hospital, Australia)	
14:30-14:40	Unveiling Shared Genetic Risks of Type 2 and Post-transplant Diabetes Mellitus in East Asians Through Polygenic Risk Scores Seokwoo Park (Seoul National University Bundang Hospital, Korea)	

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13:40-14:40	**Oral Presentation 2 (Liver)**	Room 5F-1
CHAIR(S)	Dong Jin Joo (Yonsei University, Korea) Toru Ikegami (The Jikei University, Japan)	
13:40-13:50	Intrapatient variability of tacrolimus and acute kidney injury may be associated with the development of chronic kidney disease after liver transplantation Soon Kyu Lee (The Catholic University of Korea, Korea)	
13:50-14:00	Adult-to-Adult Right Lobe Graft Living Donor Liver Transplantation for Acute-on-Chronic Liver Failure: A Single-Center Experience in Vietnam The Duy Nguyen (VinUniversity, Vietnam)	
14:00-14:10	Risk of post-transplantation recurrence in hepatocellular carcinoma patients within the Milan criteria: importance for evaluating the recurrence potential Eunjin Lee (Samsung Medical Center, Korea)	
14:10-14:20	Graft Size and Hepatocellular Carcinoma Outcomes in Adult-to-Adult Living Donor Liver Transplantation: KOTRY study Deok-Gie Kim (Severance Hospital, Yonsei University, Korea)	
14:20-14:30	The Safety and Feasibility of Adjuvant Immunotherapy with Autologous Cytokine-Induced Killer Cells for Patients with Hepatocellular Carcinoma Beyond Milan Criteria after Liver Transplantation Geun Hong (Ewha Womans University, Korea)	
14:30-14:40	Portal hypertension after liver transplantation Atsuyoshi Mita (Shinshu University School of Medicine, Japan)	

13:40-14:40	**Xenotransplantation Symposium 1** **Ethical challenges**	Room 6F-1
CHAIR(S)	Jayme Locke (The University of Alabama at Birmingham, USA) Curie Ahn (National Medical Center, Korea)	
13:40-14:00	Ethical considerations for the xenotransplantation Ivo Kwon (Ewha Womans University, Korea)	
14:00-14:20	Why xenotransplantation should be done ethically? Ik Jin Yun (Konkuk University, Korea)	
14:20-14:40	Panel Discussion Ivo Kwon (Ewha Womans University, Korea) Ik Jin Yun (Konkuk University, Korea) Hyun-il Kim (Optipharm, Korea) Ilung Oh (Ministry of Food and Drug Safety, Korea)	

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13:40-14:40	**Oral Presentation 3 (Lung)**	Room 5F-2
CHAIR(S)	Do Hyung Kim (Pusan National University, Korea) Kyeong Man Jeon (Sungkyunkwan University, Korea)	
13:40-13:50	Clinical implication of the grading system for airway complications after lung transpalntation Ha Eun Kim (Yonsei University, Korea)	
13:50-14:00	The significance of non-HLA autoantibodies as a biomarker of chronic lung allograft dysfunction in lung transplantation Jongkwon Lee (Samsung Medical Center, Korea)	
14:00-14:10	Current status and characteristics of lung transplantation for elderly people in Korea: Analysis of Korean Network for Organ Sharing Data Won Jin Lee (Pusan National University Yangsan Hospital, Korea)	
14:10-14:20	A Comparative Analysis of Cardiopulmonary Bypass and Extracorporeal Membrane Oxygenation in Lung Transplantation Samina Park (Seoul National University Hospital, Korea)	
14:20-14:30	Fusarium Infection in a Lung Transplant Patient and a Simultaneous Heart-Kidney Transplant Patient Won Jin Lee (Pusan National University Yangsan Hospital, Korea)	

13:40-14:40	**KOTRY Joint Symposium**	Room 6F-2
CHAIR(S)	Myoung Soo Kim (Yonsei University, Korea) Hyun-Young Park (National Institute of Health, Korea)	
13:40-14:20	International collaboration for transplant genetics Brendan James Keating (University of Pennsylvania, USA)	
14:20-14:40	Implementation of polygenic risk score in new onset diabetes mellitus after transplantation: results from KOTRY Jong Cheol Jeong (Seoul National University, Korea)	

13:40-14:40	**Woman In Transplantation (WIT)** **Experiences of Women in Academic Surgery**	Room 5F-3
CHAIR(S)	Yeong Hoon Kim (Inje University, Korea) Khin Thida Thwin (ARYU Hospital, Myanmar)	
13:40-14:00	Experiences of Women in Academic Surgery Claire Junga Kim (Dong-A University, Korea)	

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14:00-14:30	Panel Discussion Nam-Joon Yi (Seoul National University, Korea) Jae-Myeong Lee (Korea University, Korea) Yuki Nakagawa (Juntendo University, Japan) Sergelen Orgoi (Health Sciences University of Mongolia, Mongolia) Tin Tin Mar (ARYU Hospital, Myanmar) Rosemarie R. Liquete (National Kidney and Transplant Institute, Philippines)
14:30-14:40	Q&A
14:40-15:10	Coffee Break

14:40-15:10	**Mini-oral Presentation 1 (Liver)**	Room 6F-3
CHAIR(S)	Hae Won Lee (Seoul National University, Korea)	
14:40-14:45	In Vivo Porcine Study of 3D-Printed Biodegradable Paclitaxel-Eluting Stent for Biliary Stricture After Liver Transplantation Jiyoung Kim (Seoul National University Hospital, Korea)	
14:45-14:50	Quality Of Life After Liver Transplantation Of Vietnamese Patients Anh Nguyen Thi Van (Military Central Hospital, Vietnam)	
14:50-14:55	Outcomes Of Living Donor Liver Transplantation In Patients With Concurrent Extrahepatic Malignancy John Hee Park (Samsung Medical Center, Korea)	
14:55-15:00	Experience of Liver Transplantation in National Scientific Center for Surgery Named After A.N. Syzganov. Aziza Khajiyeva (JSC National scientific center of surgery named after A.N. Syzganov, Kazakhstan)	
15:00-15:05	Low fasting glucose of living donor and risk for graft loss after liver transplantation Hwa-Hee Koh (Severance Hospital, Yonsei University, Korea)	
15:05-15:10	Outcomes of Living Donor Liver Transplantation Recipients with High Model for End-stage Liver Disease Score over 35: A Korean National Registry Study Eun Ki Min (Severance Hospital, Yonsei University, Korea)	

14:40-15:10	**Mini-oral Presentation 2 (Liver)**	Room 6F-3
CHAIR(S)	Jae Do Yang (Chonbuk National University, Korea)	
14:40-14:45	Intention-to-treat analysis for survival benefit of ABO-incompatible living-donor liver transplantation in patients with a high Model for End-stage Liver Disease score. Seung Hyuk Yim (Severance Hospital, Yonsei University, Korea)	

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14:45-14:50	Successful Implementation of Pure Laparoscopic Right Donor Hepatectomy in a Small Center with Limited Experience: The Role of Proctorship Program Manuel Lim (Myungji Hospital, Korea)
14:50-14:55	Post-Operative Outcomes and Quality of Life After Pure Laparoscopic Versus Open Donor Hepatectomy in Adult-to-Adult Living Donor Liver Transplantation: First Report from Thailand Worakitti Lapisatepun (Chiang Mai University, Thailand)
14:55-15:00	The Association of Early Postoperative Complications after ABO-incompatible Liver Transplantation and Intraoperative Red Blood Cell Transfusion Leerang Lim (Seoul National University Hospital, Korea)
15:00-15:05	Modified patch-conduit venoplasty for hypoplastic portal vein in pediatric liver transplantation Sang-Hoon Kim (Asan Medical Center, University of Ulsan, Korea)

14:40-15:10	**Mini-oral Presentation 3 (Kidney/Pancreas)**	Room 6F-4
CHAIR(S)	Hyung Joon Ahn (Kyung Hee University, Korea)	

14:40-14:45	Serial changes in Serum Immunoglobulin Post Kidney Transplantation and its Viability as a Biomarker for Infection Eun-Ah Jo (Seoul National University Bundang Hospital, Korea)
14:45-14:50	Immunologic Risk Stratification of Kidney Transplant Recipients by Combining HLA-Eplet MM and PIRCHE-II Dongryeol Lee (Maryknoll Medical Center, Korea)
14:50-14:55	Robot-assisted kidney transplantation in immunological high-risk patients : Comparative analysis Robot-assisted kidney transplantation VS Open kidney transplantation Hye Eun Kwon (Asan Medical Center, University of Ulsan, Korea)
14:55-15:00	Experience of Robotic assisted Living donor nephrectomy at Cho Ray Hospital - the single institution in Viet Nam Duc Minh Pham (Cho Ray hospital, Vietnam)
15:00-15:05	Re-initiating Living Donation Kidney Transplantation in Covid-19 Pandemic; Indonesia Experience Aaron Abdullah (Dr. Cipto Mangunkusumo Hospital, Indonesia)
15:05-15:10	A Study Of The Effectiveness Of Anti-T-Lymphocyte Globulin As An Induction Drug In Kidney Transplantation Piyali Sarkar (Charnock Hospital, India)

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14:40-15:10	**Mini-oral Presentation 4 (Kidney/Pancreas)**	Room 6F-4
CHAIR(S)	Jung Hwan Park (Konkuk University, Korea)	

14:40-14:45 Drug-drug interaction of potassium competitive acid blocker with tacrolimus and mycophenolate in kidney transplant recipients: a randomized controlled trial using smart clinical trial platform
Seong Wook Lee (Kyungpook National University, Korea)

14:45-14:50 Association Of Reduced Bladder Capacity In The Incidence Of Complicated UTI In Kidney Transplant Recipients
Joseph Laygo (National Kidney and Transplant Institute, Philippines)

14:50-14:55 Implications of PRA and ABO Blood Type on Graft Survival in DDKT: Proposing a Novel Allocation Scheme
Jin Hyeog Lee (Severance Hospital, Yonsei University, Korea)

14:55-15:00 Outcomes of COVID-19 in Thai Kidney Transplant Recipients in the Vaccination Era
Suwasin Udomkarnjananun (Chulalongkorn University, Thailand)

15:00-15:05 Capacity building in deceased donor management
Battsetseg Gonchigjav (Center for Health development, Ministry of Health, Mongolia)

15:05-15:10 Clinical course of graft failure after kidney transplantation investigated focusing on immune rejection
Hong Seok Han (The Catholic University of Korea Seoul St. Mary's Hospital, Korea)

14:40-15:10	**Mini-oral Presentation 5 (Heart + Xenotransplantation)**	Room 6F-5
CHAIR(S)	Jaewon Oh (Yonsei University, Korea)	

14:40-14:45 Clinical course of obese advanced heart failure patients who underwent bariatric surgery
Darae Kim (Samsung Medical Center, Korea)

14:45-14:50 Genetic Screening of Associated Cardiac Disease in a Single Center Heart Transplant Cohort
Soo Yong Lee (Pusan National University Yangsan Hospital, Korea)

14:50-14:55 Interspecies incompatibility of CD200 contribute to the xenogeneic immune response
Bomin Kim (Yonsei University, Korea)

14:55-15:00 Deciphering Immunogenic Diversity via Glycan Antigen Characterization in Genetically Modified Pigs for Xenotransplantation
Myung Jin Oh (Chungnam National University, Korea)

15:00-15:05 Role of Protease-activated Receptor-1 in the Inflammatory Response in a Co-culture Model of Pig Endothelial Cells and Human Monocytes
Thi Xoan Hoang (Gachon University, Vietnam)

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15:10-16:40	**Concurrent Symposium 3 (Liver)** Update: Recent advances in LT	Room 5F-1
CHAIR(S)	Dong-Sik Kim (Korea University, Korea) Chandra Bhati (University of Maryland School of Medicine, USA)	
15:10-15:30	Imaging modalities to assess liver function, anatomy & detect complication in living donor Jeong Hee Yoon (Seoul National University, Korea)	
15:30-15:50	Organoid & tissue-engineered graft in LT Takanori Takebe (Cincinnati Children's Hospital Medical Center, USA)	
15:50-16:10	Machine perfusion & DCD Jang-Il Moon (Mount Sinai Hospital, USA)	
16:10-16:30	Extracorporeal Liver Support for Liver Failure Ram Subramanian (Emory University, USA)	
16:30-16:40	Discussion All speakers	

15:10-16:40	**Concurrent Symposium 4 (Kidney/Pancreas)** BKV nephropathy	Room 6F-1
CHAIR(S)	Chan Duck Kim (Kyungpook National University, Korea) Cynthia C. Nast (Cedars-Sinai Medical Center, USA)	
15:10-15:40	Overview of BKV nephropathy Yu Ho Lee (Cha University, Korea)	
15:40-16:10	Diagnosis including differential diagnosis of BKV nephropathy and rejection Cynthia C. Nast (Cedars-Sinai Medical Center, USA)	
16:10-16:40	Recent updates of BKV treatment Kenta Futamura (Japan Red Cross Aichi Medical Center Nagoya Daini Hospital, Japan)	

15:10-16:40	**Concurrent Symposium 5 (Basic)** Mechanisms and biomarkers of immune tolerance	Room 5F-2
CHAIR(S)	Ki Young Lee (Sungkyunkwan University, Korea) Weihua Gong (Zhejiang University Medical Center, China)	
15:10-15:32	Recent updates of immune tolerance Eun Young Choi (Seoul National University, Korea)	
15:32-15:54	Regulatory T cell subpopulations and immune tolerance Eui-Cheol Shin (KAIST, Korea)	

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15:54-16:16	T cell therapies in transplantation Fadi Issa (University of Oxford, UK)	
16:16-16:38	Th17-based biomarkers in transplantation Mi-La Cho (The Catholic University of Korea, Korea)	
15:10-16:40	**Concurrent Symposium 6 (Infection)** **Updated prophylaxis for Infection**	Room 6F-2
CHAIR(S)	Kyong Ran Peck (Sungkyunkwan University, Korea) Shin Hwang (Asan Medical Center, Korea)	
15:10-15:32	How to optimize antibacterial regimen during transplantation Sang Il Kim (The Catholic University of Korea, Korea)	
15:32-15:54	Viral infection prophylaxis Kyungmin Huh (Sungkyunkwan University, Korea)	
15:54-16:16	Fungal infection prophylaxis Tan Ban Hock (Duke-NUS Medical School, Singapore)	
16:16-16:38	*P. jirovecii* prophylaxis Su Jin Jeong (Yonsei University, Korea)	
15:10-16:40	**Concurrent Symposium 7 (Lung)** **Lung preservation Uptodate**	Room 5F-3
CHAIR(S)	Jin Gu Lee (Yonsei University, Korea) Masaaki Sato (The University of Tokyo, Japan)	
15:10-15:35	Conventional lung preservation Seokjin Haam (Ajou University, Korea)	
15:35-16:00	Review of EVLP and OCS Sandeep Attawar (Krishna Institute of Medical Sciences, India)	
16:00-16:25	Lung preservation on 10'C storage Konrad Hoetzenecker (Vienna University, Austria)	
16:25-16:40	Panel Discussion Junghee Lee (Sungkyunkwan University, Korea) Samina Park (Seoul National University, Korea) Sehoon Choi (Asan Medical Center, Korea) Wei-Hsun Chen (Chang Gung Memorial Hospital, Taiwan)	

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16:40-17:40	**Oral Presentation 4 (Liver)**	Room 5F-1
CHAIR(S)	Bong-Wan Kim (Ajou University, Korea) Rodrigo Vianna (University of Miami, USA)	
16:40-16:50	Laparoscopic Drainage Basin Hepatectomy Based on Cone Unit Yu Cheng (Binzhou Medical University Affiliated Yantai Hospital, China)	
16:50-17:00	Hepatic Congestion-Linked Intrahepatic Biliary Strictures in Right Liver Grafts Hyun Hwa Choi (Seoul National University Hospital, Korea)	
17:00-17:10	What are operating-time-determining factors of pure laparoscopic donor hepatectomy for adult recipients? Akira Umemura (Iwate Medical University, Japan)	
17:10-17:20	Impact of Donor Hepatic Duct Bifurcation Location and Angle on Post-transplant Biliary Complications in Recipients following Living Donor Liver Transplantation Sunghae Park (Samsung Medical Center, Korea)	
17:20-17:30	Evaluation for the Anatomical Correctness of Fusion Image of 3-Dimensional Hilar Structure Including Portal Vein, Hepatic Artery and Bile duct Seungwook Han (Samsung Medical Center, Korea)	
17:30-17:40	Outcomes of 6000 Living donor liver transplantation: A 30-Year Journey in a high-volume single Center. Young In Yoon (Asan Medical Center, University of Ulsan, Korea)	

16:40-17:40	**Oral Presentation 5 (Kidney/Pancreas)**	Room 6F-1
CHAIR(S)	Hee Gyung Kang (Seoul National University, Korea) Ho-Keun Kwon (Yonsei University, Korea)	
16:40-16:50	Differential Effects of Desensitization Therapy on BK Virus Viremia after Living Donor Kidney Transplantation Jeeyoun Lee (Kangbuk Samsung Hospital, Korea)	
16:50-17:00	Impact of COVID-19 vaccination to SARS-Cov-2 infection and outcomes among end-stage renal disease patients in South Korea Eunjeong Kwon (Seoul National University Bundang Hospital, Korea)	
17:00-17:10	Outcomes of kidney transplantation from donors with acute kidney injury: A nationwide registry study in Korea Tai Yeon Koo (Korea University Anam Hospital, Korea)	
17:10-17:20	Early Hemoglobin Levels after Kidney Transplantation Predict Clinical Outcomes: A Nationwide Cohort Study You Hyun Jeon (Kyungpook National University Hospital, Korea)	

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17:20-17:30	Comparative Analysis of Right and Left Retroperitoneoscopic Donor Nephrectomies Fumika Goto (Kyushu University, Japan)	
17:30-17:40	Creatinine-Cystatin C Ratio and Death with a Functioning Graft in Kidney Transplant Recipients Mun Chae Choi (Severance Hospital, Yonsei University, Korea)	
16:40-17:40	**Oral Presentation 6 (Basic)**	Room 5F-2
CHAIR(S)	Su-Hyung Park (KAIST, Korea) Mi-La Cho (The Catholic University of Korea, Korea)	
16:40-16:50	Protective effect of combination therapy with ischemic preconditioning and rapamycin in fibrotic rat livers Minsu Park (Kyung Hee University Medical Center, Korea)	
16:50-17:00	Human Leukocyte Antigen Epitope Definition Using Site-directed Mutagenesis David Suh (One Lambda a part of Thermo Fisher Scientific, USA)	
17:00-17:10	Nerve regeneration effect of FK-506 using local reserver flap Seonghyuk Park (Severance Hospital, Yonsei University, Korea)	
17:10-17:20	Modeling of allograft rejection using human induced pluripotent stem cell-derived kidney organoid system Sun Woo Lim (The Catholic University of Korea, Korea)	
17:20-17:30	Aging-related Renal Fibrosis Was Alleviated Via Conserving Mitochondrial Function And Autophagy In NLRP3 KO Mice Yang Gyun Kim (Kyung Hee University Hospital at Gangdong, Korea)	
16:40-17:40	**Oral Presentation 7 (Xenotransplantation)**	Room 6F-2
CHAIR(S)	Jae Berm Park (Sungkyunkwan University, Korea) Jae Young Kim (Gachon University, Korea)	
16:40-16:50	Beneficial effects of transgenic expression of human CD200 on top of quadruple-knockout/double-knockin (CD46/thrombomodulin) pigs on kidney xenograft survival in nonhuman primates Joon Young Jang (Yonsei University, Korea)	
16:50-17:00	Single-cell RNA Sequencing Analysis of Immune Cell Population Dynamics from Peripheral Blood in Pig-to-non-human Primate Islet Xenotransplantation Treated with Clinically Applicable Immunosuppressants Yuji Lee (Seoul National University, Korea)	

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17:00-17:10	Applying Integrative Multi-omic Profiling in Two Human Decedents Receiving Pig Heart Xenografts Reveals Early Immune-Cell Responses Indicative of Perioperative Cardiac Xenograft Dysfunction Brendan James Keating (University of Pennsylvania, USA)
17:10-17:20	Modulation of Immunosuppression for Long-Term Graft Survival in Lamellar Pig-to-Monkey Corneal Xenotransplantation from the Genetically Engineered Pig Model Ki Cheul Shin (Konkuk University Medical Center, Korea)
17:20-17:30	Factors Affecting the Long-Term Graft Survival after pig to NHP renal Xenotransplantation Ik Jin Yun (Konkuk University Medical Center, Korea)
17:30-17:40	A Report on the Longest Graft Survival of a Porcine Kidney Transplanted into a Non-Human-Primate in Korea Sangil Min (Seoul National University Hospital, Korea)

16:40-17:40	**Oral Presentation 8 (Late-breaking)**	Room 5F-3
CHAIR(S)	Geun Hong (Ewha Womans University, Korea) Seok-Hwan Kim (Chungnam National University ,Korea)	
16:40-16:50	Validation of Novel Japanese 5-5-500 criteria in large indian LDLT cohort: A Retrospetive Study Selvakumar Naganathan (Liver Transplantation and Hepatobiliary Surgery, India)	
16:50-17:00	Introduction of minimal invasive living donor liver transplantation: Hybrid cases and Totally laparoscopic living donor liver transplantation with partial clamping of the inferior vena cava Jinsoo Rhu (Samsung Medical Center, Korea)	
17:00-17:10	Super-fast-track discharge of liver transplant recipients Selvakumar Naganathan (KGMU, India)	
17:10-17:20	Short-Term Outcomes of ABO-Incompatible Kidney Transplantation At Cho Ray Hospital Chuan Khac Hoang (CHO RAY HOSPITAL, Vietnam)	

18:00-20:00	**Gala Dinner**	Room 3F-1

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07:30-08:30	**Meet the Professor 1 (Kidney/Pancreas)**	Room 5F-1
CHAIR(S)	Jaeseok Yang (Yonsei University, Korea)	
07:30-08:00	How to research immunosuppressant toxicity? Chul-Woo Yang (The Catholic University of Korea, Korea)	
08:00-08:30	How to develop business as a medical doctor? Sang Ho Lee (Kyung Hee University, Korea)	
07:30-08:30	**Meet the Professor 2 (Liver)**	Room 6F-1
CHAIR(S)	Young Kyoung You (The Catholic University of Korea, Korea)	
07:30-08:00	Evolving Strategies in LDLT for Hepatocellular Carcinoma Itsuko Chih-Yi Chen (Chang Gung Memorial Hospital, Taiwan)	
08:00-08:30	Surgical anatomy of the liver in the 3D image era Hee-Jung Wang (Inje University, Korea)	
07:30-08:30	**Meet the Professor 3 (Lung)**	Room 5F-2
CHAIR(S)	Moo Suk Park (Yonsei University, Korea)	
07:30-08:10	Role of induction treatment in lung transplantation Peter Jaksch (Vienna University, Austria)	
08:10-08:30	Panel Discussion Hye Ju Yeo (Pusan National University, Korea) Kyeong Man Jeon (Sungkyunkwan University, Korea) Ala Woo (Yonsei University, Korea) Unmil Shah (Krishna Institute of Medical Sciences, India)	
07:30-08:30	**Meet the Professor 4 (Heart)**	Room 6F-2
CHAIR(S)	Jin-Oh Choi (Sungkyunkwan University, Korea)	
07:30-08:30	Acute rejection after heart transplantation: Diagnosis and treatment, Case discussion Jae-Joong Kim (Asan Medical Center, Korea)	
08:30-09:00	Coffee Break	

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09:00-10:30	**Vanguard Award Session**	Room 3F-1
CHAIR(S)	Dongho Choi (Hanyang University, Korea) Mohamed Eltemamy (Cleveland Clinic, USA)	
09:00-09:15	Impact of Human CD31 Transgenic Modulation in Xenotransplantation on Neutrophil Extracellular Traps Suchen Kumar Yadav (Seoul National University, Korea)	
09:15-09:30	Development and Validation of a 1-year post-nephrectomy eGFR Prediction Model using Preoperative factors Eun-Ah Jo (Seoul National University Bundang Hospital, Korea)	
09:30-09:45	3D auto-segmentation of biliary structure of living liver donors using magnetic resonance cholangiopancreatography Namkee Oh (Samsung Medical Center, Korea)	
09:45-10:00	Cardioprotective effect of SGLT2 inhibitor in diabetic kidney transplant recipients Jeong Hoon Lim (Kyungpook National University, Korea)	

09:00-10:30	**Concurrent Symposium 8 (Kidney/Pancreas)** **Update in ABO-incompatible kidney transplantation**	Room 5F-1
CHAIR(S)	Jaeseok Yang (Yonsei University, Korea) Lori Jeanne West (University of Alberta, Canada)	
09:00-09:22	Role of innate T cells in antibody-mediated rejection Hideki Ohdan (Hiroshima University, Japan)	
09:22-09:44	Role of innate B cells in antibody-mediated rejection Tae Jin Kim (Sungkyunkwan University, Korea)	
09:44-10:06	Mechanism of accommodation Masayuki Tasaki (Niigata University, Japan)	
10:06-10:28	How to measure anti-ABO antibodies Lori Jeanne West (University of Alberta, Canada)	

09:00-10:30	**Concurrent Symposium 9 (Liver)** **Pediatric LDLT**	Room 6F-1
CHAIR(S)	Suk-Koo Lee (Myongji Hospital, Korea) Kyung Mo Kim (Asan Medical Center, Korea)	
09:00-09:20	Genetic evaluation & counselling in PED LT Beom-Hee Lee (Asan Medical Center, Korea)	

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09:20-09:40	ABOi PED LDLT Seisuke Sakamoto (National Center for Child Health and Development, Japan)
09:40-10:00	General technical consideration in PED LDLT Nam-Joon Yi (Seoul National University, Korea)
10:00-10:20	How to follow after PED LT Feng Xue (Renji Hospital, Shanghai Jiao Tong University, China)
10:20-10:30	Discussion All speakers

09:00-10:30	**Concurrent Symposium 10 (Coordinator)** **How to maximize organ utilization in deceased donor for overcoming serious organ shortage**	Room 5F-2
CHAIR(S)	Boknyeo Kim (Organ Transplant Center, Samsung Medical Center, Korea) Jeong Lim Lee (Korea Organ Donation Agency, Korea)	
09:00-09:25	The experience of the ECD management in deceased donor donation Minhwa Kim (Korea Organ Donation Agency, Korea)	
09:25-09:50	Deceased Donor Kidney Transplantation from ECD Jae Berm Park (Sungkyunkwan University, Korea)	
09:50-10:15	What can we do to improve the organ utilization of deceased donors? Ji-Yeon Park (The Catholic University of Korea, Korea)	
10:15-10:30	Discussion All speakers	

09:00-10:30	**Heart Workshop** **Postoperative management**	Room 6F-2
CHAIR(S)	Yang Hyun Cho (Sungkyunkwan University, Korea) Hyun-Jai Cho (Seoul National University, Korea)	
09:00-09:18	Rejection surveillance after transplantation Jin-Oh Choi (Sungkyunkwan University, Korea)	
09:18-09:36	Infection prophylaxis and surveillance Jaewon Oh (Yonsei University, Korea)	
09:36-09:54	Step down strategy of immunosuppressive agents Sang Eun Lee (Asan Medical Center, Korea)	
09:54-10:12	Prevention of renal, endocrinologic complication Jeehoon Kang (Seoul National University, Korea)	

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10:12-10:30	Panel Discussion Young-Nam Youn (Yonsei University, Korea) Darae Kim (Sungkyunkwan University, Korea) Min Ho Ju (Pusan National University, Korea) Kyung-Hee Kim (Incheon Sejong General Hospital, Korea) Kyu-Sun Lee (Eulji University, Korea)

09:00-10:30	**Lung Workshop** A Deep Dive into Lung Transplantation: Tips and Tricks for Success (surgical video session)	Room 5F-3
CHAIR(S)	Hyo Chae Paik (Myongji Hospital, Korea) Hiroshi Date (Kyoto University, Japan)	
09:00-09:18	Austria Konrad Hoetzenecker (Vienna University, Austria)	
09:18-09:36	Korea Do Hyung Kim (Pusan National University, Korea)	
09:36-09:54	Taiwan Wei-Hsun Chen (Chang Gung Memorial Hospital, Taiwan)	
09:54-10:12	Japan Masaaki Sato (The University of Tokyo, Japan)	
10:12-10:30	India Sandeep Attawar (Krishna Institute of Medical Sciences, India)	
10:30-11:00	Coffee Break	

11:00-12:30	**KST-TST Joint Symposium** Hot topics in kidney transplantation	Room 3F-1
CHAIR(S)	Sang Ho Lee (Kyung Hee University, Korea) Hsu-Han Wang (Chang Gung Memorial Hospital, Taiwan)	
11:00-11:22	Tolerance Induction in Kidney Transplantation with Combined BMT Jae Berm Park (Sungkyunkwan University, Korea)	
11:22-11:44	Glutamine Deprivation Prevents Graft Rejections through the Metabolic-Epigenetic Axis Huang-Yu Yang (Chang Gung Memorial Hospital, Taiwan)	
11:44-12:06	Immunosuppression for Renal Transplantation: Implications from the COVID-19 pandemics Meng-Kun Tsai (National Taiwan University Hospital, Taiwan)	
12:06-12:28	Prevention of cardiovascular disease after Kidney Transplantation Yu Ho Lee (Cha University, Korea)	

Day 4 – November 18 (Sat)

11:00-12:30	**GTW (Go together with) Symposium** **Let's Overcome Hurdles of Vietnam Transplantation**	Room 5F-1
CHAIR(S)	Curie Ahn (National Medical Center, Korea) Le Trung Hai (Vietnam Association for the Study of Liver diseases, Vietnam)	
11:00-11:22	Current Situation and Hurdle of Deceased Donor Promotion in Vietnam Ninh Viet Khai (Viet Duc University Hospital, Vietnam)	
11:22-11:44	How to promote deceased donation? Lesson from Korean experience In-Sung Moon (Korea Organ Donation Agency, Korea)	
11:44-12:06	Current status of Living donor liver transplantation in Vietnam and it's hurdle Van Linh Ho (108 Military Central Hospital, Vietnam)	
12:06-12:28	How to overcome the hurdles in implementing LDLT program in Korea Suk-Koo Lee (Myongji Hospital, Korea)	

11:00-12:30	**Xenotransplantation Symposium 2** **Road to the clinical trial: not an easy thing, may be**	Room 6F-1
CHAIR(S)	Ik Jin Yun (Konkuk University, Korea) Hideki Ohdan (Hiroshima University, Japan)	
11:00-11:50	Clinical Kidney Xenotransplantation Jayme Locke (The University of Alabama at Birmingham, USA)	
11:50-12:20	Strategy for the initiation of clinical trial of xenotransplantation Anhye Kim (Cha University, Korea)	
12:20-12:30	Discussion All speakers	

11:00-12:30	**Oral Presentation 9 (Coordinator)**	Room 5F-2
CHAIR(S)	Seungheui Hong (Samsung Medical Center, Korea) Sunyoung Son (Gangnam Severance Hospital, Korea)	
11:00-11:10	뇌사 신장이식 대기 중 사망 환자 특성 분석: 일 대학병원 환자를 중심으로 Anes Kim (Severance Hospital, Yonsei University, Korea)	
11:10-11:20	Manpower, Task Performance and analysis of Organ Transplantation Coordinators in Korea Ji-Yeon Park (The Catholic University of Korea Seoul St. Mary's Hospital, Korea)	
11:20-11:30	신장이식 수술 환자의 Clinical pathway(CP) 개발 및 적용 Joohee Jung (Asan Medical Center, University of Ulsan, Korea)	

Day 4 – November 18 (Sat)

11:30-11:40	전산 프로그램을 이용한 이식 대기자 관리 방법 및 경험 Jihyeon Park (Korea University Guro Hospital, Korea)
11:40-11:50	신장이식 환자를 위한 운동 프로그램 개발 연구 Sun Young Son (Gangnam Severance Hospital, Yonsei University, Korea)
11:50-12:00	10년간 Zero HLA 불일치의 이식현황 분석 Myung Sook Choi (Kyung Hee University Medical Center, Korea)
12:00-12:10	뇌사장기기증 활성화를 위한 면담 연계 지표 활동 Hyunhwa Kim (Inha University Hospital, Korea)
12:10-12:20	알코올성 간질환 환자에서 간이식 후 재음주가 미치는 영향 Seungheui Hong (Samsung Medical Center, Korea)
12:20-12:30	단일병원 심장-신장 동시이식 수혜자의 응급도 및 대기기간 분석 In Ok Kim (Asan Medical Center, University of Ulsan, Korea)

11:00-12:30	**Concurrent Symposium 11 (Heart)** Patient management for thoracic organ donor candidates	Room 6F-2
CHAIR(S)	Jae-Joong Kim (Asan Medical Center, Korea) Jin Gu Lee (Yonsei University, Korea)	
11:00-11:18	Intensivisit's perspective Jeongmin Kim (Yonsei University, Korea)	
11:18-11:36	Heart transplantation team's view Junho Hyun (Asan Medical Center, Korea)	
11:36-11:54	Lung transplantation team's view Hye Ju Yeo (Pusan National University, Korea)	
11:54-12:12	Abdominal organ transplantation team's view Han Ro (Gachon University, Korea)	
12:12-12:30	Panel Discussion Min Ho Ju (Pusan National University, Korea) Jeehoon Kang (Seoul National University, Korea) Hong Yeul Lee (Seoul National University, Korea) Juhan Lee (Yonsei University, Korea)	

Day 4 – November 18 (Sat)

12:30-13:30	**Luncheon Symposium 5** Chong Kun Dang Pharm.	Room 3F-1
CHAIR(S)	Nam-Joon Yi (Seoul National University, Korea)	
12:30-13:30	The efficacy and safety of a switch from tacrolimus capsule to tacrolimus tablet (TacroBell® tab.) in stable liver transplant patients Su Young Hong (Seoul National University, Korea)	
13:30-14:00	**State-of-the-art Lecture**	Room 3F-1
CHAIR(S)	Shin Hwang (Asan Medical Center, Korea)	
13:30-14:00	Virtual reality and metaverse in healthcare service Sanghoon Jheon (Seoul National University, Korea)	
14:00-15:00	**Plenary Session 2 (Best papers)**	Room 3F-1
CHAIR(S)	Dong-Lak Choi (Daegu Catholic University, Korea) Peter Jaksch (Vienna University, Austria)	
14:00-14:15	Outcome of donor recipient size mismatched lung transplantation Bongsuk Park (Severance Hospital, Yonsei University, Korea)	
14:15-14:30	Advancing Patient Care through Robotic-Assisted Donor Nephrectomy for Transplants Phillipe Abreu (Miami Transplant Institute University of Miami, USA)	
14:30-14:45	Metformin promotes regulatory T and B cells and suppresses Th17 via multiple pathways including microbiome modulation in liver transplant patients Soon Kyu Lee (The Catholic University of Korea, Korea)	
14:45-15:00	Impacts of pre-transplant panel-reactive antibody on post-transplantation outcomes: A study of nationwide heart transplant registry data Darae Kim (Samsung Medical Center, Korea)	
15:00-15:30	Coffee Break	
15:00-15:30	**Mini-oral Presentation 6 (Liver)**	Room 6F-3
CHAIR(S)	Jeho Ryu (Pusan National University, Korea)	
15:00-15:05	Various Retracting techniques for the laparoscopic living donor hepatectomy - Double rubber extraction to facilitate liver resection Eui Hyuk Chong (Bundang CHA General Hospital, Korea)	

Day 4 – November 18 (Sat)

15:05-15:10 Indication and Survival Among Liver Transplant Patients in Yangon Speciality Hospital,Myanmar
Hnin Aye Yin (Yangon Speciality Hospital, Myanmar)

15:10-15:15 Clinical impact and risk factors of seizure after liver transplantation: a nested case-control study
Deok-Gie Kim (Severance Hospital, Yonsei University, Korea)

15:15-15:20 Impact of donor-recipient gender on the outcome of liver transplantation: a real world evidence study
Fengqiang Gao (Zhejiang University School of Medicine, China)

15:20-15:25 Increased Risk of Infections, Renal Dysfunction, and De novo Malignancy in Elderly Liver Transplant Recipients on Tacrolimus Based Immunosuppressive Therapy: A Propensity Score-Matched Study from a Single Center
Mee Jee Kim (Seoul National University Hospital, Korea)

15:25-15:30 Predictors of post-recurrence survival in hepatocellular carcinoma patients after living donor liver transplantation
Min-Ha Choi (Asan Medical Center, University of Ulsan, Korea)

15:00-15:30 **Mini-oral Presentation 7 (Liver)** Room 6F-3

CHAIR(S) Ho Joong Choi (The Catholic University of Korea, Korea)

15:00-15:05 Small For Size Syndrome In Adult Living Donor Liver Transplantation Based On ILTS-iLDLT-LTSI 2023 Consensus Definition
Madhur Pardasani (RELA INSTITUTE AND MEDICAL CENTRE, India)

15:05-15:10 Comparison of Clinical Outcomes Using the Left and Right Liver Grafts in Adult-to-adult Living Donor Liver Transplantation: A Retrospective Cohort Study Using the Korean Organ Transplantation Registry
Hye Sung Jo (Korea University Anam Hospital, Korea)

15:10-15:15 Biliary complications after living donor right lobe liver transplantation in adults
Ayana Mussina (JSC National scientific center of surgery named after A.N. Syzganov, Kazakhstan)

15:15-15:20 ABO Blood Type Does Not Affect Recurrence of Hepatocellular Carcinoma After Liver Transplantation: Analysis Of The Korean Organ Transplantation Registry Database.
Jaehun Yang (Gachon University Gil Medical Center, Korea)

15:20-15:25 Donors' Biliary Variations and Complications in Living Donor Liver Transplantation: An Observational Study of 150 Cases in Vietnam
Hoan My Pham (General Surgery Resident, Vietnam)

15:25-15:30 The impact of age on liver regeneration after living donor right hemihepatectomy in elderly donors
Na Reum Kim (Severance Hospital, Yonsei University, Korea)

Day 4 – November 18 (Sat)

15:00-15:30	**Mini-oral Presentation 8 (Kidney/Pancreas)**	Room 6F-4
CHAIR(S)	Sik Lee (Jeonbuk National University, Korea)	

15:00-15:05 Retrospective Study of Superficial Wound Complication Comparison Between Monofilament Absorbable versus Monofilament Nonabsorbable Sutures for Skin Closure in Kidney Transplant
Komsan Leetanaporn (Ramathibodhi hospital, Thailand)

15:05-15:10 The Effect of Parathyroidectomy on Graft Function in Kidney Transplant Patients: A Systematic Review and Meta-Analysis
Gede Wira Mahadita (Prof. Dr. IGNG Ngoerah General Hospital, Indonesia)

15:10-15:15 Prediction of very early subclinical rejection with machine learning in kidney transplantation
Sung Jun Jo (Samsung Medical Center, Korea)

15:15-15:20 Valvular Heart Disease In End-Stage Kidney Disease Patients On The Transplant Waitlist
Yan Nerng Lye (National University of Singapore, Singapore)

15:00-15:30	**Mini-oral Presentation 9 (Kidney/Pancreas)**	Room 6F-4
CHAIR(S)	Cheol Woong Jung (Korea University, Korea)	

15:00-15:05 Gastrointestinal peroration after solid organ transplantation
Vu Le Nguyen (Viet Duc University Hospital, Vietnam)

15:05-15:10 Overcoming the Most Prolonged Cold Ischemia Time in Korea Using Hypothermic Machine Perfusion in Deceased Donor Kidney Transplantation
Won Bae Chang (Jeju National University Hospital, Korea)

15:10-15:15 Outcomes of Immunological High Risk Kidney Transplantation
Thunyatorn Wuttiputhanun (Chulalongkorn University and King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Thailand)

15:15-15:20 Comparison of ABO-incompatible kidney transplant outcomes between robot-assisted and open techniques.
Jin-Myung Kim (Asan Medical Center, University of Ulsan, Korea)

15:20-15:25 Survey on Kidney Transplantation Awareness Among Hemodialysis Patients at a Single Center in Japan
Noriyuki Masaki (Nakagawa Hospital, Japan)

15:25-15:30 Usefulness of Therapeutic Drug Monitoring with Tacrolimus and Mycophenolate in Kidney Transplantation
Dong Jin Park (The Catholic University of Korea Eunpyeong St. Mary's Hospital, Korea)

Day 4 – November 18 (Sat)

15:00-15:30	**Mini-oral Presentation 10 (Others)**	Room 6F-5
CHAIR(S)	Jeong-Kye Hwang (The Catholic University of Korea, Korea)	

15:00-15:05 Incidence of immunosuppressant agent related complications in solid organ transplant patients: A nationwide analysis
Ahyoung Lee (Seoul National Univeristy college of pharmacy, Korea)

15:05-15:10 Endocrine and Exoocrine function replacement by pancreas transplant alone: A case report on the oldest recipient in Korea
Jiung Ryu (Pusan National University School of Medicine, Korea)

15:10-15:15 Assessing Thailand's Transplantation Journey: A 10-Year Review and Future Directions
Voramol Rochanaroon (Rayong Hospital, Thailand)

15:15-15:20 The application of immunosuppressants education video and instant messaging software to improve compliance in transplant recipients
Hsiu Lung Fan (Tri Service General Hospital, Taiwan)

15:20-15:25 Protective effect of cyanidin-3-O-glucoside Against Tacrolimus-Induced Pancreatic Beta Cell Dysfunction
Hyuk Jai Jang (GangNeung Asan Hospital, Korea)

15:25-15:30 A case report of antibody-mediated rejection after re-pancreas transplant alone.
Jaeeun Sho (Pusan National University School of Medicine, Korea)

15:00-15:30	**Mini-oral Presentation 11 (Coordinator)**	Room 6F-5
CHAIR(S)	In ok Kim (Asan Medical Center, Korea)	

15:00-15:05 한국의 10세 이하 뇌사자의 평균 기증 장기 수(2018~2022)
Myung Gyun Seo (Korea Organ Donation Agency, Korea)

15:05-15:10 수술실에서 기증부적합 사례
Jiwoo Choi (Korea Organ Donation Agency, Korea)

15:15-15:20 marginal donor 폐장의 관리 후 기증 완료된 증례
Sarang Choi (Korea Organ Donation Agency, Korea)

15:20-15:25 Clinical Outcomes in 1000 Deceased-Donor Kidney Transplantation : A Single-Center Experience
Hae Mi Jeong (Seoul National University Hospital, Korea)

15:25-15:30 A study on donation activities of KODA coordinators during the epidemic period
Kwon Jisun (Korea Organ Donation Agency, Korea)

Day 4 – November 18 (Sat)

15:30-17:00	**Concurrent Symposium 12 (Liver)** Technical advances in LT	Room 3F-1
CHAIR(S)	Yang Won Nah (Ulsan University, Korea) Jang-Il Moon (Mount Sinai Hospital, USA)	
15:30-15:50	Two stage LT for CRC LM-RAPID procedure Silvio Nadalin (University of Tuebingen, Germany)	
15:50-16:10	What's new in the lower limit of GV & inflow modulation for SFS in LDLT Kiyoshi Hasegawa (University of Tokyo, Japan)	
16:10-16:30	Precise prognostic stratification and new technical strategies to reduce HCC recurrence after LT Xiao Xu (The First Affiliated Hospital of Zhejiang University, China)	
16:30-16:50	Whole visceral transplantation for complete PVT Rodrigo Vianna (University of Miami, USA)	
16:50-17:00	Discussion All speakers	

15:30-17:00	**Concurrent Symposium 13 (Kidney/Pancreas)** New treatment for antibody-mediated rejection	Room 5F-1
CHAIR(S)	Kyu Ha Huh (Yonsei University, Korea) Ashley A. Vo (Cedars-Sinai Medical Center, USA)	
15:30-16:00	IL-6 inhibitor Ho Sik Shin (Kosin University, Korea)	
16:00-16:30	Imlifidase Ashley A. Vo (Cedars-Sinai Medical Center, USA)	
16:30-17:00	Proteosome inhibitor Jong Cheol Jeong (Seoul National University, Korea)	

15:30-17:00	**Concurrent Symposium 14 (Basic)** Biology of organoids	Room 6F-1
CHAIR(S)	Min Kyu Yum (KAIST, Korea) Weng-Chuan Peng (Princess Máxima Center for Pediatric Oncology, Netherlands)	
15:30-15:40	Introduction of organoid biology Min Kyu Yum (KAIST, Korea)	
15:40-16:00	Using ex vivo tissue cultures to study lung regeneration and disease Joo-Hyeon Lee (University of Cambridge, UK)	

Day 4 – November 18 (Sat)

16:00-16:20	Harnessing Hepatocyte Organoids for Cell Transplantation Weng-Chuan Peng (Princess Máxima Center for Pediatric Oncology, Netherlands)
16:20-16:40	Human assembloids to study the basic principle of human diseases Kunyoo Shin (Seoul National University, Korea)
16:40-17:00	Regional and cell-type specification of taste bud organoids Yong Taek Jeong (Korea University, Korea)

15:30-17:00	**Concurrent Symposium 15 (Lung)** **Lung transplant program in Asia**	Room 5F-2
CHAIR(S)	Konrad Hoetzenecker (Vienna University, Austria) Hyo Chae Paik (Myongji Hospital, Korea)	
15:30-15:52	Korea Woo Hyun Cho (Pusan National University, Korea)	
15:52-16:14	Taiwan Wei-Hsun Chen (Chang Gung Memorial Hospital, Taiwan)	
16:14-16:36	India Unmil Shah (Krishna Institute of Medical Sciences, India)	
16:36-16:58	Japan Masaaki Sato (The University of Tokyo, Japan)	

15:30-17:00	**Concurrent Symposium 16 (Heart)** **Donor Issues in Heart Transplantation**	Room 6F-2
CHAIR(S)	Sung-Ho Jung (Asan Medical Center, Korea) Jong-Chan Youn (The Catholic University of Korea, Korea)	
15:30-15:48	Donor heart management in US In Cheol Kim (Keimyung University, Korea)	
15:48-16:06	Donor heart management in Japan Osamu Seguchi (National Cerebral and Cardiovascular Center, Japan)	
16:06-16:24	HLA / Size / Sex mismatch: How much differences are tolerable? Soo Yong Lee (Pusan National University, Korea)	
16:24-16:42	Donor considerations in pediatric heart transplantation Gi Beom Kim (Seoul National University, Korea)	

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16:42-17:00 Panel Discussion
Suk Min Seo (The Catholic University of Korea, Korea)
In Seok Jeong (Chonnam National University, Korea)
Jun Sung Kim (Seoul National University, Korea)
Yurim Shin (Yonsei University, Korea)
Suk Ho Sohn (Seoul National University, Korea)

17:00-18:00 **Oral Presentation 10 (Kidney/Pancreas)** Room 3F-1

CHAIR(S) Soojinna Choi (Chonnam National University, Korea)
Masayuki Tasaki (Niigata University, Japan)

17:00-17:10 Clinical outcomes of bortezomib-based desensitization in highly sensitized living and deceased donor kidney transplantation
Hyeran Park (The Catholic University of Korea Seoul St. Mary's Hospital, Korea)

17:10-17:20 Periodontal Pockets as a Risk Factor for Cytomegalovirus Infection after Kidney Transplantation: Single-center Retrospective Analysis
Yu Sato (Kyushu University, Japan)

17:20-17:30 The pancreas after kidney transplant is the second-best option, comparable to the simultaneous pancreas and kidney transplant.
Byung Hyun Choi (Pusan National University Yangsan Hospital, Korea)

17:30-17:40 Impact of Aging on Repair Process of Renal Ischemia-Reperfusion Injury
Hojin Jeon (Samsung Medical Center, Cell and Gene Therapy Institute, Sungkyunkwan University School of Medicine, Korea)

17:40-17:50 Effects of Personalized Nutrition Counseling on Dietary Intake and Health Outcomes in Vietnamese Kidney Transplant Recipients
Nguyen Thu Ha (Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Vietnam)

17:50-18:00 Clinical Impact Of Early Blood Transfusion After Kidney Transplantation
Minyu Kang (Severance Hospital, Yonsei University, Korea)

17:00-18:00 **Oral Presentation 11 (Liver)** Room 5F-1

CHAIR(S) Jongman Kim (Sungkyunkwan University, Korea)
Feng Xue (Renji Hospital, Shanghai Jiao Tong University, China)

17:00-17:10 Improved post-transplant mortality discrimination capability of the Gender-Equity Model for Liver Allocation(GEMA)
Minyu Kang (Severance Hospital, Yonsei University, Korea)

17:10-17:20 Effect of Desensitization Protocol According to the Degree of Antibody-Mediated Rejection Risk in Living Donor Liver Transplant; Retrospective Cohort Study
Jiyoon Kim (Seoul National University, Korea)

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17:20-17:30	3D auto-segmentation of vascular structures and hepatic sectional parenchyme of living liver donors using computed tomographic angiography: A deep learning model for automatic 3D volumetry Jinsoo Rhu (Samsung Medical Center, Korea)
17:30-17:40	The Clinical Outcome Of Hepatic Artery Dissection After Living Donor Liver Transplantation In A High Volume Center Sung Min Kim (Asan Medical Center, University of Ulsan, Korea)
17:40-17:50	Albumin-Bilirubin Score as a Short- and Long-term Prognostic Factor in Liver Transplantation Kentaro Umemura (Shinshu university, Japan)

17:00-18:00	**Oral Presentation 12 (Donation)**	Room 6F-1
CHAIR(S)	Yong Chul Kim (Seoul National University, Korea) Sun Cheol Park (The Catholic University of Korea, Korea)	
17:00-17:10	Enhancing Liver Transplantation through Utilization of Donation After Cardiac Death Donors: Insights from a High-Utilization Center Phillipe Abreu (Miami Transplant Institute University of Miami, USA)	
17:10-17:20	Performance of the new race-free estimated glomerular filtration rate equations among live kidney donors in Asian population Seongwook Shin (Keimyung University Dongsan Medical Center, Korea)	
17:20-17:30	Determination of factors influencing family decision upon organ or tissue donation request in potential deceased organ donors in Malaysia: A 22-years National Audit Abdul Jabbar Ismail (UNIVERSITI MALAYSIA SABAH, Malaysia)	
17:30-17:40	Large Kidney Volume is a Protective Factor against Chronic Kidney Disease in Old Kidney Donors Eun-Ah Jo (Seoul National University Bundang Hospital, Korea)	
17:40-17:50	The impact of renal cortex volume to recipient body weight ratio on post-transplant allograft function Seongwook Shin (Keimyung University Dongsan Medical Center, Korea)	

17:00-18:00	**Oral Presentation 13 (Laboratory/Pathology/Infection)**	Room 5F-2
CHAIR(S)	Eun-Jee Oh (The Catholic University of Korea, Korea) Borae G Park (Korea Organ Donation Agency, Korea)	
17:00-17:10	Pre- and Post- Transplant BK Virus-Specific ELISPOT Assay for Predicting the outcome of BK virus infection in Kidney Transplant Recipients Dohyun Na (The Catholic University of Korea Seoul St. Mary's Hospital, Korea)	

Day 4 – November 18 (Sat)

17:10-17:20	Clinical significance of late onset antibody-mediated rejection without donor-specific anti-HLA antibodies in kidney transplantation Younsoo Seo (Severance Hospital, Yonsei University, Korea)
17:20-17:30	Nano-biomarker-Based Surface-Enhanced Raman Spectroscopy for Non-Invasive Discrimination of Kidney Transplant Rejection Types Jin-Myung Kim (Asan Medical Center, University of Ulsan, Korea)
17:30-17:40	Impact of Individual Eplets to Acute Rejection in Kidney Transplant Recipients: Machine Learning Analysis of Korean Organ Transplantation Registry Jong Cheol Jeong (Seoul National University Bundang Hospital, Korea)
17:40-17:50	Assessment of HLA Antibody Dynamics in Patients Awaiting Kidney Transplantation Eun Ah Kim (The Catholic University of Korea Seoul St. Mary's Hospital, Korea)
17:50-18:00	Impact of Persistent and Resolved de novo Donor-Specific Antibodies on Kidney Transplant Outcomes Hwa-Hee Koh (Severance Hospital, Yonsei University, Korea)

17:00-18:00	**Oral Presentation 14 (Heart)**	Room 6F-2
CHAIR(S)	Ho Young Hwang (Seoul National University, Korea) Hae-Young Lee (Seoul National University, Korea)	
17:00-17:10	The Impact of Regional Allocation Policy on Heart Transplantation Outcomes in Korea: 2010-2022 Kyung-Hee Kim (Sejong Hospital, Korea)	
17:10-17:20	Bioimpedance Analysis As A Screening Tool In Heart-Transplanted Patients Gyeonga Lee (Keimyung University, Korea)	
17:20-17:30	Outcomes of Peripheral Cannulation in ECMO as a Bridge to Heart Transplantation: A Single-center Preliminary Experience In Seok Jeong (Chonnam National University Hospital, Korea)	
17:30-17:40	Disparities in Heart Transplantation Allocation and Outcomes by Blood Type in Korea (2010-2022) Kyung-Hee Kim (Sejong Hospital, Korea)	

18:00-18:30	**Award Ceremony & Closing**	Room 3F-1

KJT
KOREAN JOURNAL OF TRANSPLANTATION
VOLUME 37
SUPPLEMENT 1
NOVEMBER 2023

pISSN 2671-8790
eISSN 2671-8804

PROCEEDINGS
ASIAN TRANSPLANTATION WEEK 2023

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https://doi.org/10.4285/ATW2023.F-5556

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

How is the health belief model constructs affect influenza vaccination in kidney recipients? Path analysis using generalized structural equation modeling

Hye Jin Chong

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Background: Annual influenza vaccination is the most effective method for preventing influenza virus infections and its associated complications among kidney transplant recipients. Vaccine uptake is also important in the context of the coronavirus disease 2019 (COVID-19) pandemic. In South Korea, the influenza vaccination rate in kidney recipients remains low. It is crucial to apply interventions that consider theoretical mechanisms to increase vaccination rates. To date, studies employing the health belief model have not analyzed the intricate pathways among constructs due to the limitations of the statistical analysis method. This study examined the pathway linking constructs of the health belief model and explored how these constructs affect influenza vaccine uptake in kidney transplant recipients.
Methods: A cross-sectional design, guided STROBE. A total of 180 recipients were recruited at an organ transplant center in Korea in 2016. A nonlinear generalized structural equation model was used to conduct the path analysis and nonlinear combination.
Results: Previous influenza vaccination directly affected vaccine uptake. Cues to action had no direct effect on actual vaccine uptake. Previous influenza vaccination and cues to action had significant indirect effects on vaccine uptake via the mediation of perceived benefits.
Conclusions: This is the first study to investigate the mechanisms of the health belief model using nonlinear generalized structural equation modeling. This study suggests that only perceived benefits completely mediate the association between cues to action and vaccine uptake and partially mediate the relationship between previous vaccination and vaccine uptake. Health professionals and media recommending the vaccine should provide cues to action that emphasize the vaccines benefits while maintaining a positive tone. Sharing the experiences of other recipients who saw benefits from vaccination will be useful in practice as well.

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Korean J Transplant 2023;37 Suppl 1:S2
https://doi.org/10.4285/ATW2023.F-5580

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Survival benefit of kidney transplantation in patients with end-stage kidney disease and prior acute myocardial infarction

Jun Young Lee[1], Donghui Shin[2], Soo Yeon Choi[1], Seung Ok Choi[1], Byoung Geun Han[1], Jae Won Yang[1]

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[2]Department of Nephrology, Wonju Severance Christian Hospital, Yonsei University, Wonju, Korea

Background: This study aimed to compare the survival benefit of kidney transplantation (KT) versus maintenance dialysis in end-stage kidney disease (ESKD) patients with prior acute myocardial infarction (AMI).
Methods: Patients with ESKD and a previous AMI have less access to KT. Data on ESKD patients with an AMI history who underwent first KT or dialysis between January 2007 and December 2018 were extracted from the Korean National Health Insurance Service database. Patients who underwent KT (n=423) were chronologically matched in a 1:3 ratio with those maintained on dialysis (n=1,269) at the corresponding dates, based on time-conditional propensity scores.
Results: In the KT group, there were nine (2.1%) deaths and 13 (3.1%) major adverse cardiovascular events (MACE) during the postoperative hospital stay. The 1-, 5-, and 10-year cumulative incidences for all-cause mortality were 12.6%, 39.1%, and 60.1% in the dialysis group and 3.1%, 7.2%, and 14.5% in the KT group. Adjusted hazard ratios (HRs) of KT versus dialysis were 0.17 (95% confidence interval [CI], 0.12–0.24; P<0.001) for mortality and 0.38 (95% CI, 0.23–0.51; P<0.001) for MACE. Of the MACE components, KT was most protective against cardiovascular death (HR, 0.23; 95% CI, 0.12–0.42; P<0.001). Protective effects of KT for all-cause mortality and MACE were consistent across various subgroups, including patients at higher risk (e.g., age >65 years, recent AMI [<6 months], congestive heart failure).
Conclusions: KT is more beneficial than maintenance dialysis in reducing all-cause mortality and MACE in ESKD patients with a prior AMI.

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Korean J Transplant 2023;37 Suppl 1:S3
https://doi.org/10.4285/ATW2023.F-5614

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Comparison of clinical outcomes using the left and right liver grafts in adult-to-adult living donor liver transplantation: a retrospective cohort study using the Korean Organ Transplantation Registry

Hye Sung Jo, Young-Dong Yu, Se Hyeon Yu, Dong-Sik Kim

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Background: Adult-to-adult living donor liver transplantation (LDLT) has been widely performed as an alternative to the scarce liver grafts from deceased donors. Although most centers still prefer to choose the right liver graft (RLG) over the left liver graft (LLG), studies that reported favorable outcomes of LLGs are increasing. This study compared the clinical outcomes between LDLT using LLGs and RLGs with similar graft-to-recipient body weight ratios (GRWR).
Methods: This study analyzed data from a multicenter cohort using the Korean Organ Transplantation Registry. A total of 4,601 patients who underwent adult-to-adult LDLT were enrolled. After matching the Model for End-stage Liver Disease score and GRWR due to the different number of each group, the final cohort comprised 142 patients (25.1%) in the LLG group and 423 (74.9%) in the RLG group.
Results: For donors, the median age was higher in the LLG group than in the RLG group (34 [range, 16–62] vs. 30 [range, 16–66] years, P=0.002). Major complications occurred less frequently in the LLG group than in the RLG group (2 [1.4%] vs. 23 [5.4%], P=0.056). For recipients, the LLG group showed higher 90-day mortality (11 [7.7%] vs. 9 [2.1%], P=0.004) compared to the RLG group. The long-term graft survival was significantly worse in the LLG group (P=0.011). Multivariate analysis for graft survival revealed that the LLG group was not a significant risk factor (odds ratio, 1.01 [0.54–1.87]; P=0.980). Otherwise, donor age (>40; odds ratio, 2.18 [1.35–3.52]; P=0.001) and recipients' body mass index (<18.5 kg/m^2; 2.98 [1.52–5.84], P=0.002) were independent risk factors for graft survival.
Conclusions: The short-term and long-term graft survival was worse in the LLG group compared to the RLG group. However, LLG was not an independent risk factor for graft survival in multivariate analysis. LLGs are still worth considering for selected donors and recipients regarding risk factors for graft survival.

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Korean J Transplant 2023;37 Suppl 1:S4
https://doi.org/10.4285/ATW2023.F-5640

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Drug related problems in Liver Transplant Clinic at Maharaj Nakorn Chiang Mai Hospital

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Background: Maharaj Nakorn Chiang Mai Hospital has had a liver transplant clinic since 2015. The most importance factor is adherence of immunosuppressive drugs, as nonadherence can lead to graft rejection. Pharmacists have joined liver transplant clinic since 2020 and do medication reconciliation, check adherence, and check drug interactions. The aim of this study was to find drug-related problems compared between precounseling alone and pre-post counseling.
Methods: A cross-sectional observational study was performed in the liver transplant clinic at Maharaj Nakorn Chiangmai from January 2021 to December 2022. In year 2021, pharmacists did precounseling but in year 2022, pharmacists did pre- and post-counseling. Pharmacists identified drug-related problems using tool Pharmaceutical Care Network Europe (PCNE) Classification ver 9.1 and grouped drug-related problems into two groups: preventable drug related problems and nonpreventable drug related problem.
Results: In year 2021, pharmacists did precounseling for 240 visits. Pharmacists found 15 drug-related problems in four categories: patient-related problems (11, 73.3%), side effects from medications (2, 13.3%), drug-use process problems (1, 6.7%), and drug selection problem (1, 6.7%). Thirteen (86.7%) of those were classified as preventable drug related problems. In year 2022, pharmacists did pre- and post-counseling for 314 visits. Nineteen drug-related problems were found and grouped into the follow categories: drug-use process (6, 31.6%), side effect (6, 31.6%), patient-related problems (5, 26.3%), and drug selection (2, 10.5%). Of those, 13 (68.4%) were determined to be preventable drug-related problems.
Conclusions: The results of the study indicate that pre- and postcounseling from pharmacists can decrease patient-related problems, especially nonadherence, when compared with precounseling alone.

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Korean J Transplant 2023;37 Suppl 1:S5
https://doi.org/10.4285/ATW2023.F-5647

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Effects of personalized nutrition counseling on dietary intake and health outcomes in Vietnamese kidney transplant recipients

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Background: Personalized nutrition counselling (PNC) can help prevent nutrition-related complications by providing tailored dietary advice based on individual characteristics. This study examines the effects of PNC on dietary intake and health outcomes in kidney transplant recipients (KTRs).
Methods: A 6-month randomized control trial was conducted at 108 Military Central Hospital between March and November 2022, Hanoi, Vietnam, involving 97 participants with stable kidney function. Participants were randomly assigned to PNC (n=50) or control groups (CG; n=47). PNC group received personalized dietary advice based on their dietary intake and health status, while CG group received standard care. Weight, albumin, fasting glucose, triglyceride, and total cholesterol were collected at baseline, midway and end at 6 months of intervention. The intervention's effect was measured by linear mix regression analysis and eta-square.
Results: Seventy-eight out of 97 participants completed the study, resulting in dropout rate of 19.6%. In PNC group, there was no significant change in body weight between baseline and end-line measurements (mean change –0.3 kg). Dietary energy intake (mean±standard deviation, 30.6±10.4 kcal/kg) and protein intake (1.3±0.4 g/kg) remained consistent after intervention (P>0.05). Additionally, there was significant decrease in polyunsaturated fat in PNC group. Compared to CG group, dietary intake was moderately affected by PNC intervention in KTRs (eta-square >0.06, P<0.05). Six months after intervention, PNC group showed reductions in prevalence of nutrition-related complications, including hyperglycemia (>5.6 mmol/L), hypertriglyceridemia (>1.7 mmol/L), and high total cholesterol (>5.17 mmol/L). In contrast, CG group experienced an increased incidence of hyperglycemia and high total cholesterol, although these changes were not significant.
Conclusions: Over 6 months, PNC had a moderate impact on maintaining dietary intake and a small effect on clinical status. This study suggests that when resources allow, a health management program with PNC should be provided to all KTRs to help improve overall health status.

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Korean J Transplant 2023;37 Suppl 1:S6
https://doi.org/10.4285/ATW2023.F-5649

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Cardiovascular risk trajectory and its associated factors among candidates on the waiting list for deceased-donor kidney transplantation: a longitudinal study

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Background: Cardiovascular disease is a significant cause of morbidity and mortality for wait-listed kidney transplant candidates. Since cardiovascular risk is related to a variety of factors and may change with time, longitudinal changes in cardiovascular risk and related factors in candidates need to be investigated. This study aimed to examine the trajectory of the cardiovascular risk score and its related factors in patients on the waiting list for deceased donor kidney transplantation (DDKT).
Methods: This longitudinal study enrolled 144 patients who were registered as candidates for a DDKT at a transplant center in South Korea. During the 5-year follow-up period, three candidates on the waiting list were transferred to other hospitals, 19 candidates died, and 31 candidates received kidney transplantation.
Results: Approximately 26.6% of the candidates had a high level of cardiovascular risk, and this increased to 53.2% after 5 years. A high risk of psychosocial status (0.351, P=0.026) was the most significant predictor of cardiovascular risk, followed by higher comorbidity (0.263, P<0.001). Comorbidities were a significant factor associated with cardiovascular risk throughout the 5-year period, whereas the duration of dialysis and waiting time were significant only within 1 year after baseline.
Conclusions: Cardiovascular risk during 5 years on the waiting list for DDKT was associated with multidimensional factors, including psychosocial status before transplantation, comorbidity, waiting time for transplantation, and the duration of dialysis. In addition to managing comorbid conditions, shortening the waiting time and duration of dialysis is important for reducing cardiovascular risk during the long-term care of candidates on the waiting list for DDKT.

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Korean J Transplant 2023;37 Suppl 1:S7
https://doi.org/10.4285/ATW2023.F-5660

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Recipient blood group do not affect hepatocellular carcinoma recurrence after living donor liver transplantation

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Background: Studies have yielded contradictory results on whether ABO blood group system is involved in the risk prognosis of hepatocellular carcinoma (HCC) patients. The present study assessed whether ABO blood system could affect the incidence of HCC recurrence after living donor liver transplantation (LDLT) using data from a high-volume transplant center in South Korea.
Methods: This retrospective observational study included 856 HCC patients who underwent LDLT between January 2006 and December 2016 at Asan Medical Center.
Results: There were 324 patients (37.9%) with blood group A, 215 (25.1%) with blood group B, 210 (24.5%) with blood group O, and 107 (12.5%) with blood group AB. ABO-incompatible LT was performed in 136 (15.9%). Disease-free survival (DFS; P=0.978) and overall survival (P=0.261) did not differ significantly among the four blood groups. DFS according to ABO blood group did not differ significantly in ABO-compatible (P=0.701) and ABO-incompatible LDLT recipients (P=147). DFS according to ABO blood group did not differ significantly in patients within the Milan criteria (P=0.934) and beyond the Milan criteria (P=0.525).
Conclusions: The present study demonstrated that the ABO blood group system appears to have no prognostic impact on the oncological outcome of patients undergoing LT for HCC. High-volume international studies are necessary to validate the results of the present study.

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Korean J Transplant 2023;37 Suppl 1:S8
https://doi.org/10.4285/ATW2023.F-5666

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Development and validation of ultrasonography-based deep learning models for prediction of rejection in kidney transplant patient

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Background: About 15%–20% of kidney transplant recipients experience rejection. Acute rejection is the most important cause of transplant failure after kidney transplantation, and differential diagnosis of acute transplant dysfunction remains a difficult clinical challenge. Kidney biopsy for diagnosis of rejection has the risks such as bleeding and infection. We predicted rejection using a deep learning-based model using ultrasonography images of transplanted kidneys.
Methods: Among patients who underwent kidney transplantation between March 2010 and September 2022, patients who underwent a biopsy after transplantation were classified into cellular rejection group (G1), antibody-mediated rejection group (G2), and nonrejection group (G3). Ultrasonography of transplanted kidneys performed before biopsy was used. Using deep learning, 356 images of G1, 544 images of G2, and 790 images of G3 were analyzed. First, it was analyzed whether it could be predicted by distinguishing G1, G2, and G3, and second, whether it could be predicted by distinguishing the group with rejection and the group without rejection.
Results: Using the ResNet model pretrained with the ImageNet dataset, the model training result, which analyzed whether predictions could be made by dividing Gl and G2 and the group without rejection, showed an accuracy of 88.76%. In the same way, the model learning result, which analyzed whether it could be predicted by dividing the group with and without rejection, showed an accuracy of 93.33%. However, when checked with GradCAM, activation results were shown in the upper part outside the kidney area and in the letter area. It is thought that it is necessary to make a decision on data refinement and model advancement based on GradCAM and performance figures.
Conclusions: We confirmed the possibility of predicting the biopsy results through ultrasound images of transplanted kidneys using deep learning. It is expected that additional studies conducted through enhancement through more sophisticated images will be needed.

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Korean J Transplant 2023;37 Suppl 1:S9
https://doi.org/10.4285/ATW2023.F-5673

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Changes in serum circulating bacterial DNA fragment before and after kidney transplantation and its clinical significance

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Background: Circulating bacterial DNA fragment is known to be related to chronic systemic inflammatory state of end-stage renal disease (ESRD) patients undergoing dialysis. We conducted a study based on the hypothesis that if dialysis patients undergo kidney transplantation (KT), chronic inflammatory conditions will be resolved and circulating bacterial DNA fragment levels will drop. In addition, the resolution of chronic inflammatory condition reduces the use of antibiotics, and it is expected that the diversity of intestinal flora can be restored, and this can be measured by metagenomics analysis of circulating bacterial DNA fragments.
Methods: Living and cadaver donor KT recipients between July 2018 to January 2019, whose serum samples stored in biobank were enrolled in this study. Only patients with pre- and posttransplant samples were included. We tried to measure 16S rDNA level and undergo metagenomic sequencing of the samples.
Results: The 16s rDNA level of the samples were too low that measuring devices could not get the level. So, we could not quantify rDNA level. But the metagenomic sequencing of the samples were successfully done. Among six patients, four showed increased diversity of serum microbes after transplantation despite use of perioperative antibiotics. The increased diversity fell to preoperative value a year after transplantation. One of the other two patients had no samples right after surgery, but both showed increased diversity after 1 year of surgery.
Conclusions: In this study, the diversity of intestinal flora was measured by metagenomic sequencing of the 16S rDNA in serum samples. This has a limitation of indirect confirmation through serum samples. To confirm changes in intestinal flora in a more direct way, we will collect stool samples for future studies.

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Korean J Transplant 2023;37 Suppl 1:S10
https://doi.org/10.4285/ATW2023.F-5699

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Outcomes of COVID-19 in Thai kidney transplant recipients in the vaccination era

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Background: The mortality rate of coronavirus disease 2019 (COVID-19) in kidney transplant recipients (KTR) has significantly decreased with the implementation of vaccination programs. However, information on factors influencing poor outcomes in KTR diagnosed with COVID-19 and the real-world impact of booster vaccinations, particularly in Eastern countries, is still limited.
Methods: The Thai Transplant Society conducted a prospective multicenter cohort registry, including KTR diagnosed with COVID-19. The study aimed to examine incidence and factors associated with poor COVID-19 outcomes and complications, including death, COVID-19 pneumonia, and superimposed bacterial infection.
Results: A total of 413 KTR with COVID-19 from 17 transplant centers were included. The COVID-19 mortality rate was 5.6% and the incidence of pneumonia was 18.8%. With each 10-year increase in age, the risk of death, pneumonia, and bacterial infection increased by 68%, 83%, and 51%, respectively. Completing the primary vaccination (two-dose) reduced the odds of death by 76% and pneumonia by 88% compared to unvaccinated KTR. Receiving a booster dose (third or fourth dose) further reduced the odds of death by 93%, pneumonia by 97%, and bacterial infection by 92% compared to unvaccinated individuals. There were no significant differences in the effectiveness of inactivated, viral vector, and mRNA vaccine in preventing COVID-19-related deaths among KTR who completed the primary vaccination. No specific immunosuppressants were associated with inferior outcomes of COVID-19.
Conclusions: The mortality and complications of COVID-19 were decreased in KTR during the national immunization phase. Administering booster vaccinations is strongly recommended to reduce disease severity and mortality among KTR.

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Korean J Transplant 2023;37 Suppl 1:S11
https://doi.org/10.4285/ATW2023.F-5709

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

What are operating-time-determining factors of pure laparoscopic donor hepatectomy for adult recipients?

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Background: A few studies on pure laparoscopic donor hepatectomy (PLDH) have been reported. However, PLDH demands high technique and experience on laparoscopic liver resection (LLR). In this report, we aimed to confirm operating-time-determining factors of PLDH and the learning curve of PLDH.
Methods: We enrolled 48 donors underwent PLDH for adult recipients at Iwate Medical University Hospital. We extract operating-time-determining factors by multivariate analysis of donor characteristics, then, the learning curve was evaluated using the cumulative sum (CUSUM) and risk-adjusted (RA)-CUSUM methods.
Results: We chose left lobe graft in 18 donors and right lobe in 30 donors. The mean operating time and blood loss were 393.6±80.3 minutes and 192.4 mL, respectively. We converted to laparotomy in three cases (6.3%). A multivariate analysis revealed that the factors of BMI 23 kg/m^2 (odds ratio [OR], 5.000; 95% confidence interval [CI], 1.056–23.675; P=0.042) and intraoperative direct cholangiography (OR, 5.000; 95% CI, 1.120–22.321; P=0.035), were associated with a significantly higher risk of longer operating time. The learning curve was first assessed using the CUSUM method, and the CUSUM graph showed two peaks, at the 13th and 27th case. The peaks of the curvature indicate the point at which a surgeons surgical competence advances from one phase to another, overcoming the learning curve. Based on these results, an RA-CUSUM analysis was performed to assess the learning curve, which showed a decrease in the learning curve after 33 to 34 PLDH procedures.
Conclusions: Body mass index and requirement of intraoperative direct cholangiography were operating-time-determining factors; however, graft type and anatomical anomaly were not affecting factors of PLDH difficulty. When expert surgeons deeply involved in LLR perform PLDH, A learning curve effect is demonstrated after over 30 PLDH procedures in this study.

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Korean J Transplant 2023;37 Suppl 1:S12
https://doi.org/10.4285/ATW2023.F-5728

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Gastrointestinal peroration after solid organ transplantation

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Background: Organ transplantation is associated with significant survival rates and cost benefits, but postoperative complications still occur. Gastrointestinal complications, including complications of the stomach and intestines, account for a proportion of 1%–6%, with intestinal perforation specifically accounting for approximately 9% depending on the center. In Vietnam, there is no comprehensive report on these complications.
Methods: At Viet Duc Hospital, we encountered three clinical cases of gastrointestinal perforation following transplantation.
Results: Three cases of intestinal perforation are described. In 2023, a 16-year-old female patient after heart transplantation for congenital heart disease was diagnosed with intestinal perforation on the 12th day. The patient required continued blood filtration support after surgery. In 2018, a 56-year-old male patient after liver transplantation on the 6th day was diagnosed with intestinal perforation, which was repaired and the ends of the intestine were brought out. The patient was discharged in stable condition after 30 days. In 2017, a 46-year-old female patient after kidney transplantation on the 5th day was diagnosed with intestinal perforation, which was repaired and the perforation site was left open. The patient was discharged in stable condition after 40 days.
Conclusions: Intestinal perforation is a relatively rare complication, but not uncommon. Early diagnosis is challenging due to nonspecific clinical symptoms and signs. Considering the possibility of intestinal perforation and obtaining early abdominal computed tomography imaging can help prevent delayed diagnosis.

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Korean J Transplant 2023;37 Suppl 1:S13
https://doi.org/10.4285/ATW2023.F-5758

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Effect of donor-recipient size mismatch on long-term graft survival in pediatric kidney transplantation: a multicenter cohort study

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Background: Donor-recipient size mismatching is commonly occurs in pediatric kidney transplantation (KT). However, its effect on graft survival remains unknown. This study aimed to determine the effect of donor-recipient size mismatch on the long-term survival rate of transplant kidneys in pediatric KT.
Methods: A total of 241 pediatric patients who received KT were enrolled. The medical records of all patients were retrospectively reviewed, and the correlation between donor-recipient size mismatch and graft function and long-term graft outcome was analyzed according to donor-recipient size mismatch.
Results: Recipients and donors mean body weight at the time of KT were 34.31±16.85 and 56.53±16.73 kg, respectively. The mean follow-up duration was 96.49±52.98 months. A significant positive correlation was observed between donor-recipient body weight ratio (DRBWR) or donor-recipient body surface area ratio (DRBSR) and graft function until 1 year after KT. However, this correlation could not be confirmed at the last follow-up. The results of long-term survival analysis using Fine and Grays competing risk regression model showed no significant difference of the survival rate of the transplant kidney according to DRBWR or DRBSR.
Conclusions: Donor-recipient size mismatch in pediatric KT is not an important factor in determining the long-term prognosis of transplant kidneys.

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Korean J Transplant 2023;37 Suppl 1:S14
https://doi.org/10.4285/ATW2023.F-5778

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Experience of robotic assisted living donor nephrectomy at Cho Ray Hospital - the single institution in Vietnam

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Background: Laparoscopic transperitoneal nephrectomy is a standard for harvesting kidney in living donor. Recently, robotic living donor nephrectomy (LDN) has been applying gradually in several transplantation centers in the world. From May 2018, we performed the first case of robotic surgery for LDN. This report aims to assess the initial results of robotic-assisted laparoscopic LDN at Cho Ray hospital.
Methods: All of donors who underwent robotic LDN at Cho Ray Hospital from May 2018 to June 2022 were recruited to study. The donors were chosen by the Renal Transplantation Council of Cho Ray Hospital (donor national criteria). Patient demographics, radiology findings, surgery results, perioperative complications, warm ischemia time, hospital stay, and follow-up results were recorded.
Results: All the 36 patients who underwent robotic LDN were analyzed. The mean age was 45.8±9.9 years. Male:female ratio was 1.11. Mean body mass index was 23.6±2.3 kg/m^2. There were 33 cases (91.6%) harvesting the left kidney. Multiple-artery kidney was observed in eight cases (22.2%). Mean operative time was 214±39 minutes with estimated blood loss was 82.2±45.7 mL. The average of the warm ischemic time was 4.9±1.3 minutes. Neither intraoperative complication nor open conversion was seen. Postoperative complication was 5.6% in class I–II, no case in class III–IV according to Clavien-Dindo classification. The hospital stay was 3.7±2.0 days. Mean serum creatinine was 1.13±0.25 mg/dL after 1 month. Regarding recipients, immediate renal function was obtained in all recipients.
Conclusions: Robotic LDN is a safe and efficient procedure with promising results regarding not only donors but also recipients. This technique should be considered a preferable choice when performing LDN.

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Korean J Transplant 2023;37 Suppl 1:S15
https://doi.org/10.4285/ATW2023.F-5799

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Modeling of allograft rejection using human induced pluripotent stem cell-derived kidney organoid system

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Background: Kidney organoid derived human induced pluripotent stem cell (hiPSC) has been extensively studies as an alternative cellular model for recapitulating phenotypic and pathophysiologic characters of human disease. In this study, we explored the potential of hiPSC-derived kidney organoid for rejection modeling.
Methods: Using WTC-11 hiPSC, we first evaluated whether IFNr treatment increase the human leukocyte antigen (HLA) expression in the kidney organoids. Next, we determined if HLA-mismatched healthy volunteers peripheral blood mononuclear cell (PBMC) influence HLA expression by coculture system with kidney organoids. The expression changes of HLA (HLA-ABC and HLA-DR) was detected by analysis of confocal microscopy and flow cytometry. In addition, immunosuppressive effect by tacrolimus was also examined during HLA induction by IFNr or coculture system.
Results: Treatment of IFNr for 24 hours significantly increased the expression of HLA-ABC or HLA-DR with the nephron markers (podocalyxin, lotus tetragonolobus lectin, e-cadherin) in the matured kidney organoids derived WTC-11 hiPSC by confirming confocal microscopy and flow cytometric analysis. Next, after 24 hours coculture with HLA-mismatched PBMC and kidney organoids from WTC-11 hiPSC, we analyzed HLA expression after several wash out the PBMC from the kidney organoids. Consistently, the expression of HLA-ABC and HLA-DR was markedly increased compared with non-PBMC treatment and these induction was diminished by tacrolimus treatment dose-dependent manner.
Conclusions: These results showed the evidence that coculture system with allogeneic kidney organoid and PBMC can be potentially *in vitro* transplant rejection modeling. Therefore, this system has possibility of future application for finding a potential risk factors and studying drug screening of allograft rejection.

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Korean J Transplant 2023;37 Suppl 1:S16
https://doi.org/10.4285/ATW2023.F-5812

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Various Retracting techniques for the laparoscopic living donor hepatectomy: double rubber extraction to facilitate liver resection

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Background: Laparoscopic liver resection is now performed worldwide as the technical development and experiences has been accumulated in the recent decade. Especially, laparoscopic living donor hepatectomy (LLDH) has been on the rise with its advantages of lesser blood loss, lesser postoperative morbidity, shorter hospital stays and better cosmetic outcomes compared to open surgery. But, surgeons still face technical difficulties on details of operation field exposure. This study aimed to introduce various retraction techniques including double rubber band retraction which can efficiently expose the surgical plane in LLDH, and show the perioperative outcomes.
Methods: The data was collected retrospectively and the perioperative outcomes were analyzed. All patients underwent LLDH from September 2021 to March 2023. We applied various retraction methods, such as, round loop retraction of cystic duct to expose the hilum, internal retraction using vessel loops and metal clips for vessel isolation, and double rubber band retraction to expose the parenchymal resection plane during liver resection.
Results: Nine of six male and three female patients was included. The mean age was 39 years (range, 25–57 years). The median intraoperative bleeding was 300 mL (range, 130–1100 mL). The median operation time was 430 minutes (range, 375–555 minutes). There were only three patients (33.3%) with minor postoperative complications and no major complication. And the mean postoperative hospital stay was 7.0 days (1–6 days).
Conclusions: Liver tractions using one elastic rubber band was usefully performed. However, when approaching closer to the dome of the liver, one elastic band may not be sufficient to expose the liver parenchyma. By using a double rubber band technique, it solved the insufficient traction of the upper area and also replaced the hanging maneuver. Also combinations of already introduced retraction methods, we can ensure the safety of the donor and also procure an appropriate graft from living donors.

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Korean J Transplant 2023;37 Suppl 1:S17
https://doi.org/10.4285/ATW2023.F-5823

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Immunologic risk stratification of kidney transplant recipients by combining human leukocyte antigen-eplet mismatch and PIRCHE-II

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Background: Although limiting the number of human leukocyte antigen (HLA) mismatches between donor and recipient is an effective method to reduce the risk of kidney allograft rejection, this approach has some limitations. Several algorithms have been developed, aiming to predict alloimmune reactivity. HLA matchmaker and PIRCHE-II (Predicted Indirectly ReCognizable HLA Epitopes) algorithms are promising solutions to estimate alloreactivity risk after kidney transplantation
Methods: We examined 200 kidney transplant recipients from 2001 to 2023. The primary purpose of our study was to verify whether a combination of HLA-eplet mismatching (MM) and PIRCHE-II algorithms can improve risk stratification of kidney transplantation. The second purpose was to evaluate whether a nadir of Tacrolimus concentration or intrapatient variability is associated with the development of *de novo* donor-specific antibody, acute rejection, chronic antibody-mediated rejection (ABMR), and graft failure regarding high HLA-eplet MM or high PIRCHE-II.
Results: PPIRCHE-II or total eplet MM alone was insufficient to predict graft failure. When each of them was combined with IPV or a nadir of tacrolimus concentration, the high/high group had a statistically significantly higher risk of allograft failure than that of the low/low group respectively. High-PIRCHE/high-eplet MM group had significantly the highest risk of graft failure compared with the other three groups. Independent predictors of graft failure on multivariate analysis were chronic ABMR, and the low nadir of tacrolimus trough level.
Conclusions: HLA-total eplet MM cut-offs alone did not predict the risk of graft failure, however, if used in combination with PIRCHE-II. We demonstrated that high-PIRCHE and total eplet MM group is significantly the worst graft outcome compared with high-/low-, low-/high-, and low-/low- PIRCHE and eplet MMs, respectively. Together with HLA-eplet MM, The PIRCHE-II algorithm can provide a better estimated alloreactive risk for individual patients and eventually an improved allograft kidney survival.

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Korean J Transplant 2023;37 Suppl 1:S18
https://doi.org/10.4285/ATW2023.F-5834

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Assessment of hospital deceased organ donation potential at St. Luke's Medical Center–Quezon City

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Background: Organ transplantation saves lives of patients with end-stage diseases. However, shortage of donors is a limiting factor. To increase organ transplantation in the country, deceased organ donation from brain dead patients, if medically suitable, may be utilized. According to the Philippine Renal Disease Registry in 2015, 32,077 patients were on dialysis and only 475 (3.4%) received a kidney transplant. The Philippines ranks low at only 0.06 person per million kidney transplants. In our country, the number one organ transplanted is the kidney; followed by corneal and liver transplants. This research aims to determine the potential for deceased organ donation from brain dead patients of the center.
Methods: This is a cross-sectional study design. All deceased patients from the Neurocritical Care Unit (NCCU) from January 2022 to June 2022 were classified on its brain death diagnosis. The following were calculated: percentage of brain death out of the total deaths in the hospital, percentage brain deaths out of the total deaths in the NCCU. These indicators will translate to the hospitals deceased organ donor potentiality from brain dead patients.
Results: There is a 2.8% brain death over hospital death; 38.4% brain deaths over NCCU deaths. There were no potential multiple organ donors referred to the transplant center.
Conclusions: There is 2.8% potential for deceased organ donation at St. Lukes Medical Center–Quezon City comparable to the 2.3% potential from a study in Spain, one of the leading countries in deceased donation. There is a need to raise awareness on deceased organ donation to healthcare workers and the community. There is a need to set policies and to have collaborations with programs of the government in increasing deceased donation in the country.

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Korean J Transplant 2023;37 Suppl 1:S19
https://doi.org/10.4285/ATW2023.F-5842

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Experience of using the recipient's appendix for the formation of an artificial ureter during kidney transplantation

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Background: In cases of obtaining a very short ureter during kidney explantation from a donor, there are cases when, due to its very short length, it is impossible to anastomose with the recipient's bladder. Also, in the absence of a native ureter and with a small volume of the recipient's bladder, we use the recipient's appendix to form and lengthen the ureter.
Methods: In our clinic, there was one case of using the appendix to lengthen the ureter during kidney transplantation. During the removal of a kidney from a donor, the ureter was accidentally cut short. A 14-year-old recipient with terminal kidney disease 3 years ago underwent nephroureterectomy on both sides, which prevented the use of his native ureter. Also, the child has a small bladder volume, which did not allow using the bladder wall to lengthen the ureter. A laparotomy was performed, the appendix was isolated with the mesentery and moved to form an artificial ureter and anastomosis with the graft ureter and the recipient's bladder.
Results: In the postoperative period, the healing of the appendix was satisfactory. The ureteral stent was removed 28 days after transplantation. A month later, during computed tomography and ultrasound examinations, the condition of the anastomoses was satisfactory. The graft function, urination is satisfactory. The patient was discharged on the 35th day after the operation.
Conclusions: in the above cases, the use of the appendix for the formation and lengthening of the ureter of the renal graft is considered the method of choice.

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Korean J Transplant 2023;37 Suppl 1:S20
https://doi.org/10.4285/ATW2023.F-5862

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Posterior reversible encephalopathy syndrome occurring in heart transplant recipients under a hypertensive state

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Posterior reversible encephalopathy syndrome (PRES) is a rare neurological disease possibly associated with autoregulatory failure, hypertension and the use of calcineurin inhibitors (CNi). From 2014 to January 2023, there were four patients diagnosed with PRES among heart transplantation (HTx) recipients in our center. Among these four patients, three experienced generalized tonic-clonic seizure, and three showed changes in consciousness level. Three out of the four patients developed PRES during the early phase within 7 days after the HTx, while one patient presented with PRES 34 days post-HTx. Two out of the four patients exhibited typical radiologic features. All four patients had sustained hypertension prior to the onset of PRES. In two patients, antiepileptic and antihypertensive medications were administered without discontinuing tacrolimus, while one patient discontinued tacrolimus, and the remaining patient had not used calcineurin inhibitors (CNIs) prior to PRES. Three out of the four patients recovered without recurrence of PRES, whereas one patient died due to complications after altered consciousness. Hypertension was observed in all patients prior to PRES, and most of patients showed improvement of symptom with blood pressure control. Although CNI is known to be associated with PRES, the patients who maintained therapeutic levels without discontinuing CNI had not experienced a recurrence after the PRES.

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Korean J Transplant 2023;37 Suppl 1:S21
https://doi.org/10.4285/ATW2023.F-5893

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Magnetic resonance cholangiographic assessment of the right biliary ductal variations

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Background: Biliary anatomy and its common and uncommon variations are of considerable clinical significance when performing living donor transplantation, radiological interventions in hepatobiliary system, laparoscopic cholecystectomy, and liver resection (hepatectomy, segmentectomy). Because of increasing trend found in the number of liver transplant surgeries being performed, magnetic resonance cholangiopancreatography (MRCP) has become the modality of choice for noninvasive evaluation of abnormalities of the biliary tract. The aim of this study is to determine the anatomic variations of the intrahepatic biliary tree of the right liver lobe using MRCP.

Methods: The study included 80 retrospectively evaluated participants that had undergone MRCP. All examinations were performed with on 3T magnetic resonance imaging (MRI) scanner (GE Discovery MR750W) of the State Second Central Hospital. We routinely acquire coronal and axial T2-weighted (T2W) single-shot fast spin-echo (FSE) sequences. MRCP is performed by using a respiratory-triggered high-spatial-resolution isotropic three-dimensional fast-recovery FSE sequence with parallel imaging in axial and oblique coronal planes, which provides high signal-to noise ratio and excellent spatial resolution (1-mm isotropic voxels).

Results: Our study group comprised 46 (57.5%) female and 34 (42.5%) male patients. Mean age of the patients was 46,7±40.3 years (mean±standard deviation). Branching pattern in the right biliary ductal system: typical right posterior sectoral duct (RPSD) joining right anterior sectoral duct (RASD) medially to form right hepatic duct (type I) in 50 cases (62.5%) of the patients. Trifurcation: simultaneous emptying of the RASD, RPSD, and left hepatic duct (LHD) into the common hepatic duct (CHD) (type II) was identified in 13 cases (16.25%). Anomalous drainage of RPSD: RPSD joining LHD (type IIIa) in five cases (6.25%), RPSD joining CHD (type IIIb) in 10 cases (12.5%) and RPSD joining cystic duct (type IIIc) in two cases (2.5%) of all participants were noted, respectively.

Conclusions: Typical RPSD joining RASD medially to form RHD (type I) was commonly identified in all cases of the patients.

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Korean J Transplant 2023;37 Suppl 1:S22
https://doi.org/10.4285/ATW2023.F-5898

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The phase angle before transplantation can predict the status of skeletal muscle mass after kidney transplantation

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Background: This study aimed to evaluate the association between phase angle, muscle strength, and muscle mass in patients undergoing kidney transplantation.
Methods: Patients whose pre- and follow-up phase angles were measured after kidney transplantation were enrolled. Phase angle and body composition were measured using a multi-frequency bioimpedance analysis device before transplantation and at 7 and 14 days and 3, 6, and 12 months after transplantation. Muscle strength was evaluated using handgrip strength (HGS). Low HGS was defined as <28 kg in males and <18 kg in females. Low muscle mass was defined as a skeletal muscle mass index of <7.0 kg/m^2 in males and <5.7 kg/m^2 in females.
Results: A total of 88 patients, with a mean age of 52.3±10.1 years, were analyzed. The mean phase angle of pretransplantation was 5.0±1.0. Muscle mass decreased from 14 days after transplantation compared with that before transplantation and was lowest at 3 months (P<0.001). Body fat percentage was significantly higher at 6 and 12 months after transplantation than at pretransplantation (P<0.0001). Twelve months after kidney transplantation, the prevalence of low HGS decreased (pretransplantation vs. 12 months posttransplantation: 28.4% vs. 17.0%), and the prevalence of low muscle mass (pretransplantation vs. 12 months posttransplantation: 21.6% vs. 28.4%) increased. The pretransplantation phase angle was significantly associated with low muscle mass at 12 months after kidney transplantation (odds ratio [OR], 0.31; 95% confidence interval [CI], 0.10–0.97; P=0.044). The pretransplantation phase angle was not significantly associated with low HGS (OR, 0.01; 95% CI, 0.0005–1.98; P=0.088) 12 months after kidney transplantation.
Conclusions: Pretransplantation phase angle can predict muscle mass status at 12 months after kidney transplantation.

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Korean J Transplant 2023;37 Suppl 1:S23
https://doi.org/10.4285/ATW2023.F-5905

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Effect of Favipiravir on kidney function in kidney transplant recipients with COVID-19 infection: a propensity scores inverse weighting (stabilized) with double adjustment analysis

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Background: Coronavirus disease 2019 (COVID-19) infection is a common infectious disease worldwide. It can increase morbidity and mortality in the kidney transplant (KT) recipients. Favipiravir has been a medication for COVID-19 pneumonia treatment in KT patients. Previous case reports identified Favipiravir may have had nephrotoxicity in general population with COVID-19 infection. We aim to explore short term effect of Favipiravir on kidney function at 1st, 3rd months of KT recipients with COVID-19.
Methods: Propensity score inverse weighting multivariable risk regression was introduced to reduce to the possible bias in baseline characteristics between the two treatment groups, including 68 KT patients with COVID-19. The primary endpoints were rate decline in kidney function at 1st, 3rd months. The estimated glomerular filtration rate (eGFR) between groups were compared by using marginal model with generalized estimating equation (GEE).
Results: Fifty KT patients (73.5%) were treated with Favipiravir. We develop propensity scores including age, gender, body mass index, underlying hypertension, diabetes, and coronary artery diseases, ABDR mismatches, immunosuppressive agents for induction, mycophenolic acid use, calcineurin inhibitors, renin-angiotensin-aldosterone system blockades, duration of transplantation, LRKT status, and numbers of receiving COVID-19 vaccination. The eGFR of Favipiravir group was lower than another at 1st, 3rd months after COVID-19 infection by using propensity score reverse weighting (stabilized) double adjusted GEE with autoregressive one correlation (eGFR different of –11.7 [95% CI {confidence interval} –24.3 to 0.8; P=0.068], –13.2 [95% CI –24.7 to –1.7; P=0.025], and –15.8 [95% CI –27.5 to –4.1; P=0.008] for baseline, 1st month, and 3rd month, respectively).
Conclusions: We demonstrated that Favipiravir might have short term 1- and 3-months nephrotoxic effect. The physicians should closely monitor kidney function when prescribed this medication for the KT recipients.

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Korean J Transplant 2023;37 Suppl 1:S24
https://doi.org/10.4285/ATW2023.F-5914

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Gender effect on the clinical outcomes in kidney transplantation between spouses

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Background: Spousal donor (SD) became one of the important donor sources for living donor kidney transplantation (LDKT) to overcome donor shortage. In SDKT, donor-recipient sex mismatch appears, where the patient's sex is the biological characteristic including genetic, anatomic and endocrine traits as well as immunologic traits.
Methods: To investigate the outcomes of SDKT by donor-recipient sex mismatch, we analyzed the 456 SDKT recipients from 2005 to 2022 in Seoul St. Mary's hospital. We categorized the recipients by immunological risk allocated by panel reactive antibody (PRA). Among the 366-standard risk SDKT recipients, PRA under 50%, husband-to-wife (H2W) SDKT recipients were 75 and wife-to-husband (W2H) SDKT recipients were 291. In the 89-high risk SDKT recipients, PRA above 50%, H2W SDKT recipients were 55 and W2H SDKT recipients were 34.
Results: Long-term graft survival or occurrence of acute rejection within 1-year after KT was comparable in standard risk SDKT groups between H2W and W2H recipients (10-year survival rate: 90.7% vs. 87.6%, P=0.428; incidence of biopsy-proven acute rejection: 3% vs. 7%, P=0.178). Though long-term graft survival was comparable in high risk SDKT group between H2W and W2H recipients (83.6% vs. 91.2%, P=0.593), H2W SDKT recipients showed higher incidence of acute rejection within 1-year after KT (3% vs. 17%, P=0.044), which was almost acute antibody-mediated rejection (AAMR).
Conclusions: Our results suggest that donor-recipient sex mismatch does not affect graft survival. Nonetheless, among the high risk SDKT group, H2W recipients showed higher risk of AAMR compared to W2H recipients, who have parallel immunological risk. H2W recipients with high immunological risk should be carefully managed by individualized approach.

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Korean J Transplant 2023;37 Suppl 1:S25
https://doi.org/10.4285/ATW2023.F-5920

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical outcomes after kidney transplantation in patients with end stage kidney disease and severe aplastic anemia

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Background: Presence of hematologic disorder such as severe aplastic anemia (SAA) can be a significant obstacle for successful kidney transplantation (KT) in end-stage kidney disease (ESKD). In this study, we report seven cases of KT in ESKD patients with severe aplastic anemia.
Methods: We reviewed seven KT recipients (KTRs) who had either SAA or received hematopoietic stem cell transplantation (HSCT) for SAA. We analyzed baseline characteristics of KTRs and their allograft outcomes, focusing on survival rates, rejection incidence, and both infectious and surgical complications.
Results: Out of the seven patients, four underwent KT while having ESKD and SAA. Among these four KTRs, two received HSCT within 2 months of their KT. Another two did not received HSCT because complete blood count profiles were improvement after KT. Before KT, average absolute neutrophil count, hemoglobin, and platelet count were 4.1±2.2 ($10^3/\mu L$), 8.9±2.3 (g/dL), and 36.0±22.1 ($10^3/\mu L$), respectively, and baseline bone marrow cellularity was less than 15% in all patients. The other three out of total seven patients received HSCT before undergoing KT, and their blood count profiles were normal. The average time between HSCT and KT was 12.5±10.1 years. All KTRs did not experience acute rejection within 1-year after KT. Surgical complications including major bleeding did not occur after KT. Two out of seven KTRs suffered from upper urinary tract infection including graft abscess and one out of seven KTRs had herpes zoster, who needed hospitalization. Only one out of seven KTRs experienced graft failure, 69 months after KT, and no patient death developed. Four out of five KTRs who received HSCT and KT from same donors successfully discontinued immunosuppressant.
Conclusions: In conclusion, for the treatment of combined state of ESKD and SAA, KT followed by HSCT can be done safely without significant complications.

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Korean J Transplant 2023;37 Suppl 1:S26
https://doi.org/10.4285/ATW2023.F-5933

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Capacity building in deceased donor management

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Background: Capacity building in brain death determination and management project implemented in 2020. Due to the pandemic of coronavirus disease 2019 (COVID-19) in the middle of January 2020. We followed WHO, The Transplantation Society guidance such as social distancing, travel restrictions, and online trainings. However, we tried our all possible options to implement project activities as we planned. To improve our intensive care unit (ICU) doctors' knowledge, experience and skills for determining brain death donor, its management, optimize organ function and improve donation rate.
Methods: The project consists of 10 different activities to improve ICU doctors brain donor management knowledge and skills. Those activities are advanced online training for Training of Training, continuous medical education course, international congress, survey studies of brain death determination, preparation of training materials and ICU manual, provide textbooks for ICU doctors in donor hospitals, proper information board for customers, establish new brain death determination team, organize training at hospitals, health centers and public awareness activities through television interview, newspapers, and social media.
Results: Target group trainings for doctors of donor hospitals has a positive impact on health professionals' attitudes, perceptions and involvement in deceased donor activities have improved dramatically. Knowledge exchange: training on ICU management by experienced Korean, Australian and Spanish professors and physicians significantly improved our doctors' conceptions, involvements and overall detection numbers increased during 2020. The rate actual donor has directly relation with total brain death donor detection and potential donor numbers. Precise understanding: there is a perception among medical professionals that they want to learn more about deceased donor detection and management, its benefits for patients who are on the waiting list.
Conclusions: In the future, it will be necessary to integrate all related activities into comprehensive system and create transparent nationwide network, which can create the settings all doctors work together more effectively and provide precise management.

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Korean J Transplant 2023;37 Suppl 1:S27
https://doi.org/10.4285/ATW2023.F-5944

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Higher concentration of pronase can effectively reduce false positive results of B cell flow-cytometric crossmatch in patients with rituximab treatment and no donor-specific human leukocyte antigen antibodies

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Background: Pronase treatment reduces nonspecific binding in B cell flow cytometric crossmatch (B-FCXM). Higher concentration of pronase might reduce false positivity from rituximab, but also can decrease the sensitivity. We evaluated the effect of variable pronase concentration on B-FCXM with sera from patients with various conditions.
Methods: We analyzed 63 sera, including 30 from patients with rituximab treatment before 7–63 days ago (17 with donor-specific antibody [DSA] [MFI 1,260–10,325 for A, B, DR, and 5,226–19,033 for DQ] and 13 with non-DSA). Controls comprised 29 sera from patients with DSA but nonrituximab-treated. Additionally, we spiked 4 sera from DSA-negative and nonrituximab-treated patients with rituximab (Mabthera, Roche; 100 ug/mL). We isolated peripheral blood mononuclear cells from 38 kidney transplantation donors (Seoul National University Hospital, June 2022 to January 2023) and treated them with six different pronase concentrations (0, 0.5, 1.0, 2.0, 3.0, and 4.0 mg/mL). Donor cells underwent crossmatch with three patient groups: rituximab and DSA (RD, n=21), rituximab without DSA (RN, N=13), and DSA with no rituximab (ND, n=33). NDs DSA matched those of RDs specificity and MFI. The days between rituximab and blood sampling were matched between RD and RN.
Results: We tested 40 DSA (six human leukocyte antigen [HLA]-A, 15 HLA-B, 12 HLA-DR, 7 HLA-DQ). The false positive rates in RN with 2.0 mg/mL (12/38, 31.6%), 3.0 mg/mL (2/38, 5.3%), and 4.0 mg/mL (0/38, 0.0%) pronase were significantly lower than 1.0 mg/mL (30/38, 78.9%) in B-FCXM (P<0.001). Sensitivity in ND with 3.0 mg/mL (23/38, 60.5%) and 4.0 mg/mL (22/38, 57.9%) pronase did not differ significantly from 1.0 mg/mL (25/38, 65.8%; P>0.05).
Conclusions: Higher pronase concentration can effectively reduce false positive results in B-FCXM for patients with rituximab treatment and DSA, without a significant decrease in DSA detection sensitivity.

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Korean J Transplant 2023;37 Suppl 1:S28
https://doi.org/10.4285/ATW2023.F-5956

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of denosumab on aortic arch calcification in kidney transplant recipients

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Background: Aortic arch calcification (AoAC) is associated with cardiovascular disease in kidney transplant recipients (KTRs). Recent research reported that Denosumab, a potent antiresorptive agent, might affect to AoAC in hemodialysis patients, but the impact of denosumab on AoAC in KTRs remain unclear.
Methods: We analyzed 45 KTRs who used denosumab for the treatment of osteoporosis from 2018 to 2023. Denosumab was administered to KTRs every 6 months. AoAC was semiquantitatively estimated by calculating calcification score. We investigated the change of AoAC by simple chest X-ray, biochemical parameters, cardiovascular event, graft failure and patient death.
Results: The mean age was 50.6±10.1 years. The mean AoAC score at 1-year postdenosumab was significantly decreased comparing to the mean AoAC score at pr-denosumab (18.1±20.8 vs. 20.8±23.4, P=0.025). There were no significant differences in the calcium, phosphorus, parathyroid hormone, vitamin D, creatinine and tacrolimus trough levels between pre- and postdenosumab. Cardiovascular event did not occur in the study population. There were no significant difference of graft failure and death in KTRs.
Conclusions: The use of denosumab might be effective to improve AoAC in KTRs.

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Korean J Transplant 2023;37 Suppl 1:S29
https://doi.org/10.4285/ATW2023.F-5966

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Expression of p53 and beta-catenin proteins in hepatocellular carcinoma

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The expression of p53 and beta-catenin proteins in hepatocellular carcinoma (HCC) samples with mutations in the tumor suppressor TP53 gene, which has a high frequency of mutations in liver cancer, and the CTNNB1 gene, which plays an important role in the Wnt signaling pathway, were identified. As a result, the beta-catenin protein was increased in 83.33% of liver tumor samples with CTNNB1 gene mutation, and p53 protein expression was increased in 50% of samples with TP53 gene mutation. According to this, it may be that liver tumors were caused by changes in p53 and beta-catenin protein expression. In the study, we selected 14 liver tumor samples and 14 adjacent nontumor samples with TP53 and CTNNB1 gene mutations and determined the protein concentration based on the bicinchoninic acid method. A standard calibration curve was established with bovine serum albumin.

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Korean J Transplant 2023;37 Suppl 1:S30
https://doi.org/10.4285/ATW2023.F-5977

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Comparisons of clinical outcomes between hypertensive and normotensive living kidney donors: a nationwide prospective cohort study

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Background: Living kidney donors with hypertension is potential candidates to solve the imbalance between supply and demand for renal transplantation. However, the safety of hypertensive donors after donor nephrectomy is not sufficiently established.

Methods: We enrolled a total 642 hypertensive donors and 4,848 normotensive living kidney donors from the Korean Organ Transplantation Registry between 2014 and 2020. Primary outcome was the incident proteinuria and lower renal function, defined as an estimated glomerular filtration rate (eGFR) less than 60 or 45 mL/min/1.73 m^2.

Results: Hypertensive donors had lower eGFR before donation compared to normotensive donors, and this difference remained after transplantation. However, the risk of eGFR <60 mL/min/1.73 m^2 (adjusted hazard ratio [HR], 0.87; 95% confidence interval [CI], 0.70–1.09; P=0.217) or <45 mL/min/1.73 m^2 (adjusted HR, 1.52; 95% CI, 0.79–2.94; P=0.209) was not significantly increased in hypertensive donors after multiple adjustment. When comparing the rate of eGFR decline between the hypertensive and normotensive donors, there was no significant difference (adjusted unstandardized β, −0.19; −1.15 to 0.76; P=0.691). The incidence of proteinuria was higher in hypertensive donors, and they were found to have a significantly higher risk of proteinuria than normotensive donors (adjusted HR, 1.77; 95% CI, 1.10–2.85; P=0.020).

Conclusions: Our study indicates that the risk of proteinuria after donation was increased in hypertensive donors, while there is no significant decline in renal function. Careful monitoring for proteinuria is required in hypertensive donors after nephrectomy.

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Korean J Transplant 2023;37 Suppl 1:S31
https://doi.org/10.4285/ATW2023.F-5989

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Addition of SD282 (biguanide derivatives) may attenuate inflammation and improve immune homeostasis in liver transplantation

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Background: Liver transplantation (LT) is an ultimate treatment in patients with end-stage liver disease. Although tacrolimus reduces the risk of rejection effectively, risks of rejection and long-term side effects, such as chronic renal disease and malignancy, are still unsolved problem in LT patients. In this study, we tried to evaluate the effects of combination treatment with SD282 (biguanide derivatives) and tacrolimus on immune homeostasis *in vitro* and *in vivo* mice models.
Methods: T cell proliferation and subtypes after T cell activation or allogeneic stimulation were evaluated *in vitro* analysis using mouse and human cells by administration of SD282 and tacrolimus. Using graft-versus-host (GVHD) mice model, the severity of GVHD and weight changes were evaluated after administration of SD282 and tacrolimus. The synergistic effects were also evaluated in rat LT model and avatar mouse model using peripheral blood mononuclear cells (PBMCs).
Results: Combination treatment with SD282 and tacrolimus attenuated alloreactive T cell responses *in vitro* mouse and human cells. In GVHD mice model, combination treatment also reduced the severity of GVHD along with an increase in regulatory T cells. Moreover, in rat LT model demonstrated that the inflammation, fibrosis, and survival was better in the combination treatment. Patient-derived avatar mice model using PBMCs of LT patients also showed a decrease in $STAT3^+$ T cells along with an increase in $FoxP3^+$ Treg cells in combination therapy.
Conclusions: This study demonstrated that combination treatment with SD282 and tacrolimus may improve immune homeostasis of LT.

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Korean J Transplant 2023;37 Suppl 1:S32
https://doi.org/10.4285/ATW2023.F-6001

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Pediatric living donor liver transplantation from adult allograft liver after resection of focal nodular hyperplasia: a case series study

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A case series of three living donor liver transplantations. Every donor is found to have a single liver mass suspected of focal nodular hyperplasia (FNH) size 1.4–2.3 cm. Estimated left lateral liver volume is 176.5–336.5 cm^3. Estimated graft-recipient weight ratio (GRWR) is 1.4%–3.7%. We operated wedge resection mass and then sent for frozen section. The frozen section was reported FNH with free margin. We performed left lateral segmentectomy after intraoperative pathologic examination report. Actual graft weight is 168–371 g and actual GRWR is 1.6%–3.5%. The donor was discharged without any complications.

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Korean J Transplant 2023;37 Suppl 1:S33
https://doi.org/10.4285/ATW2023.F-6021

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Intrapatient variability of tacrolimus and acute kidney injury may be associated with the development of chronic kidney disease after liver transplantation

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Background: In this study, we aimed to examine the long-term effects of acute kidney injury (AKI) and inpatient variability of immunosuppressants (ISs) on the development of chronic kidney disease (CKD) and end-stage renal disease (ESRD) following liver transplantation (LT).
Methods: We consecutively enrolled patients who underwent LT at Seoul St. Mary's hospital between 1993 and 2018 in our study. Baseline kidney function was defined at the time of LT. The diagnosis of CKD was established based on a persistent estimated glomerular filtration rate (eGFR) lower than 60 mL/min/1.73 m^2 over 6 months. Stage 5 CKD (ESRD) was defined as an eGFR <15 mL/min/1.73 m^2. The intrapatient variability (IP) of IS was evaluated based on the coefficient of variant for each patient.
Results: Among 1,113 eligible patients, 952 were included in our study, divided into a normal group with eGFR ≥60 mL/min/1.73 m^2 (n=752) and an AKI group with eGFR <60 mL/min/1.73 m^2 (n=200). The development of CKD was significantly earlier (15 vs. 9 months, P<0.05) and more frequent in the AKI group compared to the normal group (P<0.001). The development of ESRD was also more common (n=23 [3.1%], normal group; n=20 [10.0%], AKI group) and earlier in the AKI group compared to the normal group (47.4 vs. 97.4 months, P<0.001). Regarding IS with tacrolimus in the normal group, patients with CKD development showed significantly higher and more variable drug level and level/dose compared to patients without CKD. Finally, both in the normal and AKI groups, patients with CKD development demonstrated higher IP in the drug dose and level compared to patients without CKD during follow-up.
Conclusions: Our study reveals that AKI and high IP of tacrolimus could be associated with the risk of developing CKD after LT. Consequently, preventing AKI prior to LT and implementing a tailored management of IS are vital in preventing CKD after LT.

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Korean J Transplant 2023;37 Suppl 1:S34
https://doi.org/10.4285/ATW2023.F-6035

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The impact of age on liver regeneration after living donor right hemihepatectomy in elderly donors

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Background: The expanding donor pool includes marginal donors with steatosis, small-for-size grafts, and elderly donors. This study aimed to investigate liver volumetric regeneration after living donor right hepatectomy (LDRH) in elderly and younger donors, focusing on age impact.
Methods: From March 2012 to December 2022, 38 elderly donors (≥55 years) and 291 younger donors (<30 years) underwent LDRH. Donors without preoperative liver fibroscan or postoperative follow-up computed tomography (CT) scans after 3 months were excluded. Propensity score matching resulted in a final cohort of 55 younger and 30 elderly donors. Remnant liver volume was assessed via CT scans within 1 year after surgery. Comparative analysis conducted on pre- and postoperative clinical characteristics, as well as liver volumetric regeneration over time between the two groups. Additionally, binary logistic regression was used to analyze risk factors for poor liver regeneration.
Results: The mean age was 58.0 and 24.0 years for elderly and younger donor, respectively. Preoperative factors were similar between two groups. Rapid liver regeneration occurred within the first months (median 465.9 mL, 77.8% of initial total liver volume [iTLV]), but elderly donors showed significantly lower liver regeneration rates than younger age donors throughout all time points (around 1 month: 83.5 vs. 75.5%, P=0.001; 3 months: 89.9 vs. 79.2%, P<0.001; 6 months: 94.7 vs. 86.2%, P=0.001, all compared to iTLV). Multivariate logistic regression analysis identified old age and low preoperative phosphate level (<3.5 mg/dL) as risk factors for liver regeneration below 80% of iTLV.
Conclusions: After LDRH, liver regeneration within 1 year reaches over 95% of the original volume in young donors but is less, at approximately 86% of the original volume, in elderly donors. Therefore, more conservative criteria for the remnant liver volume need in elderly donors compared to younger donors.

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Korean J Transplant 2023;37 Suppl 1:S35
https://doi.org/10.4285/ATW2023.F-6043

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Delayed graft function three months after a living donor kidney transplantation

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Kidney transplantation (KT) has been proven to provide a longer life expectancy and a better quality of life. KT recipient may experience what is referred to as a delayed graft function (DGF) complication with a frequency of occurrence at 25% to 30% making it one of the most common forms of acute kidney injury (AKI). A 56-year-old woman (body mass index of 19 kg/m^2), she decided to undergo a second transplantation procedure with living donor at Cipto Mangunkusumo Hospital. The physical examination blood pressure was consistently below 100 mmHg. human leukocyte antigen (HLA)-crossmatch cell lysis was 10%. The patient tested positive for donor-specific antibody, cytomegalovirus was 2,250 IU/mL. Prior to the operation, the patient underwent plasmapheresis, cryoprecipitate procedure, along with intravenous immunoglobulin. After the operation, blood pressure increased to higher than 120 mmHg. The initial diuresis was 2,130 mL, which later dropped to 800 mL and finally to 0. Creatinine serum level was 3.3 mg/dL. Doppler ultrasonography was any delayed function (acute tubular necrosis). Biopsy (following the allograft anastomosis) to assess parenchyma kidney with antibody mediated changes, Banff score was C4d2. Therapy for the patient included Methylprednisolone 16 mg/day, mycophenolate-sodium 360 mg/twice day, valganciclovir 450 mg/day. The recipient also underwent regular hemodialysis procedures twice a week for 3 months, resulting in an improvement in diuresis to 1,000 mL/24 hours. The creatinine level 0.9 mg/dL, with negative cytomegalovirus, Doppler ultrasonography was normal and clinically stable. DGF remains the most common complication that occurs in KT. Implementing an appropriate High-Risk management protocol prior to operation may prevent AKI and reduce the risk of failure.

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Korean J Transplant 2023;37 Suppl 1:S36
https://doi.org/10.4285/ATW2023.F-6051

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Robot-assisted kidney transplantation in immunological high-risk patients: comparative analysis robot-assisted kidney transplantation versus open kidney transplantation

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Background: Robot-assisted kidney transplantation (RAKT) has several advantages over open kidney transplantation including minimal postoperative pain, better cosmesis, fewer wound infections, and shorter hospital stay. However, it is unknown whether RAKT is feasible in recipients with increased risk factors for acute rejection and graft failure.
Methods: From August 2020 to August 2022, a total of 687 patients had living-donor KT at Asan Medical Center. Of those patients, 88 had RAKT and 599 had open KT. In addition, recipients in each group were subdivided into immunological high- and low-risk groups. A recipient was classified into the high-risk group if flow cytometry was positive (T-flow XM MFI ratio>2.0 or B-flow XM MFI ratio>3.0) or if there was a donor-specific antibody before KT. Twenty-five among RAKT recipients and 158 of the open KT recipients belonged to the high-risk group. Biopsy-proven acute rejection was compared between the four groups using the adjusted Cox proportional hazard model.
Results: There was no significant difference in baseline characteristics except that those undergoing RAKT were younger, had a shorter period of dialysis before KT, and had a higher rate of left kidney donation. In univariable analysis, young age (adjusted hazard ratio [aHR], 0.98), female gender (aHR, 1.86), number of human leukocyte antigen (HLA)-mismatch (aHR=2.86), positive flow cytometry (aHR, 2.86), pretransplant donor-specific antibody (DSA; aHR, 2.37), and unrelated living donor (aHR, 2.02) were significantly associated with BPAR. An adjusted Cox proportional hazards model demonstrated that neither RAKT for high-risk patients (aHR, 3.12, P=0.09) compared with open KT for high-risk patients nor RAKT for low-risk patients compared with open KT for low-risk patients (aHR, 1.64, P=0.42) was associated with BPAR within 18 months posttransplant. There was no significant difference in estimated glomerular filtration rate between the four groups at 1, 6, 12, 18 months posttransplant.
Conclusions: This study showed that there was no significant difference in posttransplant renal function and BPAR after KT between open KT and RAKT according to immunological risk.

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Korean J Transplant 2023;37 Suppl 1:S37
https://doi.org/10.4285/ATW2023.F-6055

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Confirmation of predictable prognosis with intrapatient variability and identification of the best intrapatient variability indicators

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Background: Liver transplantation (LT) is a life-saving treatment in patients with end-stage liver disease and immunosuppressants are needed to prevent immunologic adverse events. Intrapatient variability (IPV) of tacrolimus (TAC) levels is associated with poor outcomes. We aimed to investigate outcomes related to TAC IPV and find good indicators that represent IPV in pediatric patients.
Methods: From 2000 to 2022, pediatric LT cases were collected at Severance Hospital. Excluding retransplantation, 100 patients were remained. The medical records were reviewed, and we obtained clinical factors, complications (death, rejection, infection, and biliary complication), and TAC levels for 1 year. IPV was determined medication level variability index (MLVI), coefficient of variation (CV), and mean absolute deviation (MAD). The statistical analysis was performed using IBM SPSS ver. 26 (IBM Corp.). Figures were performed with R ver. 4.2.3 (R Foundation).
Results: The episode of death in 100 patients occurred in 11%, and it was correlated with MLVI, CV, and MAD. Area under receiver operating curve (AUROC) of IPVs was 0.697, 0.700, and 0.753 without statistical significance. In the Kaplan-Meier curve, poor survival was also confirmed in high IPV. When the patients were divided into two groups according to the cut-off level of IPV with Youden index, odds ratio of MLVI, CV and MAD were 16, 7.78 and 11.89, and hazard ratio of MLVI, CV, and MAD was 7.158, 2.847, and 4.955 with statistically significant.
Conclusions: Death is the most predictable outcome with IPVs and MAD is the most representative IPV indicator in Korean pediatric LT recipients.

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Korean J Transplant 2023;37 Suppl 1:S38
https://doi.org/10.4285/ATW2023.F-6066

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Portal hypertension after liver transplantation

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Background: Portal hypertension (PoH) after liver transplantation (LT) is a severe complication that could result in graft loss. This study aimed to clarify characteristics and evaluate the treatment outcome of PoH after LT.
Methods: This single-center, retrospective cohort study was conducted at a university hospital in Japan and included 309 recipients, excluding 34 patients who lost their graft within 1 year after LT.
Results: Of 309 LT recipients, 65 (21.0%) had PoH. The etiology of PoH consisted of prehepatic in 24 (36.9%), hepatic in 35 (53.8%), and posthepatic in 6 (9.2%). The 10-year survival rate was significantly lower in patients with PoH than in those without PoH (68.6% and 92.0, P<0.0001). Out of 65 patients with PoH, 30 (46.2%, Con-Tx group) could be conservatively treated by such as the use of diuretics. Other 35 (53.8%, Inv-Tx group) underwent retransplantation (n=7), operations such as splenectomy (n=4), interventional radiology (n=17), endoscopic intervention (n=4), and drainage of pleural effusion and/or ascites (n=3). The Inv-Tx group showed a significantly better 10-year survival rate than the Con-Tx group (78.4 vs. 53.3%, P=0.0049). IVR could be performed in 10 of 24 patients with prehepatic PoH (41.6%) and six of six patients with posthepatic PoH (100%), while 19 (54.3%) were only administered drugs and only 5 (14.3%) could be performed retransplantation in 35 patients with hepatic PoH. In Inv-Tx group, the graft survival rate was significantly worse in 15 patients with hepatic PoH than in 14 with prehepatic PoH and 6 with posthepatic PoH (10-year graft survival rate: 46.7%, 85.7%, and 83.3%, respectively; P=0.0131).
Conclusions: PoH in LT recipients negatively impacted patient survival. Notably, hepatic PoH was difficult to treat and showed a worse outcome. Invasive treatment for posttransplant PoH could improve patient outcomes. Thus, appropriate diagnosis and treatment selection are important.

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Korean J Transplant 2023;37 Suppl 1:S39
https://doi.org/10.4285/ATW2023.F-6068

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Multivariable linear model for predicting graft weight based on three-dimensional volumetry in regards of body weight change of living liver donor

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Background: The purpose of this study is to build a prediction model for estimating the graft weight in regards of different graft volumetry methods combined with other variables.
Methods: Donors who underwent living donor right hepatectomy during March 2021 to March 2023 were included. Estimated graft volume measured by conventional method and three-dimensional (3D) software were collected as well as the actual graft weight. Univariable linear regressions were performed for estimating the predictability. Multivariable linear regression was performed to build a prediction model with higher accuracy. Donor groups were further divided into three groups according to the 3D volumetry of <700 cm^3, 700 to 899 cm^3, and ≥900 cm^3 to compare the performance of different models.
Results: A total of 119 donors were included to the study. Conventional volumetry for predicting graft weight showed R^2 of 0.656 (P<0.001) while 3D software showed R^2 of 0.776 (P<0.001). The R^2 of the multivariable model was 0.842 (P<0.001) including for 3D volume (β=0.623, P<0.001), body mass index (β=7.648, P<0.001) and amount of weight loss (β=–7.252, P<0.001). The median errors between different models to actual graft weight did not differ in donor groups <700 cm^3 and 700 to 899 cm^3, while the median error of univariable linear model using 3D software (122.5; interquartile range [IQR], 61.5–179.8) was significantly higher compared to that of multivariable adjusted linear model (41.5; IQR, 24.8–69.8; P=0.003) in donors with estimated graft weight ≥900 cm^3.
Conclusions: Univariable linear model with 3D volumetry can be used with acceptable outcome for predicting right liver graft weight in donors with estimated graft volume less than 900 cm^3. For donors with estimated graft volume ≥900 cm^3, multivariable adjusted linear model showed higher accuracy.

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Korean J Transplant 2023;37 Suppl 1:S40
https://doi.org/10.4285/ATW2023.F-6074

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

New-onset diabetes mellitus after transplantation in patient undergoing a second kidney transplantation

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New-onset diabetes mellitus after transplantation (NODAT) is the occurrence of diabetes mellitus in a previously nondiabetic person after solid organ transplantation. NODAT frequently occurs after organ transplantation and increasing risk of infection and mortality rates. The aim of this case report is to show that the treatment of NODAT by replacing tacrolimus with cyclosporin as well as using oral antidiabetic drug. We reported A 45-year-old man at Kidney Transplantation Center Cipto Mangunkusumo Hospital, Jakarta. He was diagnosed with hypertension since 2005 and chronic kidney disease since 2012, underwent the first kidney transplantation in 2014 and received tacrolimus 0.5 mg twice-daily, mycophenolic acid 180 mg twice-daily and methylprednisolone 16 mg once-daily. He experienced worsening kidney function in 2019, underwent hemodialysis since April 2020 and underwent a second kidney transplantation in December 2020. The initial treatment included tacrolimus XL 3 mg once-daily, diltiazem CD 200 mg once-daily, methylprednisolone 4 mg once-daily, mycophenolate mofetil 500 mg twice-daily. Laboratory examination May 2023 revealed, ureum 32.1 mg/dL, creatinine 0.80 mg/dL, estimated glomerular filtration rate (eGFR) 107.9 mL/min/1.73 m^2, fasting blood glucose 180 mg/dL, 2-hour postprandial glucose 333 mg/dL, HbA1C 12.8%, urinalysis glucose 1+, tacrolimus 3.9 ng/dL. At that time the therapy was changed from tacrolimus XL 3 mg to cyclosporine 100 mg twice-daily, and metformin 500 mg twice-daily. Currently the patient has no complaints. Laboratory examination revealed ureum 55.6 mg/dL, creatinine 1.1 mg/dL, eGFR 80.6 mL/min/1.73 m^2, fasting blood glucose 139 mg/dL, 2-hour postprandial glucose 162 mg/dL, cyclosporine plasma concentration 248.7 ng/dL. NODAT has been reported in a patient undergoing a second kidney transplantation. Replacing of tacrolimus with cyclosporine as well as oral antidiabetic drug was carried out as the management of NODAT in this patient.

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Korean J Transplant 2023;37 Suppl 1:S41
https://doi.org/10.4285/ATW2023.F-6077

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Kidney transplantation in polycystic kidney disease: serial case report

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Polycystic kidney disease (PKD) is characterized by the formation and development of cysts that cause progressive enlargement of the kidneys. Approximately 50% of patients with PKD develop end-stage renal failure requiring dialysis or kidney transplantation. From January 2022 to July 2023 at Cipto Mangunkusumo Hospital, Indonesia, kidney transplants carried out in three stage 5 chronic kidney disease patients with PKD gave good postoperative results. Case 1, a 35-year-old man with PKD whose cysts enlarged rapidly with bleeding and infection, needed repeated transfusions and nephrectomy dextra before kidney transplantation. Case 2, a 50-year-old man with PKD could undergo kidney transplant surgery with implantation on the right side without nephrectomy and complications. Case 3, a 23-year-old man with PKD underwent kidney transplantation with left implantation due to stenosis of the right iliac artery, the operation went well with satisfactory results. Kidney transplantation in PKD has several obstacles, namely the narrow location of the allograft kidney, recurrent urinary tract infections, massive hematuria, repeated transfusions, abdominal pain, weight loss, and resistant hypertension. Indications for nephrectomy are active bleeding causing repeated leuko-depleted pack red cell transfusions, abdominal pain due to cyst rupture, narrow space for the allograft kidney, and partial obstruction of the large intestine. Repeated transfusions before surgery will increase human leukocyte antigen sensitivity, longer waiting times, and increase the risk of early and late-phase graft loss. Kidney transplantation in patients with PKD has various obstacles but has a good prognosis.

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Korean J Transplant 2023;37 Suppl 1:S42
https://doi.org/10.4285/ATW2023.F-6081

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Determination of factors influencing family decision upon organ or tissue donation request in potential deceased organ donors in Malaysia: a 22-years national audit

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Background: Organ transplantation remains the only definitive modality of treatment for patients suffering with end-stage organ failure. However, without organ donation, transplantation would be impossible. For 20 years, Malaysia remains among the lowest ranking country in the world in terms of deceased organ donation per million population.
Methods: A retrospective cross-sectional study conducted using the big national database involving potential organ donors from 2001 until 2023. The objective was to explore factors associated with family agreement upon organ or tissue donation request, in those potential organ donors of 18 years and above that was initially referred to national transplant team as potential organ donors with devastating brain injury and features suspected of brain death which had family approach for request for organ or tissue donation.
Results: Out of the 4,447 patients in the 22-year database, 1,425 potential organ donors were enrolled. Only 315 (22.1%) families agreed to either organ or tissue donation. Factors that had P-value of <0.25 from univariate analysis were entered into multivariate analysis using binary logistic regression that shows Chinese race, eventually confirmed as brain death, family-initiated organ donation discussion, families that had prior discussion with the deceased about organ donation and the potential donor had pledged as organ donor were all significant factors associated with the outcome.
Conclusions: This study shown that awareness and knowledge of organ donation and transplantation of the potential donors' families were the most important factors as three out of five significant factors were related to this. All suspected brain deaths need to undergo official clinical brain death testing as this was significantly associated with family agreement upon request. Further research is needed to explore the reason for Chinese family has a higher tendency to agree on organ donation upon request.

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Korean J Transplant 2023;37 Suppl 1:S43
https://doi.org/10.4285/ATW2023.F-6088

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Investigation of non-human leukocyte antigen antibodies and epitope mismatch in kidney transplant recipients with chronic antibody-mediated rejection

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Background: There is a strong correlation between chronic antibody-mediated rejection (CAMR) and human leukocyte antigen (HLA) donor-specific antibodies (DSA) in kidney transplantation. However, cases of CAMR in kidney transplant recipients have been observed without DSA, suggesting the involvement of non-HLA antibodies. Some non-HLA antibodies have been reported to be associated with the histology of CAMR, but their specific contribution to rejection reactions remains unclear. In this study, we conducted a retrospective analysis to identify which antibodies are involved in the histological manifestation of CAMR cases where DSA was not detected after kidney transplantation.
Methods: This study included 47 cases of CAMR identified among 868 kidney transplant cases performed at the Tokyo Women's Medical University Urology Department from 2015 to 2021. Out of these 47 cases, 38 were eligible for analysis, and among them, 13 cases were selected where DSA was not detected. The method involved analyzing serum samples obtained on the same day as kidney allograft biopsy. The samples were used to investigate the correlation between CAMR and HLA as well as non-HLA antibodies, and the HLA epitopes (HLA-Ep) between the donor and recipient.
Results: Among the 13 cases, six cases showed the presence of HLA-Ep associated with DSA. Specifically, AT1R-Ab was detected in two cases, MICA-Ab in two cases, and PRKCH in one case. In two cases, no antibodies were detected. These findings suggest the necessity to investigate non-HLA antibodies when CAMR is observed.
Conclusions: For cases with suspected rejection but no detection of DSA, screening for non-HLA antibodies may be helpful as an aid in effective rejection response treatment.

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Korean J Transplant 2023;37 Suppl 1:S44
https://doi.org/10.4285/ATW2023.F-6101

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical outcomes of bortezomib-based desensitization in highly sensitized living and deceased donor kidney transplantation

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Background: Desensitization (DSZ) strategies have been developed in kidney transplantation recently. The aim of this study is to investigate the usefulness of bortezomib based DSZ (BZB-DSZ) therapy in highly sensitized living and deceased donor kidney transplantation.
Methods: We applied this BZB-DSZ protocol to 20 patients of 14 living donor kidney transplantation (LDKT) candidates with positive T-CDC (complement dependent cytotoxicity) crossmatch at baseline or refractory to DSZ using rituximab and plasmapheresis (RTX/PP) and of six deceased donor kidney transplantation (DDKT) candidates, when (1) waiting time 10 years, (2) panel reactive antibody values 50%, and (3) previous history of a positive T cell crossmatch with potential deceased donor between July 2012 and Nov 2022 in our center.
Results: Clinical outcomes revealed 16 of 20 patients (80%) underwent BZB-DSZ proceeded with transplantation successfully, one refused the transplant, and three are still awaiting for DDKT. Among LDKT candidates, 8 of 10 candidates (80%) with a positive T-CDC turned negative. Mostly the mean fluorescence intensity (MFI) level of donor-specific anti-human leukocyte antigen (HLA) antibody (HLA-DSA) markedly decreased to target level (MFI<5,000) except for those patients who were refractory to RTX/PP based DSZ with marginal decease of MFI. Among DDKT candidates, the count of strong HLA-DSA (MFI>10,000) decreased after DSZ. Out of them, three showed negative T cell crossmatch test to deceased donor as they could proceed with DDKT. All 16 patients who proceeded KT did not show hyper-acute rejection but eight cases (50%) showed biopsy-proven allograft rejection, with an antibody-mediated rejection rate of 87.5%. Death censored allograft survival during median follow-up duration of 35 months was 93.75%. Three received antiviral treatment for cytomegalovirus viremia, and one of them expired due to pneumonia sepsis.
Conclusions: BZB-DSZ is effective to reduce HLA-DSA and enables highly sensitized patients to take kidney transplantation, and showed acceptable allograft outcomes.

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Korean J Transplant 2023;37 Suppl 1:S45
https://doi.org/10.4285/ATW2023.F-6110

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Nerve regeneration effect of FK-506 using local reserve flap

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Background: FK-506 (tacrolimus) a calcineurin inhibitor, suppresses helper T cell function causing immunosuppression. It is used widely as an immunosuppressant in transplanted patients. Studies have shown FK-506 to promote nerve regeneration through FK-506 binding protein (FKBP) 51 and 52, enhancing nerve stimulation factor. It is also known that sensory recovery of transplanted arm is faster and recovery rate is higher than those of replanted. Thus, research is being done on applying FK-506 with less problems of immunosuppression while increasing nerve regeneration. The authors aimed to investigate the effects of local injection of FK-506 using an adipose flap as a reserve flap for nerve regeneration.
Methods: The SD-rat sciatic nerve injury model was used in this study. Nerve repair was performed after sciatic nerve transection, then adipose fat flap from the abdomen was moved to the pubic area as a reserve flap to be positioned around the nerve. Experimental group 1: low-dose (0.5 mg/kg) injection. Experimental group 2: high-dose (2.0 mg/kg) injection. Injection was performed twice over a total of 4 weeks. Blood tests, walking tests, analysis of the gastrocnemius muscle, axon and myelin analysis, and analysis of glial cell-derived neurotrophic factor (GDNF) were performed.
Results: Experimental group 1, which received low-dose injections, showed faster recovery of sciatic function index in the walking test. There was a tendency for experimental group 1 to recover in terms of gastrocnemius muscle weight and width. The myelin thickness was also thicker in experimental group 1. The GDNF gene increased in experimental group 1. There was no apparent immunosuppressive effect in the individuals receiving either low or high doses of FK-506.
Conclusions: When FK-506 was injected at a low dose using a local reserve flap, it showed a regenerative effect on nerve tissue.

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Korean J Transplant 2023;37 Suppl 1:S46
https://doi.org/10.4285/ATW2023.F-6115

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The risk factor for delayed graft function in the deceased donor kidney transplantation

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Background: Delayed graft function (DGF) is a common and significant complication in deceased donor kidney transplantation (DDKT). DGF is characterized by a temporary or permanent loss of kidney function after transplantation, which is associated with increased morbidity and mortality for transplant patients. But the exact cause of DGF is not well understood. The aim of this study is to identify the risk factors associated with DGF after the DDKT.
Methods: Between June 2011 and December 2022, 88 patients underwent DDKT at Department of Surgery at Konyang University Hospital, Daejeon, Korea. We compared two groups according to delayed graft: non-DGF group (n=75), delayed function group (n=13). The following characteristics were evaluated retrospectively through the medical records.
Results: The 5-year patient survival in the DGF group was 69.2% compared to 94.1% of the non-DGF group (P<0.001). The 5-year graft survival were 76.9% and 97.1% in the DGF group and non-DGF group (P=0.005) retrospectively. The estimated glomerular filtration rate (eGFR) level by period of recipients was significantly more increased in non-DGF group (1 week: 61.4±25.5 mL/min vs. 22.0±12.2 mL/min, P<0.001; 12th months: 73.0±22.2 mL/min vs. 47.8±14.5 ml/min, P=0.001) but the eGFR level of recipients at 60th months was not significantly different in both groups (79.8±21.5 mL/min vs. 79.7±13.6 mL/min, P=0.989). Also, we found that significant independent risk factors associated with DGF after DDKT were extended criteria donor (odds ratio [OR], 6.002; 95% confidence interval [CI], 1.586–22.722; P=0.008) and recipient body mass index >25 kg/m^2 (OR, 4.881; 95% CI, 1.249–19.074; P=0.023) in multivariate analysis. During the follow periods, pneumonia increase in the DGF group (30.8% vs. 16.0%, P=0.041) and AVN occurred two cases (15.4%) of DGF group (P=0.020).
Conclusions: We should anticipate a high possibility of DGF after DDKT, when recipients BMI is high or using the graft from extended criteria donor.

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Korean J Transplant 2023;37 Suppl 1:S47
https://doi.org/10.4285/ATW2023.F-6129

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Kidney allograft torsion, a rare post kidney transplantation complication: a case report

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Kidney allograft torsion is defined as rotation of allograft around its renal pedicle and a rare complication with high rate of graft loss. The nonspecific presentation and inability to provide definitive diagnosis by imaging in cases of partial torsion may delay the diagnosis and treatment. This is a case of a 43-year-old male with a history of glomerulonephritis and end-stage kidney disease with 2 years history of hemodialysis who received a living related transplant from his sibling in 2017. The transplanted kidney was placed intraperitoneal position with laparoscopic surgery in Palembang. After surgery he never had hemodialysis again. In 2019 he had traffic accident but there was no hospitalitation. About 6 months ago, he had complained weakness and decreasing kidney function with creatinine serum increased and decreased urine output 700 mL in 24 hours. There was a swollen and moderate hydronephrosis of the allograft kidney in computed tomography scan and resistive index 0.88 in kidney allograft Doppler ultrasonography. Patient will be performed double J stent by urologist but there were difficulties and cannot be done. This patient consulted to Cipto Mangunkusumo Hospital, Jakarta to be evaluated with suspected torsion of the allograft kidney. Acute torsion generally has a prompt onset, and immediate surgery is indicated. Ultrasound can be used to support a diagnosis, often displaying alterations in the renal arterial flow rate and resistive indices. Importantly, in cases of partial or intermittent torsion, symptoms may be episodic and the classic ultrasound findings may be absent.

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Korean J Transplant 2023;37 Suppl 1:S48
https://doi.org/10.4285/ATW2023.F-6141

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Risk of COVID-19 infection in pediatric solid organ transplant recipients: a single center study in South Korea

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Background: Solid organ transplant (SOT) recipients are at high risk for severe coronavirus disease 2019 (COVID-19) due to immunosuppressant (IS) use. Compared to adult SOT recipients (SOTRs), studies on risk and vaccination effectiveness in pediatric SOTRs are limited. We aim to investigate the epidemiologic characteristics of COVID-19 infection in pediatric SOTRs.
Methods: This study was conducted at Severance Hospital in Korea, between 1999–2022. All SOTRs received SOT at the age ≤18 years were included. SOTRs who had a history of COVID-19 before SOT were excluded. Severe case was defined when there is oxygen demand. Demographic data and information for risk factor exploration were retrospectively collected through chart review.
Results: A total of 117 SOTRs were included. The median age at SOT was 4.8 years (1.0–10.3 years), and the male to female ratio was 1:1.1. About 82% (96/117) had COVID-19 infection and 10% (10/96) of them were hospitalized for COVID-19 management. Four cases were severe cases and there was no death. Multiple immunosuppressants (IS) and steroid uses were significantly associated with the lower incidence of COVID-19 (odd ratio [OR] 0.15, 95% confidence interval [CI] 0.05–0.54, P=0.002; and 95% CI 0.09–0.58, P=0.003; respectively). Multiple IS and steroid uses were correlated with the shorter duration after SOT (R=−0.40 and −0.42), older age (R=0.30 and 0.19), and more vaccine dose (R=0.31 and 0.24). Older age at SOT was associated with the hospitalization of COVID-19 SOTRs by logistic regression (OR, 1.34; 95% CI, 1.1–1.7; P=0.01). Retransplantation (OR, 21.8; 95% CI, 1.3–357.1; P=0.03) and multiple IS use (OR, 7.6; 95% CI, 1.1–54.2; P=0.04) were associated with the COVID-19 frequency. There was no factor affecting the severity of COVID-19.
Conclusions: Pediatric SOTR is susceptible to COVID-19, especially in older children at SOT, and those who are taking multiple IS as well as those who have undergone re-SOT.

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Korean J Transplant 2023;37 Suppl 1:S49
https://doi.org/10.4285/ATW2023.F-6148

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Epidemiology of invasive fungal infection in pediatric liver transplant recipients: a retrospective single-center study 2012–2022

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Background: The incidence of invasive fungal infection (IFI) in pediatric liver transplant (LT) recipients ranges from 2.5 to 5%; however, antifungal prophylaxis has not yet been approved in Korea. We investigated the incidence of early-onset IFI and its characteristics in pediatric LT recipients in Korea, and also explored its risk factors.
Methods: This is a retrospective, single-center study on children (<19 years of age) who have undergone LT from 2012 to 2022 at Severance Hospital, Korea. IFI was defined as detection of fungus in sterile fluid or tissue and/or blood associated with symptoms. Superficial fungal infection and colonization on the skin or urine were excluded. The primary outcome is the occurrence of IFI within 90 days from LT. The logistic regression was used to analyze the risk factors of IFI.
Results: A total of 104 LT children and 111 cases were included. 42.3% (n=44) were male, and the median age at LT was 4.0 years of age (interquartile range [IQR], 1.0–11.0). Two thirds received LT due to biliary atresia (n=69, 66.3%). Antifungal prophylaxis was not done in 86.5% of the LT recipients. Twenty-three IFI events was identified in 19 patients (18.3%) at median time of 16.5 days after LT (IQR, 10–38). 87.0% of the pathogens detected were *Candida* species (*C.albicans* 40.0%, *C.parapsilosis* 35.0%, *C. auris* 15.0%), and *Aspergillus fumigatus* (13.0%). The risk of IFI was significantly increased in those who underwent retransplantation, postoperative intervention or surgery due to bleeding, vascular, and bile duct complications (odd ratio [OR], 4.6; 95% confidence interval [CI], 1.54–13.60; P=0.006), and postoperative renal replacement therapy (OR, 3.2; 95% CI, 1.13–8.82; P=0.028).
Conclusions: The incidence of early IFI after LT in Korean children is considerable; therefore, universal antifungal prophylaxis, especially in high-risk IFI patients such as reoperation or intervention and renal replacement therapy, is necessary.

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Korean J Transplant 2023;37 Suppl 1:S50
https://doi.org/10.4285/ATW2023.F-6158

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Metabolic clinic for living kidney donors: a pilot study

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Background: Living kidney donors are at higher risk of developing chronic kidney disease compared with the healthy nondonor population. The objective of this study was to examine the effect of postdonation interventions to decrease the risk of metabolic syndrome in high-risk donors.
Methods: Kidney donors were invited to participate this study if one of the following criteria were met: waist circumference larger than 80 cm in female or 90 cm in male, fasting blood glucose (FBG) higher than 100 mg/dL, serum triglyceride (TG) higher than 150 mg/dL, serum high-density lipoprotein (HDL) lower than 50 mg/dL in female or 40 mg/dL in male, or blood pressure higher than 130/85 mmHg. The interventions were (1) nutrition and diet counseling by dietitian, who also gave feedback on every meal of the participants, (2) blood pressure and steps counting by smart watches, and (3) exercise monitoring. The online social platform was created and joined by participants and investigators. The primary outcome was the changes of metabolic profile including FBG, TG, blood pressure, and waist circumference.
Results: Fifteen donors with high risk of metabolic syndrome were included. After 2 months of follow up, FBG was decreased from 101.3±11.0 mg/dL to 100.3±7.3 mg/dL, with an average of 0.8% reduction. Serum TG was decreased from 150±49 mg/dL to 117±36 mg/dL (average 11.1% reduction). Four percent of donors experienced decreased waist circumference more than 3%. Finally, decreased systolic blood pressure of more than 5% was achieved in 5.2% of donors. 100% adherence rate were observed during the follow up period.
Conclusions: This pilot metabolic clinic for living kidney donors led to an improvement in donor health. Future study that includes more donors with longer follow up period in this metabolic clinic, compared with the traditional post-donation care, will enlighten the benefit of this intervention.

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Korean J Transplant 2023;37 Suppl 1:S51
https://doi.org/10.4285/ATW2023.F-6159

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Poor health-related quality of life in the postmenopausal women receiving kidney transplantation during long-term follow-up

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Background: Women with chronic kidney disease (CKD) at gestation at age experience early menopause. Kidney transplantation (KT) can resume menstruation at this age. However, there is a lack of concerns for the postmenopausal women received KT. We aimed to study health-related quality of life (HRQOL) and clinical outcome in postmenopausal women at the time of KT.
Methods: The Korean cohort study for outcome in patients with kidney transplantation (KNOW-KT) is a multicenter, observational cohort study. Total 972 subjects who performed questionnaire of disease quality of life instrument (KDQOL-SF) were enrolled in this study. The KDQOL-SF and clinical parameters were assessed at the point of 0, 2, 4, and 6 years after registration. HRQOL was analyzed according to sex or menopause parameters.
Results: A total 168 KT patients were in postmenopause status and mean age was 54±5.9 years. Both CKD-targeted score and SF36 score were improved 2 years after KT and their improvement persisted until 6 years. The postmenopausal females had poorer CKD-targeted and SF36 scores; both physical and mental components, compared to both nonmenopausal females and similarly aged males during 6-year follow-up. Lower glomerular filtration rate, low baseline QOL, diabetes, low incomes, and low hemoglobin level were independent risk factors for lower SF36 score at 6-year follow-up. At the same renal function, postmenopausal patients had significantly lower SF36 score than same aged male patients (72.2±12.8 vs. 77.8±13.9, P<0.001), which were similar in both physical QOL and mental QOL score. Regarding the CKD-targeted score, premenopausal patients had lower scores as same-aged male patients. In multivariable analysis, menopause was an independent determining factor for lower HRQOL (P=0.01).
Conclusions: Postmenopausal KT women have the poorest HRQOL compared to other KT populations. Tailored health care in both physical and mental fields should be planned for these populations to improve QOL after KT.

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Korean J Transplant 2023;37 Suppl 1:S52
https://doi.org/10.4285/ATW2023.F-6163

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Different short-term clinical outcome of living donor kidney transplantation with ABO incompatibility

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ABO-incompatible kidney transplantation is a safe option to address the kidney donor supply-demand disparity. However, its outcomes in developing countries are not well-known. In this study, we compare two cases of ABO-incompatible kidney transplantation. Patient 1 is a 17-year-old female on dialysis, with end-stage kidney disease caused by chronic glomerulonephritis. She received a kidney donor from her mother, who had different blood type (patient B+, donor AB+). Her baseline anti-A immunoglobulin M (IgM) titer was 1:256. Patient 2, a 46-year-old male with the same diagnosis, received a donor from an unrelated male with different blood type (patient O+, donor B+). His baseline anti-B IgM titer was 1:32. Modified desensitization protocol was used for both patients, using rituximab, triple immunosuppression (tacrolimus, mycophenolic acid, methylprednisolone), plasmapheresis (six sessions and three sessions, respectively), followed by intravenous immunoglobulin. Both patients achieved a preoperative antibody titer of anti-A IgM and anti-B IgM of 1:16 for patient 1 and 2, respectively. Basiliximab was used as induction therapy. Both patients underwent successful allograft renal implantation without any clinical signs of hyperacute rejection. During a 2-day monitoring period in the intensive care unit, both patients remained stable. Patient 1 experienced a significant reduction in serum creatinine levels, from 9.6 mg/dL to 2.4 mg/dL within 24 hours, and continued to improve. Conversely, despite daily diuresis of more than 1.5 liters, patient 2 failed to achieve a postoperative decrease in creatinine levels and had to undergo hemodialysis on the fourth day posttransplantation. Further clinical and pathology data indicated that patient 2 experienced accelerated graft rejection, leading to nephrectomy. Both patients were eventually discharged safely. These cases emphasize the importance of considering the ABO blood group antibody titer in combination with other clinical characteristics before opting for high-risk kidney transplantation procedures. Donor-recipient relatedness status and the number of plasmapheresis sessions may potentially influence the outcomes.

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Korean J Transplant 2023;37 Suppl 1:S53
https://doi.org/10.4285/ATW2023.F-6188

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

An anatomically complicated living donor kidney transplantation from hepatitis B surface antigen positive donor to negative recipient with donor-recipient size discrepancy

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The deficiency of organ donors remains a barrier in kidney transplantation. Living donor kidney transplantation (LDKT) can overcome graft shortage, showing better outcomes. Many efforts are being made to expand the donor pool, such as hepatitis B surface antigen (HBsAg) positive donors to negative recipients, and anatomically-complicated donor kidneys with size discrepancy. We report our case in which we overcame various problems in LDKT. The recipient was a 56-year-old male, 106 kg, HBsAg negative with chronic renal failure due to diabetic nephropathy. The donor was the recipient's spouse, a 63-year-old female, 56 kg (absolute weight difference was 50 kg; D<R), HBV carrier with dual renal arteries. Preoperative antiviral medication was given to the donor by purpose of negative conversion of hepatitis B virus (HBV) DNA. And the recipient was given HBV vaccination (anti-hepatitis B antibody [HBsAb], 2.25–36.16 mIU/mL). Anti-HBV immunoglobulin was administered intraoperatively to minimize the risk of transmission. Moreover, a specific effort had to be taken to overcome the size discrepancy. The donor and recipient had a significant size discrepancy according to the absolute weight difference (50 kg). Also, the donor's kidney had a main artery and an accessory artery of the upper pole. Therefore, we anastomosed the grafts accessory artery to the recipients right inferior epigastric artery. Follow-up serum creatinine levels trended down, and the urine output was sufficient. Doppler ultrasonography (US) of the kidney showed good vascular flow within the normal range of the resistive index. He was discharged without complications. His follow-up HBV DNA titer was negative with antiviral medication and the repeated Doppler US in 5 weeks of surgery showed good flow. We successfully performed an LDKT from HBV positive donor to negative recipient by perioperative antiviral treatment and overcame a significant size discrepancy and anatomical challenges by preservation of even a small portion of kidney graft by anastomosing the upper pole artery with inferior epigastric artery.

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Korean J Transplant 2023;37 Suppl 1:S54
https://doi.org/10.4285/ATW2023.F-6203

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Two-year real-word outcomes in HeartMate 3 versus heart transplant patients in Taiwan

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Background: The durable left ventricular assist device (LVAD) and heart transplantation (HTx) are the most advanced surgical treatment modalities for end-stage of heart failure (HF), that can improve survival and quality of life. Many trials have demonstrated the durable HeartMate 3 (HM3) LVAD is associated with similar 2-year survival at 2 years as compared with HTx. The purpose of our study is to compare real-world outcomes between HM3 and HTx in Taiwan.
Methods: We retrospectively adult patients (aged from 18 to 70 years old) who received HM3 or HT between October 2019 and April 2023 in this study. To minimize crossover bias, HTx patients bridged with Heartware, Heartmate 2, and Heartmate 3 LVAD were excluded. Two years of survival on HM3 was benchmarked against HTx over the same period.
Results: Our study consisted of 41 (39.8%) HM3 patients and 62 (60.2%) HTx. The median follow-up was 22.9±18.8 months. For the primary HM3 implant group, 31.7% (13/41) is in Intermacs Profile 1 and 39.0% (16/41) in Intermacs Profile 2. 64.5% (40/62) of HTx recipients were bridged using a extracorporeal ventricular assist device, 3.2% (2/62) using an extracorporeal membrane oxygenation, and 6.5% (4/62) using an intra-aortic balloon pump. Overall survival at 2 years was 79.1%. There was no statistical difference in 2-year survival (HM3 71.3% vs. HTx 83.3%, P=0.171).
Conclusions: Our data suggest that HM3 provided comparable 2-year survival to HTx as a primary treatment for end-stage HF. However, HM3 patients had a lower likelihood of reaching transplantation, which may be a reflection of the implant Intermacs status.

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Korean J Transplant 2023;37 Suppl 1:S55
https://doi.org/10.4285/ATW2023.F-6209

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Successful open chest intraoperative epicardial ventricular tachycardia mapping and ablation during the HeartMate-3 left ventricular assist device implantation in Taiwan

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Despite substantial technical improvements in long-term new generation continuous-flow pumps support, ventricular tachycardia (VT) remains a major complication following left ventricular assist devices (LVADs) implantation. Recent reports that have been through work utilizing a hybrid empirical intraoperative cryoablation to intrinsic scar at the time of VAD placement to reduce postprocedural visual analogic scale. We first time report in Taiwan that combined two procedures ventricular assist device placement and intraoperative open chest epicardial mapping and radiofrequency ablation into a single heart surgery technique at National Taiwan University Hospital. The open chest intraoperative epicardial VT mapping and ablation during the HeartMate 3 LVAD implantation can play a new option for people with serious heart failure and arrhythmia.

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Korean J Transplant 2023;37 Suppl 1:S56
https://doi.org/10.4285/ATW2023.F-6226

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Efficacy of early steroid withdrawal using everolimus in *de novo* kidney transplantation: a single center cohort study

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Background: This study aimed to investigate the safety and efficacy of steroid withdrawal therapy in kidney transplant recipients with tacrolimus, mycophenolate mofetil, everolimus based immunosuppression.
Methods: We analyzed 274 recipients who underwent kidney transplantation from August 2014 and July 2022. Among these recipients, 180 patients maintained an immunosuppressive regimen including steroids (steroid continuation [SC] group). The 94 patients were determined to withdraw steroid therapy (steroid withdrawal [SW] group). All patients in the SW group received tacrolimus-mycophenolate mofetil-everolimus based immunosuppression.
Results: The observation period was 4.96±2.11 years in the SC group and 4.38±2.03 years in the SW group. Five-year patient survival was 97.2% and 96.8%, and 5-year graft survival was 97.8% and 94.7% in SC and SW groups, respectively, with no significant difference. Estimated glomerular filtration rates were 43.6±18.3 mL/min/1.73 m^2 in the SC group and 42.0±15.3 mL/min/1.73 m^2 in the SW group. There was no significant difference in the 24-hour urinary protein excretion between two groups. The blood concentration of tacrolimus was 3.9±1.6 ng/dL and 3.6±1.5 ng/dL in the SC and SW groups, respectively. No significant difference was found in the incidence of borderline change, interstitial fibrosis and tubular atrophy, calcineurin inhibitor nephrotoxicity revealed by graft biopsy between two groups. However, the incidence of T cell-mediated rejection and transplant glomerulopathy were higher in the SW group (P=0.05 and P<0.01). The incidence of *de novo* donor-specific human leukocyte antigen (HLA) antibody (DSA) and non-DSA were similar in both groups. There was no significant difference in the incidence of cytomegalovirus or BK infection. The SW group had higher incidence of coronavirus disease 2019 than the SC group, but the difference was not significant (17.0% vs. 10.0%, P=0.12).
Conclusions: The early steroid withdrawal therapy using everolimus may lead to a higher incidence of transplant glomerulopathy. A longer follow-up is necessary to thoroughly assess this impact.

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Korean J Transplant 2023;37 Suppl 1:S57
https://doi.org/10.4285/ATW2023.F-6263

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Valvular heart disease in end-stage kidney disease patients on the transplant waitlist

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Background: Valvular heart disease (VHD) is a risk factor for adverse outcomes in end-stage kidney disease (ESKD) patients but its impact on patients on the local kidney transplant waitlist is unclear. We hypothesize that VHD is an independent risk factor for mortality in our ESKD patients on the transplant waitlist.
Methods: This is a single-center retrospective cohort study including ESKD patients who were referred for transplant waitlist placement from May 2008 to February 2021 and had undergone transthoracic echocardiogram (TTE). Significant VHD was defined as valvular lesions that were moderate or severe on TTE.
Results: Of the 512 patients included, 89 (17.4%) had significant VHD. The most common significant valvular lesions were tricuspid regurgitation (9.0%), mitral regurgitation (MR; 8.6%), and aortic regurgitation (2.1%). VHD was associated with longer median dialysis duration (38.0 vs. 18.0 months, P=0.04). All-cause mortality was associated with presence of any significant VHD (hazard ratio [HR], 1.55; 95% confidence interval [CI], 1.01–2.36; P=0.04), left-sided VHD (LVHD) (HR, 1.76; 95% CI, 1.10–2.81; P=0.02) and aortic stenosis (AS; HR, 5.80; 95% CI, 2.36–14.3; P<0.0001) and remained significant after adjustment for age, diabetes mellitus and history of cardiovascular disease (VHD: adjusted HR [aHR] 1.57, 95% CI 1.02–2.42, P=0.04; LVHD: aHR 1.92, 95% CI 1.19–3.10, P=0.01; AS: aHR 2.93, 95% CI 1.15–7.46, P=0.02). With noncardiovascular mortality as a competing event, LVHD (sub-distribution HR [SHR], 2.54; 95% CI, 1.13–5.70; P=0.03) and MR (SHR 2.94; 95% CI, 1.27–6.84; P=0.02) were significantly associated with cardiovascular mortality and remained significant after adjustment for age, diabetes mellitus and history of cardiovascular disease (LVHD: aSHR 2.68, 95% CI 1.15–6.24, P=0.02; MR: aSHR 3.33, 95% CI 1.38–8.03, P=0.007).
Conclusions: VHD, particularly AS and MR, may be an independent risk factor for mortality in ESKD patients on the kidney transplant waitlist. Prolonged dialysis may be associated with VHD.

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Korean J Transplant 2023;37 Suppl 1:S58
https://doi.org/10.4285/ATW2023.F-6301

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Outcomes of immunological high risk kidney transplantation

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Background: ABO-incompatible (ABOi) and human leukocyte antigen (HLA)-incompatible (HLAi) kidney transplantations are known to be immunological high-risk transplantation. Patients with incompatible living donors have to choose either desensitization then transplantation or waiting for deceased donor kidney transplantation (DDKT). The study of outcome of ABOi and HLAi living donor kidney transplantations (LDKT) compared to waiting for and receiving DDKT outside the United States and European countries remains scarce.

Methods: A single-center retrospective study was conducted in patients who underwent ABOi, HLAi and DDKT between January 2008 and November 2021. The patients and grafts survival, since registration date, as well as the incidences of viral infection and rejection were compared between DDKT recipients and ABOi or HLAi recipients.

Results: There were 322 patients, 32 patients and 37 patients receiving DDKT, ABOi and HLAi LDKT respectively. In DDKT group, the patient survival rate was 97.7% at 5 years, 92.5% at 10 years, and 82.6% at 15 years, as compared to rate of 96.8% at 5 and 10 years in ABOi group (P=0.84) and 94.8% at 5 years in HLAi group (P=0.91). The death-censored graft survival was 95.6% at 5 years, 83.1% at 10 years, and 63.8% at 15 years in DDKT group, as compared to rate of 90.3% at 5 and 10 years in ABOi group (P=0.73) and 92.1% at 5 years in HLAi group (P=0.53). Antibody-mediated rejection occurred significantly higher in HLAi group with hazard ratio 2.77 (95% confidence interval, 1.31–5.88; P=0.008) compared to DDKT group. Rates of BK and cytomegalovirus (CMV) infection was comparable between all groups.

Conclusions: ABOi and HLAi LDKT showed comparable patients, grafts survival, as well as CMV and BK infections to DDKT. Our study emphasizes the usefulness of ABOi and HLAi LDKT in reducing waiting time and improving patients' quality of life.

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Korean J Transplant 2023;37 Suppl 1:S59
https://doi.org/10.4285/ATW2023.F-6351

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The clinical outcome of hepatic artery dissection after living donor liver transplantation in a high volume center

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Background: Hepatic artery dissection (HAD) is an uncommon complication of living donor liver transplantation (LDLT) and is associated with hepatic artery thrombosis (HAT). Since the incidence of HAD is low, clinical outcomes have not been well studied so far. The aim of this study is to identify the natural course of HAD and to suggest an appropriate management strategy.
Methods: Patients who underwent adult LDLT at Asan Medical Center were retrospectively reviewed between January 2010 and December 2022. We divided the subgroups based on the range of HAD, as well as the use of anticoagulants. The study outcomes were an event of HAT.
Results: Among 4,065 LDLT recipients, 114 patients (2.8%) were diagnosed with HAD. HAD was diagnosed on a mean of 10 (range, 1–55) postoperative days. The isolated proper hepatic artery (PHA) involved group accounted for 47.3% (54/114) of the cases, while the diffuse type of HAD was 60 (52.6%). Ninety-two patients (80.7%) had resolution and the mean time to resolution was 104.3 days (range, 19–448). The HAT was diagnosed in seven patients (6.1%), all of which occurred in the isolated PHA group (7/54, 13%). According to the medication type, 47 patient received only antiplatelet agents while 67 patients received additional oral anticoagulant. In comparison between two groups, there were no significant differences in HAT and graft failure (P=0.444, P=1). The resolution rate of HAD was higher in the anticoagulant group (33/47 [70.2%] vs. 59/67 [88.1%], P=0.017). The time to resolution of HAD was shorter in the anticoagulant group but there was no significant difference (109.38±18.63, 62.56±8.15; P=0.695).
Conclusions: HAD is mostly benign and spontaneously resolved within 4 months. The diffuse type of HAD does not increase the risk of HAT or graft failure. The conservative treatment is sufficient and the addition of oral anticoagulants may be beneficial in the resolution of HAD.

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Korean J Transplant 2023;37 Suppl 1:S60
https://doi.org/10.4285/ATW2023.F-6369

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Quality of life and related factors in renal transplant patients at 108 Military Central Hospital

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Background: Posttransplantation care is a long-term and challenging process for both patients and caregivers, physically and mentally. However, there are still few studies on the factors that affect these patients' quality of life (QoL). Therefore, it is necessary to explore the factors related to the QoL of patients after kidney transplantation.
Methods: A cross-sectional study was conducted on kidney transplant patients who had at least 3 months posttransplantation and were followed up at 108 Central Military Hospital from January 2019 to June 2022. Demographic characteristics of patients were collected through a structured questionnaire. Their QoL was assessed based on the self-reported SF-36 scale. Logistic regression analysis determined the association between the QoL and other factors.
Results: The study included 112 patients with an average age of 45.7 years, 43 patients (38.4%) over 50, and 85 males (75.9%). Of patients with a normal body mass index, 68.7% resided in Hanoi, and 32.1% were cadres/employees. The scores of four domains in the physical health component were: general health (54.4), the role of physical health (81.3), physical functioning (57.8) and body pain (77.3). The scores of four domains in the mental health component were: mental health (67.4), the role of emotion (64.9), vitality (61.3) and social functioning (70.2). The QoL of patients after kidney transplantation reached 68.4. Factors such as age (odds ratio [OR], 0.81; 95% confidence interval [CI], 0.36–1.86); sex (OR, 1.82; 95% CI, 0.74–4.51), current residence (OR, 0.7; 95% CI, 0.31–1.58); occupation (OR, 0.94; 95% CI, 0.40–2.25) were not related to the QoL of patients after kidney transplantation.
Conclusions: Most patients had a moderate and high quality of life. The study did not find any demographic characteristics that affected QoL. Further study with a large sample size should be done to support the improvement and enhancement of effective patient care in the future.

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Korean J Transplant 2023;37 Suppl 1:S61
https://doi.org/10.4285/ATW2023.F-6380

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Prediction of postdonation renal function using machine learning techniques and conventional regression models in living kidney donors

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Background: The accurate prediction of renal function following a kidney donation and a careful selection of living donors are essential for living-kidney donation programs. We aimed to develop a prediction model for postdonation renal function following a living kidney donation using machine learning.
Methods: This retrospective cohort study using electronic medical records was conducted with 823 living kidney donors between 2009 and 2020. The entire dataset was randomly split into a training set (80%) and a test set (20%). The main outcome was the accurate prediction of postdonation estimated glomerular filtration rate (eGFR) 12 months after nephrectomy. We compared the performance of various machine learning techniques as well as traditional regression models. The best-performing model was selected based on the mean absolute error (MAE) and root mean square error (RMSE).
Results: The mean age of the participants was 45.2±12.3 years, and 48.4% were males. The mean predonation and postdonation eGFRs were 101.3 and 68.8±12.7 mL/min/1.73 m^2, respectively. The XGBoost model with feature importance, including the eGFR, age, serum creatinine, 24-hour urine creatinine, 24-hour urine sodium, creatinine clearance, cystatin C, cystatin C-based eGFR, computed tomography volume of the remaining kidney/body weight, normalized GFR of the remaining kidney measured through a diethylenetriaminepentaacetic acid scan, and sex, showed the best performance with an MAE of 6.23 and RMSE of 8.06. The proportion of predicted eGFR values within 5% or 10% of the actual eGFR value were 0.39 and 0.58, respectively. We developed a web application titled Kidney Donation with Nephrologic Intelligence (KDNI) for ease of use in clinical practice.
Conclusions: The machine learning technique using XGBoost accurately predicted the postdonation eGFR after living kidney donation. This model can be easily applied in clinical practice using KDNI, the developed web application.

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Korean J Transplant 2023;37 Suppl 1:S62
https://doi.org/10.4285/ATW2023.F-6396

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Discovery of brain-dead donors at a local university hospital in Korea

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Background: This study was conducted to find out the current status of the brain death donor discovery project, so called Donation Improvement Program (DIP) implemented by Korean Organ Donor Agency (KODA) in the actual field.
Methods: The brain death donor discovery project at a local medical university hospital with 1,000 beds was investigated for 10 years from 2012 to 2021. Since 1998, Ulsan University Hospital has been the only university hospital in the metropolitan city of Ulsan, and is practically the only provider of organ donation and transplant-related medical care in the city. Therefore, it can be seen that it reflects the current situation of Korea as a whole. As of 2023, the population of 1,108,665 of Ulsan city corresponds to 2.150% of the population of the Republic of Korea, 51,558,034.
Results: During the 10 years from 2012 to 2021, the total number of brain death donors in Korea was 4,679, and the number of cases that occurred in the hospital was 97 (2.07%), which was almost the same as expected compared to the population. The number of patients discharged from the intensive care unit of the hospital due to death during the same period was 3,286, but the number of KODA notifications was only 415 (12.6%). Among them, 97 brain-dead donated organs, and the organ donation rate was 23.3%. The biggest reason for the low organ donation rate was the rejection of guardians in 241 cases (58.1%). There were 19 (4.5%) and 31 (6.7%) cases of nonbrain death or nondonation due to cardiac death, respectively.
Conclusions: The most urgent task in securing brain-dead organ donors in Korea is to enable medical personnel to more actively notify KODA of suspected brain-dead patients. It is time to systematically educate the public about the necessity and the actual implementation process of brain-dead organ donation.

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Korean J Transplant 2023;37 Suppl 1:S63
https://doi.org/10.4285/ATW2023.F-6399

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Albumin-bilirubin score as a short- and long-term prognostic factor in liver transplantation

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Background: The albumin-bilirubin (ALBI) score is a simple and objective indicator for liver function, but its role and clinical significance in liver transplantation (LTx) are unclear. The study aimed to investigate its utility as a predictor of short- and long-term outcomes in LTx recipients.

Methods: The study included 351 consecutive LTx recipients (217 adults, 134 pediatric) who underwent their first LTx between 1990 and 2022. Study 1: patients were classified into low-ALBI (grade 1 or 2) and high-ALBI (grade 3) groups based on ALBI score at LTx. Background factors and short-term outcomes were compared. ALBI scores utility as a predictor for long-term prognosis was evaluated by ROC and multivariate analysis. Study 2: we examined the changes in ALBI score post-LTx and its usefulness as a follow-up marker.

Results: In Study 1, ALBI scores at LTx were: adults (–1.63±0.77), pediatric (–1.25±0.59). High-ALBI group had more severe liver failure (model for end-stage liver disease [MELD], 21 vs. 12; pediatric end-stage liver disease [PELD], 19 vs. 12) and massive blood loss. No significant increase in complications, but the high-ALBI group had three times higher in-hospital mortality (13% vs. 4%, P=0.020). In the adult cohort, the ALBI score was better than MELD/ChildPugh scores in graft failure prediction. Graft survival was significantly worse in the high-ALBI and was identified as an independent prognostic factor (hazard ratio, 3.23; 95% confidence interval, 1.80–5.82; P<0.001). In Study 2, ALBI scores improved at 1-year post-LTx for adults (–2.67) and pediatric cases (–2.77), stabilizing over 20 years. Receiver operating characteristic analysis revealed ALBI score at 1 year predicted graft failure (area under the curve: adults 0.83, pediatric 0.85, P<0.001), and ALBI grade 2 linked to poor graft survival.

Conclusions: High ALBI at LTx predicted poor outcomes in adults. Subsequent ALBI increases post-LTx correlated with poor graft prognosis in both adult and pediatric cases, indicating the importance of investigation and intervention, including retransplantation considerations.

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Korean J Transplant 2023;37 Suppl 1:S64
https://doi.org/10.4285/ATW2023.F-6406

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The effect of parathyroidectomy on graft function in kidney transplant patients: a systematic review and meta-analysis

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Background: Parathyroidectomy is performed to treat hyperparathyroidism, mainly when hypercalcemia is present. Some studies have revealed a paradoxical early reduction in allograft function following parathyroidectomy. Our study aims to determine the effect of parathyroidectomy on graft function.

Methods: We included all research articles analyzing the estimated glomerular filtration rate (eGFR) in kidney transplant recipients with and without parathyroidectomy. We excluded nonresearch articles, studies with insufficient data, and non-English articles. The remaining articles were independently screened for relevance by their abstracts with authors. The full text of residual articles was assessed according to the inclusion and exclusion criteria. The outcome of studies is the eGFR of kidney transplant recipients. To perform a meta-analysis, Review Manager 5.4.1 (The Cochrane Collaboration) and Stata ver. 16 (StataCorp LP) were used. The effects of the parathyroidectomy on eGFR in kidney transplant recipients were analyzed by comparing the mean difference between the parathyroidectomy and nonparathyroidectomy groups. The mean difference was reported with a 95% confidence interval (CI) for dichotomous variables. The P-value was two-tailed, and statistical significance was set at <0.05.

Results: A total of three studies of 968 patients were included in this meta-analysis. Studies were conducted in Taiwan, Brazil, and Germany. All of the studies included were cohort studies. The lowest mean age of included studies is 44.7±10.7 years old. The pooled mean difference of eGFR between the parathyroidectomy and nonparathyroidectomy group in kidney transplant recipients showed higher eGFR in the nonparathyroidectomy group (–5.53 [–20.11, 9.05]; P=0.46). The result was not statistically significant.

Conclusions: In kidney transplant recipient patients, there was no statistically significant difference in eGFR between parathyroidectomy and nonparathyroidectomy.

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Korean J Transplant 2023;37 Suppl 1:S65
https://doi.org/10.4285/ATW2023.F-6418

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Donor sex and donor-recipient sex disparity do not affect hepatocellular carcinoma recurrence after living donor liver transplantation

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Background: Studies have yielded contradictory results on whether donor sex and donor-recipient sex disparity affect hepatocellular carcinoma (HCC) recurrence after living donor liver transplantation (LDLT). The present study assessed whether donor sex or donor-recipient sex disparity affects HCC recurrence after LDLT at a high-volume center.
Methods: This study included 772 HCC patients who underwent LDLT between January 2006 and December 2015 at Asan Medical Center. Patients were divided into four groups based on the sex of the donor and recipient: male-to-male (n=490 [63.5%]), male-to-female (n=75 [9.7%]), female-to-male (n=170 [22.0%]), and female-to-female (n=37 [4.8%]).
Results: Disease-free survival (DFS; P=0.372) and overall survival (OS; P=0.591) did not differ significantly among the four groups. DFS also did not differ significantly between LDLT recipients with male and female donors (P=0.792) or between male and female recipients (P=0.084). After patient matching with an alpha-fetoprotein/des-carboxy prothrombin/tumor volume score cutoff of 5 logs, donor-recipient sex disparity did not significantly affect DFS (P=0.598) or OS (P=0.777). There were also no differences in DFS in matched LDLT recipients with male and female donors (P=0.312) or between male and female recipients (P=0.374).
Conclusions: Neither donor sex nor donor-recipient sex disparity significantly affected posttransplant HCC recurrence.

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Korean J Transplant 2023;37 Suppl 1:S66
https://doi.org/10.4285/ATW2023.F-6421

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Is it really challenging procedure to performing the liver transplantations in polycystic liver disease?

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Background: Liver transplantation (LT) is the only curative treatment option for polycystic liver disease (PCLD) and is associated with good survival rates. Patients with PCLD complain of discomfort due to very large liver volume, but liver function is preserved until a late stage. The aim of the study is to review our center experience in LT for PCLD.
Methods: This study was performed from Asan Medical Center LT database. It contains all patients transplanted for PCLD. Data was extracted for patients who underwent LT between February 2004 to February 2023 and follow up until May 31, 2023.
Results: Data of 13 PCLD patients who underwent LDLT between February 2004 to February 2023 were analyzed. Eleven (85%) of these patients were female. Seven (54%) of our database had PCLD while two (15.4%) had autosomal dominant polycystic kidney disease and one (7.6%) had autosomal recessive polycystic kidney disease. The median model for end-stage liver disease score at time for referral was 10. The median age of transplant was 49.5 years for male vs. 55 for female patients. The median weight of the harvested liver was 3,830 g, and 11 (85%) of transplanted livers had an Rt. lobe was used. In just two (15%) cases, Lt. lobe was used. The mean graft-to-recipient weight ratio of the transplanted liver was 1.07. After a median follow-up of 94 months, the probability of survival was 92%. Comparing survival analysis between males and females did not show significant differences.
Conclusions: Most of the patients who received LT for PCLD were more women than men. Patients with PCLD complain of discomfort due to very large liver volume. After LT for PCLD had excellent survival rate.

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Korean J Transplant 2023;37 Suppl 1:S67
https://doi.org/10.4285/ATW2023.F-6424

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical outcomes after living donor liver transplantation for Budd-Chiari syndrome

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Background: Budd-Chiari syndrome (BCS) refers to complete thrombotic obstruction of the venous hepatic outflow tract due to various causes and is an uncommon indication for liver transplantation (LT). These patients present problems such as vascular thrombosis and biliary tract complications. The aim of this study was to review our center experience in LT for BCS.
Methods: Twenty BCS patients who underwent LDLT between March 2001 and February 2023 were analyzed. We analyzed potential effects of disease etiology, vascular events, graft type on long-term survival after transplantation. It contained all patient's liver transplanted for BCS at Asan Medical Center.
Results: Of the 20 patients, 65% were female and 35% were male. Median age at the time of transplantation was 47 years. Median follow-up time was 111 months. The median model for end-stage liver disease score was 12.5 points. Primary BCS was observed in 17 patients (85%). Caval replacement was performed in six patients (30%). Sixteen patients used the right graft, three patients received dual LT, and one patient received Lt. graft was used. The median graft-to-recipient weight ratio was 1.12 points. The median hospital stay was 38 days including before and after surgery. During liver transplantation, median transfused RBD was 10.5 packs. The least amount of transfusion was not transfused, while the most amount of transfusion was 134 RBC packs. After surgery, BD anastomotic stricture occurred in six patients, and bile duct problems were identified as the most common complication after surgery. It was confirmed that 70% of patients were taking warfarin even after surgery. We have observed no recurrence of disease in our BCS patients. Our actual survival rate for BCS group was 95% at 5 years.
Conclusions: Liver transplantation is a good option for BCS with treatment strategy for patients with BCS provides good outcomes.

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Korean J Transplant 2023;37 Suppl 1:S68
https://doi.org/10.4285/ATW2023.F-6441

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Graft size and hepatocellular carcinoma outcomes in adult-to-adult living donor liver transplantation: KOTRY study

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Background: To assess the association between graft-to-recipient weight ratio (GRWR) in adult-to-adult living donor liver transplantation (LDLT) and hepatocellular carcinoma (HCC) recurrence.
Methods: Data for patients who underwent LDLT for HCC between 2014 and 2020 were retrospectively reviewed in the Korean Organ Transplantation Registry (KOTRY) registry. Patients were matched at a 1:3 ratio using propensity score, according to the cutoff of GRWR for HCC recurrence determined by adjusted cubic spline (GRWR <0.7% vs. GRWR 0.7%). Primary outcome was HCC recurrence and secondary outcome was overall survival (OS). In addition, competing-risk analysis through the Fine and Gray method was utilized aiming to assess the association between GRWR and HCC recurrence in entire cohort.
Results: LDLT was performed in 1,321 patients ([n=43, GRWR<0.7] vs. [n=1,278, GRWR 0.7]). In the matched cohort, 1, 3- and 5-years OS were 77.1%, 74.3% and 74.3% in the group with GRWR <0.7, compared to 94.5%, 87.4% and 87.4% in the group with GRWR 0.7 (P=0.038) and 1, 3- and 5-years OS were 94.4%, 80.3%, and 80.3% in the group with GRWR <0.7, compared to 98.9%, 94.6%, and 92.7% in the group with GRWR 0.7 (P=0.041). In the competing-risk regression with entire cohort, GRWR <0.7 (adjusted hazard ratio [aHR], 2.03; 95% confidence interval [CI], 1.06–3.87; P=0.033) were found to be independent risk factors for HCC recurrence, along with other factors such as alpha-fetoprotein levels (aHR, 1.15; 95% CI, 1.08–1.23), protein induced by vitamin K absence or antagonist levels (aHR, 1.12; 95% CI, 1.02–1.22), pretransplant locoregional treatment (aHR, 1.76; 95% CI, 1.13–2.73), viable tumor number (aHR, 1.04; 95% CI, 1.02–1.06), maximum tumor size (aHR, 1.20; 95% CI, 1.14–1.26), and microvascular invasion (aHR, 2.79; 95% CI, 2.00–3.90).
Conclusions: GRWR <0.7 can potentially lead to higher HCC recurrence in adult patients undergoing LDLT. Future high-quality research is encouraged to establish a clear relation between GRWR and HCC recurrence.

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Korean J Transplant 2023;37 Suppl 1:S69
https://doi.org/10.4285/ATW2023.F-6451

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical impact and risk factors of seizure after liver transplantation: a nested case-control study

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Background: Seizure is one of the most common neurological complications of liver transplantation (LT). However, the clinical impact and risk factors for seizures after LT have not been sufficiently investigated. This study evaluated the clinical impact and risk factors for seizures after LT.
Methods: The data of patients who underwent LT in a single tertiary hospital were analyzed using a nested case-control design. Patients diagnosed with seizures (seizure group) within 1-year posttransplantation were matched to controls who had not experienced seizures until the corresponding time points at a 1:5 ratio to perform survival and risk factor analyses.
Results: Seizures developed in 61 of 1,243 patients (4.9%); median time from LT to seizure was 11 (interquartile range, 6–26) days. Five-year graft loss was significantly lower in the seizure group than in the controls (50.6% vs. 78.2%, respectively; P<0.001) and seizure was a significant risk factor for graft loss after adjusting for variables (hazard ratio, 2.04; 95% confidence interval, 1.24–3.33). In multivariable logistic regression, body mass index <23 kg/m^2, donor age 45 years, intraoperative continuous renal replacement therapy, delta sodium level 4 mmol/L, total bilirubin level 2.5 mg/dL, and albumin level <3.5 mg/dL emerged as independent risk factors for post-LT seizure. Delta sodium level 4 mmol/L was associated with seizures, regardless of the severity of preoperative hyponatremia.
Conclusions: This study showed the hazardous effects of seizures on LT outcomes and their risk factors. Identifying the risk factors and controlling perioperative changes in the sodium level are necessary to prevent post-LT seizures.

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Korean J Transplant 2023;37 Suppl 1:S70
https://doi.org/10.4285/ATW2023.F-6477

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Gastrointestinal syndrome due to cytomegalovirus infection after kidney transplantation: a case report

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Cytomegalovirus infection and disease in kidney transplantation are associated with an increased risk of allograft failure and mortality. Cytomegalovirus can establish latent infection after primary infection and can cause many clinical manifestations or syndromes, one of which occurs in the gastrointestinal tract. We present a 53-year-old man with chronic diarrhea, nausea, and malaise. He had a kidney transplantation four years ago with a seropositive immunoglobulin G (IgG) cytomegalovirus donor and recipient. He had seropositive IgM cytomegalovirus after having symptoms. These symptoms were previously treated with antibiotics and symptomatic drugs but did not recover. We treated the patient by giving valganciclovir, 450 mg thrice a day. He also replaced mycophenolate with tacrolimus because the initial test had decreased which increased the risk of allograft failure and after giving 0.5 mg twice-daily, it was stable at 5–10 ng/mL. The result of treatment was very satisfactory as indicated by recover of gastrointestinal syndrome, seronegative IgM cytomegalovirus, increased estimated glomerular filtration rate, and creatinine was stable.

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Korean J Transplant 2023;37 Suppl 1:S71
https://doi.org/10.4285/ATW2023.F-6486

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Donors' biliary variations and complications in living donor liver transplantation: an observational study of 150 cases in Vietnam

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Background: Living donor liver transplant (LDLT) has developed tremendously as a savage therapy for chronic liver disease and malignancy. To optimize the procedure outcome, expert knowledge of surgical liver anatomy variations surgical techniques and pitfalls is essential. Our study aims to evaluate the biliary anatomy variation according to Varoti classification and its correlation with surgical outcomes for both donors and recipients undergoing LDLT.
Methods: We conducted a retrospective analysis of 150 LDLT cases performed at a single center in Vietnam. Preoperative radiologic evaluations and intraoperative surgical assessments were utilized to identify biliary variant anatomy. Postoperative complications, including biliary complications, were documented and analyzed. Statistical analysis was performed to determine any significant associations between biliary variations and posttransplant outcomes.
Results: Our study included 150 cases of LDLT at 108 Military Central Hospital from October 2017 to December 2022. Among the donors, the mean age was 30.89±7.23, with male predominance (77.3%). The prevalence of type 1 biliary anatomy was 84.67%. Type 2, 3a, 3b, 4a, and 4b accounted for 5.33%, 2.67%, 5.33%, 0.67%, and 1.33% of cases, respectively. Donors complications were witnessed in seven cases (4.67%), and all needed intervention (Clavien-Dindo grade 3). Biliary complications were found in 36 recipients (24.0%), with 22 (14.67%) cases of biliary stenosis and 16 (10.67%) cases of biliary leak, including two cases encountering both complications. Age, gender, graft type, preoperative liver function, biliary variant anatomy, number of graft orifices, model for end-stage liver disease score, and blood loss were not significant risk factors for recipients' biliary complications. Cold ischemia time significantly increased the biliary complication rate.
Conclusions: According to our study, biliary variant anatomy is common in liver transplantation donors. However, such variations should not be considered a contraindication to donation but require accurate pre- and intraoperative radiologic and surgical evaluations to plan a careful reconstruction.

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Korean J Transplant 2023;37 Suppl 1:S72
https://doi.org/10.4285/ATW2023.F-6507

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Knowledge and attitudes towards kidney donation and transplantation among Filipino patients in a tertiary hospital's outpatient department

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Background: According to the Global Burden of Disease, chronic kidney disease (CKD) is one of the leading causes of worldwide mortality with global estimated prevalence of 13.4%. Patients with end-stage renal disease (ESRD) needing renal replacement therapy is estimated between 4.902 and 7.083 million. Two treatment options are kidney transplantation (KT) and dialysis. Renal transplant being superior due to its positive impact on life expectancy and quality of life. In the Philippines, over 7,000 ESRD patients are on the renal transplant waiting lists according to the National Kidney and Transplant Institute. Only about 2,500 kidneys had been transplanted since 1963 despite the proven survival advantage and cause effectiveness of KT due to lack of knowledge and negative attitude towards organ donation.
Methods: The researchers administered a structured questionnaire to 372 participants in a tertiary hospital's outpatient unit in the Philippines from April to June, 2023. Data were statistically analyzed using SPSS ver. 25. Relationship between socio-demographic profile, knowledge/attitudes towards kidney donation and transplantation was examined using chi-square. Logistic regression was employed to identify independent predictors. Descriptive statistics were utilized to analyze socio-demographic variables and identify patterns. The prevalence of registered organ donors were determined as percentage.
Results: The study revealed poor knowledge (53.20%, n=198) and negative attitudes (50.30%, n=187) towards kidney donation and transplantation among the respondents. Only 0.30% (n=1) were registered organ donors, while 27.7% (n=103) expressed willingness to register. Concerns about surgery (36.6%) and posttransplant medical treatment (38.2%) were evident. The analysis of factors associated with knowledge levels towards kidney donation and transplantation revealed significant associations with education, employment status, monthly family income, and willingness to register as an organ donor.
Conclusions: The study highlights the need for improved education and awareness programs to address misconceptions and enhance knowledge about kidney donation and transplantation among Filipino patients.

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Korean J Transplant 2023;37 Suppl 1:S73
https://doi.org/10.4285/ATW2023.F-6512

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Expansion and characterization of regulatory T cell populations from Korean kidney transplant recipients

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Background: The development of immunosuppressants has enabled remarkable progress in kidney transplantation (KT). However, current immunosuppressants cannot induce immune tolerance, and their nonspecific immunosuppressive effects result in many adverse effects. Regulatory T cells (Tregs) play crucial roles in controlling allospecific immune responses. This study evaluated the distribution of Tregs and their effects on kidney allograft function in Korean KT recipients.
Methods: We enrolled 113 KT recipients with stable graft function. The differentiation and expansion of Tregs were examined by flow cytometry to compare the Tregs subpopulations.
Results: Among the 113 patients, 73 (64.6%) were males, and the mean follow-up period from KT to Tregs collection was 147.5±111.3 months. Patients receiving lower doses of cyclosporine had higher proportions of Tregs than those with higher doses of cyclosporine (36.3±21.6 vs. 17.0±12.7, P=0.010, respectively). Patients taking cyclosporine tended to have higher Tregs numbers than those taking tacrolimus (94.7±158.1 vs. 49.3±69.4, P=0.095, respectively). However, no significant association was observed between Tregs and allograft dysfunction in the Cox proportional hazard model.
Conclusions: Tregs counts may be associated with the type and dose of immunosuppressants. However, no significant relationship was found between Tregs and kidney allograft function in stable KT recipients.

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Korean J Transplant 2023;37 Suppl 1:S74
https://doi.org/10.4285/ATW2023.F-6516

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Overcoming the most prolonged cold ischemia time in Korea using hypothermic machine perfusion in deceased donor kidney transplantation

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To overcome the scarcity of donor kidneys, marginal grafts have become more prevalent in deceased donor kidney transplantation (DDKT). But they correlate with the inferior outcomes, especially in the case with prolonged cold ischemia time (CIT). Hypothermic machine perfusion (HMP) during graft transportation has been studied as a way to overcome prolonged CIT. We report a case to overcome the longest CIT in Korea using hypothermic machine perfusion (HMP) in DDKT. Donor was a 54-year-old male (Kidney Donor Profile Index [KDPI] 82%) with diabetes. The recipient was a 51-year-old male on peritoneal dialysis, who was end-stage renal disease due to diabetes nephropathy. After procurement, the left kidney was preserved in HMP. Due to the weather issues, the kidney graft was delayed for transportation, total CIT was 28 hours 6 minutes (HMP time: 22 hours 35 minutes). Antithymocyte globulin was given as induction therapy, and the same maintenance immunosuppressants (tacrolimus, mycophenolate mofetil, steroid) were used for the recipient. Postoperative graft function gradually recovered in the patient without problems. Urine output also showed descent amount. The patient showed no sign of delayed graft function (DGF), and were discharged on postoperative day 13 without significant complications. The successful DDKT using a marginal donor graft with the longest CIT by using HMP demonstrates the usefulness of HMP in improving graft quality and in preserving graft function.

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Korean J Transplant 2023;37 Suppl 1:S75
https://doi.org/10.4285/ATW2023.F-6532

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Efficacy and safety of eculizumab for treatment of antibody-mediated rejection following renal transplantation

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Background: We evaluated the efficacy and safety of eculizumab in comparison with plasmapheresis (PP) and intravenous immunoglobulin (IVIG) therapy in renal transplant recipients diagnosed with antibody-mediated rejection (AMR).
Methods: This was a multi-center, open-label, prospective, randomized analysis. The patients were randomized by therapy type (eculizumab infusions or standard of care [SOC]: PP/IVIG). The patients (eculizumab arm: seven patients, SOC arm: four patients) were evaluated for the continued presence of donor-specific antibodies (DSAs) and C4d (staining on biopsy), as well as histological evidence, using repeat renal biopsy after treatment.
Results: The allograft biopsies revealed that eculizumab did not prevent the progression to transplant glomerulopathy. Only two patients in the SOC arm experienced rejection reversal, and no graft losses occurred in either group. Following AMR treatment, the DSA titers generally decreased compared to titers taken at the time of AMR diagnosis. There were no serious adverse effects in the eculizumab arm.
Conclusions: Eculizumab alone cannot treat AMR effectively and does not prevent acute AMR from progressing to chronic AMR or transplant glomerulopathy. However, it should be considered as a potential alternative therapy because it may be associated with decreased DSA levels.

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Korean J Transplant 2023;37 Suppl 1:S76
https://doi.org/10.4285/ATW2023.F-6541

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical effects of early statin use in kidney transplant recipients: results from the KNOW-KT study

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Background: Cardiovascular disease remains a leading cause of morbidity and mortality after kidney transplantation. Although statins reduce cardiovascular risk and have renal benefits in the general population, their effects on kidney transplant recipients are not well-established.
Methods: We studied the effects of early statin use (within 1-year posttransplantation) on long-term outcomes in 714 kidney transplant recipients from the Korean Cohort Study for Outcome in Patients with Kidney Transplantation.
Results: Compared with the control group, statin group recipients were significantly older, had a higher body mass index, and had a higher prevalence of diabetes mellitus. During a median follow-up of 85 months, 74 graft losses occurred (54 death-censored graft losses and 20 deaths). Early statin use was independently associated with lower mortality (hazard ratio, 0.280; 95% confidence interval, 0.111–0.703) and lower death-censored graft loss (hazard ratio, 0.350; 95% confidence interval, 0.198–0.616). Statin therapy significantly reduced low-density lipoprotein cholesterol levels but did not decrease the risk of major adverse cardiovascular events. Biopsy-proven rejection and graft renal function were not significantly different between statin and control groups.
Conclusions: Our findings suggest that early statin use is an effective strategy for reducing low-density lipoprotein cholesterol and improving patient and graft survival after kidney transplantation.

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Korean J Transplant 2023;37 Suppl 1:S77
https://doi.org/10.4285/ATW2023.F-6562

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Intention-to-treat analysis for survival benefit of ABO-incompatible living-donor liver transplantation in patients with a high Model for End-stage Liver Disease score

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Background: ABO-incompatible (ABOi) living donor liver transplantation (LDLT) in high Model for End-stage Liver Disease (MELD) patients stays uncertain. Using an intention-to-treat analysis, the survival benefit of ABOi-LDLT in patients with a high MELD score was investigated. We also compared the posttransplant outcomes following ABOi-LDLT, ABO-compatible (ABOc) LDLT and deceased donor LT (DDLT).

Methods: We retrospectively reviewed 649 patients with a MELD score ≥30 placed on the liver transplantation waitlist in our center. Based on living-donor eligibility and their ABO match, they were divided into three groups: intention-to-treat (ITT) ABOi-LDLT (n=45), ITT-ABOc-LDLT (n=162), ITT-DDLT (n=442).

Results: ITT-ABOi-LDLT group showed higher 1-year patient survival over ITT-DDLT (66.7% vs. 28.7%, P<0.001) and it was independently associated with reduced mortality in multivariable Cox regression (hazard ratio [HR], 0.32). Among patients who received liver transplant, 1-year posttransplant survival of ABOi-LDLT group (n=32) was not significantly different from those of DDLT group (n=170) and ABOc-LDLT group (n=88, 75.0% vs. 67.2% vs. 78.4%, respectively, P=0.130). ABOi-LDLT group showed similar complication rates compared to DDLT group and even ABOc-LDLT group, except for their higher rate of biliary stricture compared to DDLT group (25% vs. 10%, P=0.038). Postoperative outcomes of living-donors were similar between ABOi-LDLT and ABOc-LDLT group. Among ABOi-LDLT group, the higher isoagglutinin titer, the more in-hospital mortality and graft loss tended to occur, however, no association was observed between the initial titer and the rejection or rebound of ABO antibodies.

Conclusions: ABOi-LDLT offers considerable survival benefits over awaiting DDLT, for patients with a high MELD score. Patients who received ABOi-LDLT showed comparable posttransplant outcomes compared to DDLT and even ABOc-LDLT. ABOi-LDLT is a feasible treatment option for patients with a high MELD score.

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Korean J Transplant 2023;37 Suppl 1:S78
https://doi.org/10.4285/ATW2023.F-6578

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Serial changes in serum immunoglobulin post kidney transplantation and its viability as a biomarker for infection

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Background: Previous studies failed to show serum immunoglobulin levels as a biomarker to predict infection because of widely variable degrees in individual immunosuppression and susceptibility. To reflect the individual changes in immune function, the study analyzed serial changes in serum immunoglobulin along with immune modulatory factors of each individual to determine its association with infection.
Methods: A retrospective study of serum samples from 192 kidney transplant recipients from August, 2016 to December, 2019 was undertaken. All patients had serum samples attained from four different periods T0, preoperative baseline; T1, postoperative 2 week; T2, postoperative 3 month; and T3, postoperative 1 year. The serum samples were analyzed for serum C3, C4, immunoglobulin G (IgG), IgA and IgM. The individual differences in the probability of having hypogammaglobulinemia and infection at a certain period were stabilized using IPTW (inverse probability of treatment weighting) methods.
Results: At 2 weeks posttransplantation (T1), IgG and IgA levels significantly decreased, and hypogammaglobulinemia (HGG) and hypocomplementemia (HCC) were most common. HGG was significantly associated with infection requiring hospitalization (hazard ratio [HR], 1.895; 95% confidence interval [CI], 1.871–1.920; P<0.001) and viral infection (HR, 1.152; 95% CI, 1.144–1.160; P<0.001) in the adjusted model for immunosuppression.
Conclusions: Monitoring serum immunoglobulin levels provides insight into immunosuppression in transplant recipients. HGG in the posttransplant period was identified as a risk factor for clinically significant infections. Serum immunoglobulins may serve as a feasible biomarker for infection in kidney transplant patients.

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Korean J Transplant 2023;37 Suppl 1:S79
https://doi.org/10.4285/ATW2023.F-6583

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Large kidney volume is a protective factor against chronic kidney disease in old kidney donors

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Background: Old age is a known risk factor for chronic kidney disease as functional nephron loss occurs starting at the age of 60. This study aimed to assess whether old age kidney donors with larger kidney volumes have lower risks of developing chronic kidney disease after donor nephrectomy.
Methods: A retrospective analysis of 1,087 living kidney donors was performed. The remnant kidney whole volume was measured using preoperative computed tomography through a fully autosegmentated program. A univariate and multivariate analysis for development of chronic kidney disease (CKD) postdonor nephrectomy was performed using preoperative factors including baseline characteristics, laboratory results, and remnant kidney volume.
Results: Compared to young donors (≤60 years, n=1,006), old age donors (>60 years, n=81) had lower baseline estimated glomerular filtration rate (95.6±9.5 vs. 104.5±14.4, P<0.001). Other baseline characteristics, including weight, kidney whole volume quartile distribution, and gender were similar in both groups. The cumulative CKD-free survival for 5-years was worse in old age donors (hazard ratio, 3.36; 95% confidence interval [CI], 2.14–5.26; P<0.001). Multivariate Cox regression model for CKD in old age donors showed that male gender was a significant risk factor (odd ratio [OR], 4.834; 95% CI, 1.746–13.381; P<0.002) and large kidney whole volume to weight ratio was a protective factor against CKD (OR, 0.263; 95% CI, 0.054–1.272; P<0.097).
Conclusions: Large kidney volume to weight ratio acts as a protective factor against the development of chronic kidney disease in old age donors.

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Korean J Transplant 2023;37 Suppl 1:S80
https://doi.org/10.4285/ATW2023.F-6620

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

In vivo porcine study of 3D-printed biodegradable paclitaxel-eluting stent for biliary stricture after liver transplantation

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Background: Liver transplantation is the gold standard treatment for end-stage liver disease, but biliary stricture can occur in 25%–30% of cases, leading to complications. Current methods of treating biliary strictures involve endoscopic stent insertion, which can cause restricture, bleeding, and bowel perforation. We aimed to develop a biodegradable stent loaded with paclitaxel that could be inserted during surgery, without requiring separate removal. We conducted an *in vivo* study in a porcine model to evaluate the safety and efficacy of this stent.

Methods: Fourteen pigs were used and a biodegradable paclitaxel-eluting stent was inserted after duct-to-duct anastomosis. The pigs were divided into four groups based on the type of stent used: no stent group (NS, n=3), bare stent group (BS, n=3), 300 ug paclitaxel stent group (300, n=4), and 900 ug paclitaxel stent group (900, n=4). The pigs were followed up for 3 months after surgery, and computed tomography was performed to confirm the location and degradation of the stent at the 3-month mark. An autopsy was conducted to obtain common bile duct tissue samples, and inflammation and fibrosis thickness were measured under a microscope.

Results: Microscopic examination showed that the inflammation scores for each group were 2.67, 5.33, 3.25, 4.0, respectively (P=0.115). As most tissues had already resolved inflammatory reactions by the 3-month mark, few inflammatory cells were observed. Submucosal layer fibrosis was evaluated after Masson-Trichrome staining, and although statistical significance was absent due to the small sample size, the thinnest fibrosis thickness was observed in the 900 ug group (359.08±167.23 um).

Conclusions: Our study demonstrated the safety of paclitaxel-eluting biodegradable biliary stents and their positive effect on fibrosis in an ischemic bile duct porcine model. Further studies are needed to determine their efficacy in actual liver transplantation situations. This biodegradable stent represents a promising approach to overcome the complication barrier associated with biliary stricture after liver transplantation.

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Korean J Transplant 2023;37 Suppl 1:S81
https://doi.org/10.4285/ATW2023.F-6622

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Implications of panel-reactive antibody and ABO blood type on graft survival in deceased donor kidney transplantation: proposing a novel allocation scheme

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Background: Waiting time to deceased donor kidney transplantation (DDKT) is very long in Asian countries. Prior research has indicated that the likelihood of transplantation for sensitized patients and those with blood type O is notably diminished, and without the provision of additional allocation points, this inequity remains unresolved. due to the constraints of limited deceased donor kidney availability, considerations of utility are inevitable. As such, our study sought to explore the impact of patient sensitization and ABO blood type on graft failure and patient mortality post-DDKT.
Methods: We analyzed adult, waitlisted patients for DDKT from two Korean cohorts: the hospital cohort from two centers and the national database. The patients were classified into two groups based on the maximal panel-reactive antibody (PRA) percentage; <80%, and ≥80% in hospital cohort and two groups according to PRA positivity in both hospital and national cohort. To examine the impact of PRA and ABO blood types on DDKT opportunity and graft failure, a competing risk regression model was used. Additionally, a time-dependent Cox regression model was used to examine the impact of PRA and ABO blood types on patient mortality of DDKT candidates and recipients.
Results: Among 4,722 waitlisted patients in the hospital cohort, 474 (10.0%), 2,611 (55.3%), 1,404 (29.7%), and 234 (5.0%) patients belonged to category A and 315 (6.7%), 2,049 (43.4%), 1,900 (40.2%), and 458 (9.7%) patients belonged to category B. In the national cohort (n=16,410), 1,167 (7.1%), 6,967 (42.5%), 6,465 (39.4%), and 1,811 (11.0%) patients belonged to category B. Prior findings indicate significant disparities in the opportunities for DDKT based on both PRA and ABO blood types.
Conclusions: Our analysis revealed no significant differences in utility outcomes within these cohorts. we propose a novel approach to organ allocation that involves distributing additional points based on the inverse of DDKT opportunities for groups.

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Korean J Transplant 2023;37 Suppl 1:S82
https://doi.org/10.4285/ATW2023.F-6626

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of sensitization and ABO blood types on the opportunity of deceased donor kidney transplantation with prolonged waiting time

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The waiting time to deceased donor kidney transplantation (DDKT) is long in Asian countries. We investigated the impact of sensitization and ABO blood type (ABO) on DDKT opportunity using two Korean cohorts: a hospital cohort from two centers and a national database. The impact of panel-reactive antibody (PRA) based on the maximal PRA percentage and ABO on DDKT accessibility was analyzed using a competing risks regression model. In the hospital cohort (n=4,722), 88.2%, 8.7%, and 3.1% of patients belonged to <80%, 80%–99%, and 99% PRA groups, respectively, and 61.1%, 11.6%, and 27.3% belonged to A or B, AB, and O blood types, respectively. When PRA and ABO were combined, PRA <80%/A or B and 80%≤PRA<99%/AB had fewer DDKT opportunities (median, 12 years; subdistribution hazard ratio [sHR], 0.71) compared with PRA <80%/AB (median, 11 years). Also, PRA <80%/O, 80%≤PRA<99%/A or B, and PRA99%/AB had a much lower DDKT opportunity (median, 13 years; sHR, 0.49). Furthermore, 80%≤PRA<99%/O and PRA99%/non-AB had the lowest DDKT opportunity (sHR, 0.28). We found similar results in the national cohort (n=18,974). In conclusion, an integrated priority system for PRA and ABO is needed to reduce the inequity in DDKT opportunities, particularly in areas with prolonged waiting times.

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Korean J Transplant 2023;37 Suppl 1:S83
https://doi.org/10.4285/ATW2023.F-6664

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The clinical outcome of sequential liver-kidney transplantation

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Background: It is rare for a patient to receive both liver and kidney transplant. In addition, there are not many studies on the outcome when the two organs are transplanted sequentially rather than simultaneously. So, we aimed to evaluate the outcomes of patients who underwent sequential liver-kidney transplantation (SLKT) and compare them with those who maintained dialysis.
Methods: We first retrospectively analyzed 2,615 patients who received KT from 2000 to 2023 at Seoul St. Mary's Hospital. Among them, we found patients with a history of liver transplantation (LT) before KT and analyzed their graft survival. Patients who received simultaneously liver-kidney transplantation were excluded. To compare the outcome with SLKT group, we analyzed patients who maintained dialysis for end-stage renal disease after LT.
Results: Out of 2,615 KT patients who received KT during the period from 2000 to 2023, a total of 11 patients received SLKT. Among them, five people received from the same living donor, five received LT from living donor and then KT from deceased donor, and only one received LT and KT from different living donors. The mean interval between LT and KT was 6.8 years. Only one patient experienced kidney graft failure, receiving KT in 2011 and starting dialysis in 2023, with a graft survival of 12 years. The other 10 patients all maintain kidney function with an average creatinine of 1.92 mg/dL without dialysis after KT, and the longest graft survival period is 13.1 years. During the same period, 28 patients maintained dialysis without KT after receiving LT. Five patients received transplantation from deceased donor and 23 patients received transplantation from a living donor. Among them, seven patients died, showing a mortality rate of 25% and the average duration of dialysis was 3.4 years.
Conclusions: If the post-liver transplantation patient is on dialysis, actively considering KT will be better option for the patient's outcome.

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Korean J Transplant 2023;37 Suppl 1:S84
https://doi.org/10.4285/ATW2023.F-6674

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

24-hour urine sodium excretion among renal donors in India: a cross-sectional study

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Background: High sodium intake is associated with increased risk of hypertension, stroke and cardiovascular disease. Renal donors, with reduced nephron mass, are a vulnerable population with higher risk of hypertension and other comorbidities. There is paucity of literature to assess urinary sodium excretion among renal donors.

Methods: This is a descriptive cross-sectional study of renal donors who came for follow up to MIOT International Hospital from 2019–2021. Sodium excretion was assessed through collection of 24-hour urine and their clinical information was obtained through chart review.

Results: Out of the 104 donors who came for a follow-up visit, 82 donors had a 24-hour urine measurement obtained. Among these donors, 83% of them were females and the mean age at donation was 45.5 years. The median follow-up was 4 years (range, 1–27 years). Mean estimated glomerular filtration rate (eGFR) decreased from 108±14.4 mL/min/1.73 m^2 at the time of donation to 81.4±21.4 mL/min/1.73 m^2 during follow up visit (P<0.0001). The mean 24-hour salt excretion among donors was 9.2±4.8 g /day. The mean 24-hour salt excretion was similar between various subgroups: male vs. female (10.9±4.8 vs. 8.7±4.1 g/day, P=0.07), hypertensive vs. nonhypertensive (9.2±4.8 vs. 8.9±4.1 g/day, P=0.8) and donors with eGFR <60 vs. >60 mL/min/1.73 m^2 (7.6±2.2 vs. 9.3±4.2 g/day, P=0.2). Only 10 out of 82 donors had salt intake less than 5 g/day. More than WHO recommendations (>5 g/day) for salt intake were observed in 87% of the cases.

Conclusions: In conclusion, estimated salt intake is much higher than WHO recommendations in a majority of the renal donors. Physicians should counsel on reducing salt intake in this population.

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Korean J Transplant 2023;37 Suppl 1:S85
https://doi.org/10.4285/ATW2023.F-6680

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Successful laparoscopic living donor right hepatectomy in a case with challenging portal vein variation

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Background: Type 3 refers to cases where the right posterior portal vein serves as the first branch of the main portal vein. In the presence of this anatomical variation, laparoscopic living donor right hepatectomy becomes a challenging surgical technique. Furthermore, the acute angle between the main portal vein and the left portal vein poses a high risk of postoperative portal vein complications. In this video, we demonstrate the technique to overcome these challenges.
Methods: The donors main portal vein and right hepatic artery were clamped with bulldogs, and the midplane of the liver was identified. Adequate dissection of the liver parenchyma was performed, followed by the division of the right bile duct and hilar plate. After resecting the right hepatic artery, the right anterior portal vein and the right posterior portal vein were separately divided. Subsequently, quilt venoplasty was performed using a cryopreserved iliac artery patch to create a single right portal vein during the bench operation.
Results: Laparoscopic living donor right hepatectomy was successfully performed without the need for open conversion, even in a challenging case with anatomically difficult portal vein variation. Postoperatively, Doppler sonography revealed a monophasic flow pattern and normal flow direction in the remnant left portal vein, and the donor's recovery was excellent.
Conclusions: Laparoscopic living donor right hepatectomy of portal veins with challenging anatomical variations is a feasible and safe technique with meticulous planning and precise execution.

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Korean J Transplant 2023;37 Suppl 1:S86
https://doi.org/10.4285/ATW2023.F-6681

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A study of the effectiveness of anti-T-lymphocyte globulin as an induction drug in kidney transplantation

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Background: Polyclonal antibodies, such as antithymocyte globulin (ATG) and anti-T-lymphocyte globulin (ATLG), are often used in solid organ transplant patients. The role and dose of ATLG in Indian patients need to be standardized. This study will report on our clinical experience using ATLG in patients receiving kidney transplants.
Methods: We analyzed the medical records of 110 patients who received ATLG as an induction agent for a kidney transplant from May 2019 to May 2022 for this retrospective, single-center study. Patients received the typical triple immunosuppressive regimen of tacrolimus, mycophenolate mofetil, and methylprednisolone.
Results: A total of 110 patients were given pretransplant ATLG at a mean dosage of 6 mg/kg. There were 77 men (70%) among the 110 patients. The mean age of the patients was 45.03±13.94 years. Patients survived with ATLG (n=106, 96.37%), however, four patients deceased posttransplant, one from acute liver failure, one from antibody-mediated rejection (ABMR), and two with coronavirus disease 2019 (COVID-19) pneumonia. Posttransplant kidney function is preserved, and serum creatinine levels were within acceptable ranges. The majority of the prevalent causes for readmission were urinary tract infection (*E. Coli*; n=8), leucopenia (n=2), acute liver damage (n=1), acute tubular necrosis (n=1), and azotemia (n=1). Posttransplant pneumonia occurred in seven patients, five of whom were caused by Klebsiella and two with COVID-19. Overall, 10 instances of rejection followed by transplant occurred, with six related to cell-mediated and four due to ABMR. ATLG displayed statistically significant immunosuppression in absolute lymphocyte count, absolute CD3, absolute CD4, absolute CD8, and CD4/CD8 ratio as an induction agent (P<0.0001).
Conclusions: In kidney transplant recipients, the use of ATLG as an induction agent offers sufficient immunosuppression with a high overall survival rate. A proactive strategy is required for urinary tract infection prevention.

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Korean J Transplant 2023;37 Suppl 1:S87
https://doi.org/10.4285/ATW2023.F-6687

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Adult-to-adult right lobe graft living donor liver transplantation for acute-on-chronic liver failure: a single-center experience in Vietnam

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Background: Acute-on-chronic liver failure (ACLF) has a high mortality rate, and liver transplants are considered a definite treatment for patients with this condition. This study aims to evaluate the outcomes of living donor liver transplantation (LDLT) on ACLF patients in a single center.
Methods: This is a retrospective study at the 108 Military Central Hospital, enrolling 51 patients diagnosed with ACLF based on Asian Pacific Association for the Study of the Liver (APASL) criteria who underwent LDLT with the right lobe graft from December 2019 to December 2022. We utilize the Model for End-Stage Liver Disease (MELD) and APASL-ACLF Research Consortium (AARC) scores to evaluate and stratify the severity of ACLF.
Results: The average age of all patients is 47.27±13.61, with 88.24% are male. The average body mass index was 22.78±2.61. The most common underlying liver disease is chronic viral hepatitis B (88.2%). The average MELD score of the patients is 34.90±5.61, with 33.3% having MELD score of more than 40. In terms of ACLF severity, five patients (9.8%) had grade I ACLF, 35 patients (68.6%) had grade II ACLF, and 11 patients (21.6%) had grade III ACLF. The average AARC score was 9.43±1.68. The duration of treatment in the intensive care unit is 8.59±7.27 days, and the length of stay is 28.02±13.45 days. The most common posttransplant complication is biliary complication (19.61%), with a mortality in seven patients (13.7%). The survival rates at 6 months, 1 year, and 3 years are 84%, 81.7%, and 81.7%, respectively.
Conclusions: LDLT for ACLF patients is safe and has a high posttransplant survival rate. Multidisciplinary care before, during, and after surgery, and the decision to do liver transplant early, is essential in saving the lives of ACLF patients.

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Korean J Transplant 2023;37 Suppl 1:S88
https://doi.org/10.4285/ATW2023.F-6698

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Effect of renal transplantation on pulmonary artery hypertension: a single-center study

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Background: Moderate to severe pulmonary artery hypertension (PAH) is a strong independent predictor of mortality in hemodialysis (HD) patients and in those undergoing noncardiac surgery. We aimed to study the effect of renal transplantation on pulmonary artery systolic pressure (PASP) in chronic kidney disease stage 5 patients on maintenance HD.
Methods: Patients on maintenance HD who are prospective renal allograft recipients were included in the study. PAH was defined as patients with PASP 35 mmHg. Pulmonary artery pressure by two-dimensional echocardiography was measured within a month before transplantation and followed up at 3 and 6 months postrenal transplantation. The primary outcome was to assess the change in PASP before transplantation and after 3 and 6 months postrenal transplantation. The secondary outcome was to evaluate the association of delayed graft function postrenal transplantation with PASP.
Results: A total of 35 patients were included in the study over 3 years. The mean age of patients was 41.60±12.43. A total of 12 patients (34%) had pulmonary hypertension with 14%, 11%, and 9% as mild, moderate and severe, respectively. PAH was positively associated with the duration of chronic kidney disease (CKD; P=0.004) and the presence of arteriovenous fistula (P=0.03). However, no association was found with the duration of HD. The comparison of change in mean PASP at 0, 3 and 6 months was statistically significant (P<0.001). No association was found between delayed graft function with PASP.
Conclusions: Renal transplantation may have a positive impact on PAH in CKD stage 5 patients on maintenance HD. The decrease in PASP following transplantation indicates an improvement in pulmonary artery pressures and suggests that renal transplantation could potentially alleviate the burden of PAH in these patients.

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Korean J Transplant 2023;37 Suppl 1:S89
https://doi.org/10.4285/ATW2023.F-6710

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Biliary complications after living donor right lobe liver transplantation in adults

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Background: Biliary complications are one of the most frequent and serious problems after liver transplantation, that occur from 10% to 40% cases. The aim of this study is to analyze the results of liver transplantation in our center.
Methods: From December 2011 to July 2023, 211 adult liver transplantation was performed at the A.N. Syzganov National Research Center. Liver transplantation from a living related donor was performed in 186 patients (88.1%). The right lobe graft was used in 165 (91.1%) cases. Frame drains were used in 85 cases (51.5%) and 80 patients (48.5%) without a frame, respectively. According to the type of bile ducts of a living donor, they were divided into groups A (n=130), B (n=6) and C (n=29).
Results: In the postoperative period, 35 patients (18.8%) developed biliary complications. Five patients (14.2%) had bile leakage, in three patients (60%) it was corrected by percutaneous method for biloma, in two patients (40%) were applied open surgery for biliary peritonitis, in six patients (85.7%) were developed biliary stricture. Endoscopic retrograde cholangiopancreatography with endobiliary stenting was performed in 28 patients with biliary strictures. Magnetic compression was used for two of them and in three cases were used rendezvous method. The effectiveness of endoscopic retrograde cholangiopancreatography was 100% of cases. In three patients, percutaneous transhepatic biliary drainage with antegrade stenting was performed. One recipient with a biliary complication was retransplanted from a deceased donor with a positive effect.
Conclusions: Biliary complications in most cases are corrected by minimally invasive methods, which is the main treatment tactic, if it is impossible to carry it out, we conduct open surgery. Improving the correction methods of biliary complications will lead to improved results after liver transplantation.

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Korean J Transplant 2023;37 Suppl 1:S90
https://doi.org/10.4285/ATW2023.F-6726

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A comparison between continuous glucose monitoring and capillary blood glucose monitoring for predicting new-onset diabetes after kidney transplantation

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Background: New-onset diabetes after kidney transplantation (NODAT) is a common and significant complication that negatively impacts graft and patient survival. Perioperative continuous glucose monitoring (CGM) has been proposed as a means to predict patients with high risk for NODAT. We have completed a follow-up for the Seoul National University kidney transplantation (KT) CGM study, previously presented as an interim report.
Methods: From the patients in our prospective observational study, we selected 60 patients who were nondiabetic before the transplant and had a 6-month complete follow-up posttransplantation. We analyzed the risk factors for NODAT occurrence and compared the predictive power of CGM and capillary blood glucose (CBG) monitoring for NODAT occurrence.
Results: A total of 14 patients (23.3%) developed NODAT. The NODAT patients were older, more prominent in male, revealed higher mean tacrolimus level during hospitalization and at the time of discharge compared to non-NODAT patients. Preoperative CGM showed that NODAT patients had higher mean glucose levels, glucose management index and daily peak glucose levels. Postoperative CBG and CGM showed higher mean glucose levels, and daily peak glucose in NODAT patients. Furthermore, postoperative CGM revealed higher rate of time with blood sugar levels exceeding 180 mg/dL in NODAT patients. Multivariate analysis showed that preoperative risk factors for NODAT were male (odds ratio [OR], 22.68; 95% confidence interval [CI], 1.64–313.95; P=0.020) and preoperative daily peak glucose level (OR, 1.072; 95% CI, 1.009–1.138; P=0.023). Postoperative risk factors were mean glucose level (OR, 1.070; 95% CI, 1.009–1.135; P=0.025) and mean daily peak glucose level (OR, 1.065; 95% CI, 1.010–1.122; P=0.020). We compared the predictive power for NODAT using CBG and CGM models, and the CGM model demonstrated more sensitive (area under the curve, 0.938 vs. 0.862).
Conclusions: Male patients with higher preoperative daily peak glucose level and higher postoperative mean and daily peak glucose level showed increased risks for NODAT. The use of perioperative CGM may be useful in predicting the occurrence of NODAT.

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Korean J Transplant 2023;37 Suppl 1:S91
https://doi.org/10.4285/ATW2023.F-6739

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Association between early allograft dysfunction and requirement of renal replacement therapy in liver transplant recipients

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Background: Early allograft dysfunction (EAD) after liver transplantation can result in adverse graft and patient outcomes. However, the association between EAD and performance of renal replacement therapy (RRT) remains unclear. We retrospectively investigated the impact of EAD on RRT requirement within 7 days following liver transplantation.
Methods: EAD was defined as the presence of one or more of the following: total bilirubin 10 mg/dL or international normalized ratio 1.6 on day 7, or aspartate aminotransferase or alanine aminotransferase level >2,000 U/L within the first 7 days after liver transplantation.
Results: A total of 76 patients underwent liver transplantation and EAD occurred in 15 recipients (19.2%). The incidence of EAD was associated with the model for end-stage liver disease score and donor age (P=0.053 and 0.011), whereas it was not related to recipient age and sex, donor sex, and deceased donor (P=0.986, 0.464, 0.843, and 0.167, respectively). RRT was performed within 7 days of liver transplantation in 18 patients (23.1%). Eight (13.1%) out of 61 recipients with normal early allograft function experienced RRT, whereas 10 (66.7%) out of 15 recipients with EAD experienced RRT (P<0.001). There was an association between EAD and RRT performance, independent of recipient age and sex, Model for End-stage Liver Disease score, donor age and sex, and deceased donor (P=0.003). In addition, the area under the curve for the probability of RRT need was estimated using the variable for EAD, and total bilirubin on day 7 predicted RRT requirements after liver transplantation (area under the curve, 0.83; P<0.001).
Conclusions: EAD appears to increase the likelihood of performing RRT after liver transplantation. Therefore, efforts to prevent the occurrence of EAD are needed to improve the renal prognosis of liver transplant recipients.

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Korean J Transplant 2023;37 Suppl 1:S92
https://doi.org/10.4285/ATW2023.F-6754

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Role of protease-activated receptor-1 in the inflammatory response in a coculture model of pig endothelial cells and human monocytes

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Coagulation dysregulation and persistent systemic inflammation are critical huddles for successful pig-to-primate solid organ xenotransplantation. Protease-activated receptors (PARs) are a family of G protein-coupled receptors that play a role in inflammation and coagulation through their interaction with the ligand thrombin. In this study, we investigated the role of PAR-1 in the expression of inflammatory mediators and intracellular calcium ion levels in a coculture model of pig endothelial cells (pECs) and human monocytes (hMOs), using a PAR-1 inhibitor and human thrombin. PAR-1 inhibition reversed the increased expression of inflammatory mediators and tissue factors in pEC-hMO cocultures. Human thrombin increased intracellular Ca^{2+} levels in hECs but not pECs. PAR-1 inhibition reversed the enhanced Ca^{2+} levels in hECs. Human thrombin enhanced the expression of inflammatory mediators and endothelial permeability in hECs but not pECs. PAR-1 inhibition reversed the enhanced expression of inflammatory mediators and endothelial permeability in hECs. Human thrombin enhanced PAR-1 phosphorylation, which was suppressed by the PAR-1 inhibitor. The unresponsiveness of pECs to human thrombin was found to be due to the difference in the amino acid sequence of PAR-1 between humans and pigs. This study has demonstrated, for the first time, the molecular incompatibility of PAR-1 between humans and pigs. This work was supported by the Cooperative Research Program for Agriculture Science and Technology Development (Project No. PJ015607).

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Korean J Transplant 2023;37 Suppl 1:S93
https://doi.org/10.4285/ATW2023.F-6757

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A study on donation activities of Korea Organ Donation Agency coordinators during the epidemic period

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Background: The purpose of the study was to investigate the changes in organ donation resulting from the altered activities of Korea Organ Donation Agency (KODA) coordinators during the pandemic. Due to restrictions on visitations and travel, medical professionals were unable to conduct face-to-face meetings with potential organ donors and their families. Thus, the study aimed to analyze the number of organ donors in affiliated medical institutions and nonaffiliated medical institutions (HOPO) during the pandemic, based on data from KODA statistics from January 2019 to December 2022.
Methods: The study found that KODA coordinators used several methods to prevent the spread of infection, such as remote communication for consent, consent in nonmedical locations, and collaboration with coordinators from other regions. The number of remote consents increased each year, with the highest number in 2021. KODA-affiliated medical institutions showed a steady increase in organ donation over the study period, while the number of organ donations from HOPO decreased sharply each year.
Results: In conclusion, the study revealed that the pandemic had some impact on organ donation in Korea, but KODA coordinators adapted their activities to ensure the safety of potential donors and their families.
Conclusions: The study also showed that KODA-affiliated medical institutions had a higher number of organ donations than nonaffiliated medical institutions, indicating the importance of collaboration between medical institutions and KODA coordinators for successful organ donation.

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Korean J Transplant 2023;37 Suppl 1:S94
https://doi.org/10.4285/ATW2023.F-6765

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Assessment of human leukocyte antigen antibody dynamics in patients awaiting kidney transplantation

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Background: Although preexisting anti-human leukocyte antigen (HLA) antibodies are regularly monitored for changes in patients awaiting kidney transplantation (KT), the natural kinetics of HLA antibodies over time have yet to be fully elucidated. This study aims to investigate the dynamics of anti-HLA antibodies using the single antigen bead (SAB) assay in patients waiting KT.

Methods: A retrospective review was conducted on SAB test results of 5,757 patients (2016–2023). The inclusion criteria were met by 316 patients, with SAB assay measurements on at least two occasions, separated by a minimum interval of 6 months, and no prior history of immunosuppression. The SAB results were categorized based on the peak mean fluorescence intensity (MFI) levels into different grades: strong (10,000≤MFI), moderate (5,000 to 10,000), weak-moderate (3,000 to 5,000), weak (1,000 to 3,000), and negative (MFI≤1,000).

Results: Of 316, 198 (62.7%) and 184 (58.2%) had no changes in class I and class II MFI grades, respectively. For class I and class II antibody, 73 (22.1%) and 89 (26.3%) patients showed an increase, whereas 45 (13.6%) and 43 (12.0%) patients showed a decrease, respectively. Significant MFI changes (2 MFI grade≤) were found in 26 patients (8.2%) for class I (18 increase, 8 decrease) and 20 (6.3%) for class II (16 increase, 4 decrease). Of 49 patients who had three or more SAB assay results, 38 patients (77.5%) did not show significant MFI changes. Interestingly, one patient, a 68-year-old woman showed spontaneous resolution of HLA antibodies (from 7,631 MFI to negative during 6 years period), despite no documented sensitization history or immunosuppression.

Conclusions: While most patients demonstrated stable dynamics of anti-HLA antibodies, we also observed significant changes, including a case of spontaneous resolution. These findings highlight the individualized nature of anti-HLA antibody dynamics and emphasize the complexity of alloimmunity. Further investigations are necessary to elucidate the underlying mechanisms driving such changes and evaluate their impact on KT outcomes.

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Korean J Transplant 2023;37 Suppl 1:S95
https://doi.org/10.4285/ATW2023.F-6767

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical effects of different perioperative antibiotic prophylaxis in kidney transplant recipients

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Background: While urinary tract infections (UTIs) are common post-kidney transplantation, the optimal perioperative antibiotic prophylaxis to prevent these remains undefined. In this quasiexperimental study, we compared the clinical efficacy of five days of ampicillin/sulbactam versus a single dose of cefazolin.
Methods: We retrospectively analyzed 2,322 kidney transplant patients from a single center between 2015 and 2021. In February 2018, we transitioned from a 5-day regimen of ampicillin/sulbactam to a single dose of cefazolin. Patients were stratified into two groups based on the timing of their transplantation in relation to the policy change: 971 received ampicillin/sulbactam and 1,351 received cefazolin. We compared the postoperative infection and acute rejection (AR) rates between these two groups and investigated the risk factors for UTI and AR.
Results: When UTI is defined as bacteriuria with urinary symptoms, the cefazolin group showed a tendency towards a higher UTI rate within 1 month posttransplantation (3.4% vs. 2.2%, P=0.078). A multivariate logistic regression analysis indicated that a single cefazolin dose was significantly associated with an increased UTI risk (odds ratio [OR], 1.72; 95% confidence interval [CI], 1.02–2.93; P=0.04). The 6-month AR rate was significantly lower in the cefazolin group (7.9% in ampicillin/sulbactam group, 5.1% in cefazolin group). This was also confirmed as significantly reducing 6-month AR in the multivariable logistic regression test (OR, 0.63; 95% CI, 0.45–0.89; P=0.009).
Conclusions: In this quasiexperimental study, we found that a single dose of cefazolin as perioperative antibiotic prophylaxis was associated with a tendency towards increased UTI rates (defined as bacteriuria with urinary symptoms) within 1 month after transplantation. However, this regimen was linked to a reduced 6-month AR rate.

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Korean J Transplant 2023;37 Suppl 1:S96
https://doi.org/10.4285/ATW2023.F-6798

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The diagnosis of acute antibody-mediated rejection was delayed due to the initial suspicion of graft dysfunction caused by renal artery stenosis

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Mechanical kinking leading to transplant renal artery stenosis is an uncommon yet noteworthy complication observed in kidney transplantation. This condition can result in graft dysfunction due to inadequate blood flow, potentially causing slow graft function or even complete kidney infarction. This case involves a 52-year-old male patient who received a kidney transplant. The patients panel reactive antibody was 75% for class I and 0% for class II. The number of human leukocyte antigens mismatches was four, and in class I donor-specific antibodies, there was a weak positive reaction to Cw9. Before the surgery, rituximab was administered, and basiliximab was used for induction. As the donors left renal function was better than the right kidney, they planned to receive the right. Afterward, anastomosis was performed, and due to the discrepancy in arterial and venous lengths, the graft kidney was positioned horizontally. An ultrasound was performed on the 4th postoperative day, revealing an elevated resistive index (RI) value (0.8) and an increased peak systolic velocity (PSV; 211 cm/sec) in the renal artery. As a result, magnetic resonance angiography was conducted on the 6th postoperative day. The finding of focal tortuosity of the transplanted renal artery proximal portion causing minimal luminal narrowing was noted. However, on the 7th day after the surgery, a repeat ultrasound showed a decrease in the renal arteries PSV (130 cm/sec) and an RI value (1.0). Subsequently, a biopsy was performed and evidence of antibody-mediated rejection was confirmed. Following three rounds of therapeutic plasma exchange and intravenous immunoglobulin treatment, along with rituximab administration, the patient's creatine level, which had been above two, decreased to 1.5. In conclusion, although there was sufficient suspicion for renal artery stenosis as the cause of slowly graft function, it is essential to explore various angles to identify the underlying factors.

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Korean J Transplant 2023;37 Suppl 1:S97
https://doi.org/10.4285/ATW2023.F-6808

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The usefulness of lymphangiography in the lymphocele after renal transplantation

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Background: After kidney transplantation, lymphatic leakage is a relatively common complication. Lymphangiography is used for diagnostic purposes, and various therapeutic effects have also been reported in these cases. Therefore, in this study, we aim to investigate their therapeutic effects.
Methods: Between September 2020 and April 2023, lymphangiography for lymphatic leakage was performed in five patients (two male, three female; age range 62 to 67) after renal transplantation. Lymphorrhea is defined as the continuous measurement of 100 mL or more of lymphatic fluid per day after the removal of the urinary catheter, around postoperative day 7, once urinary leakage has been ruled out based on blood urea nitrogen and creatinine levels. We conducted intranodal method lymphangiography in these patients, using a 25-gauge needle to inject lipiodol. Subsequently, we observed changes in the drainage volume.
Results: The amount of drainage before lymphangiography was 369.5 to 617 mL per day. Intranodal lymphangiography was technically successful in all cases. When examining the ratio of drainage volume before and after the procedure, we observed a maximum decrease of up to 98.3% and an average reduction of approximately 63.3%. Among the five cases, in one case, the immediate postprocedure reduction rate was only 10.3%. However, after reattempting the procedure 2 days later, we observed a reduction of 75.9%. In another case, the initial attempt resulted in a reduction of 47.9%. However, even after a period of approximately 2 weeks, there was no further decrease in drainage volume. Subsequently, we reattempted the procedure, and it led to an additional reduction of 37.2%. Eventually, the drainage volume decreased to 165 mL per day, allowing us to conclude the drain placement successfully.
Conclusions: Although intranodal lymphangiography is originally a diagnostic tool, it has been proven to be a safe and effective method when used for the therapeutic management of lymphorrhea after kidney transplantation.

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Korean J Transplant 2023;37 Suppl 1:S98
https://doi.org/10.4285/ATW2023.F-6809

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Non-human leukocyte antigen autoantibodies with antibody- or T cell-mediated rejection in kidney transplantation: three cases report with literature review

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Non-human leukocyte antigen antibodies (N-HLA Abs) have been suggested to impact of with kidney allograft rejection and graft loss in kidney transplantation (KT). We report three KT cases of patients with N-HLA autoAbs in antibody-mediated rejection (AMR) and T cell-mediated rejection (TCMR) showing negative panel-reactive antibody (PRA), donor-specific antibody (DSA), and C1q antibody (C1qA). First case was a 62-year-old male who underwent graft nephrectomy 12 days after first KT due to AMR. Using LABScreen Autoantibody assay (One lambda), nine of 39 N-HLA autoAbs were (vimentin, PRKCH, CXCL11, CXCL10, GAPDH, ARHGDIB, HNRNPK, IFNG, and REG3A) were above a cut-off of 95% nonsensitized population (NSP). The second case, a 42-year-old male, presented with both AMR and acute TCMR at 16 months 16 days after KT. None of 39 N-HLA autoAbs were above a cut-off of 95% NSP, but three non-HLA autoAbs (FLRT2, AGRIN, and GSTT1) were above of cut-off of 85% of NSP. He was discharged after therapeutic plasmapheresis, rituximab treatment, steroid pulse therapy (SPT), and antithymocyte globulin rescue therapy. The third case, a 48-year-old male, presented with third acute TCMR at 33 months 7 days after first KT. In three N-HLA autoAbs (FLRT2, CXCL10, and CXCL9) above a cut-off of 85% NSP, especially CXCL9 was above a cut-off of 95% NSP. He discharged after SPT. Although N-HLA autoAbs were heterogeneous regarding the target antigens, positive cut-offs, and mean fluorescence intensity in this study, they might be associated with TCMR as well as AMR. To clarify the role of N-HLA autoAbs in KT, further evaluation on cut-offs for positivity using large population is needed.

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Korean J Transplant 2023;37 Suppl 1:S99
https://doi.org/10.4285/ATW2023.F-6817

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Cases of inadequate donation in the operating room

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Background: We conducted a comparative analysis of cases of brain-dead donors who were not eligible for donation in the operating room (OR) in Korea for 10 years from 2013 to 2022. By analyzing these people, we try to seek measures for reducing inadequate donation cases and achieving successful donations.
Methods: Over the past 10 years from 2013 to 2022, managed donors were 5,020, of which 4,455 completed organ donation and 565 failed organ donations. Among them, a retrospective survey was conducted on 94 (17%) who were not suitable for organ donation in the OR.
Results: The average age was 57 years, and men were 63.8%, and women were 36.2%. The causes of brain death were cerebrovascular/stroke 27.6%, hypoxic brain damage 38.2%, head trauma 32.9%, and other 1%. It took an average of 4.6 days for notification of potential brain-dead (PBD) from the day of hospital admission, and it took an average of 2.8 days to enter the OR from notification of PBD. The reasons for inadequate donations in the OR were poor organ condition 89.3%, death of the patient 2.1%, malignant tumor 7.5%, nontransplant recipients 1%.
Conclusions: Organ shortage is a serious problem and a problem that should be solved in every country around the world. Professional donor management is essential for the success of brain-dead organ donation, and the process of donation should be conducted instantly to reduce the cases of inadequate donation, considering the age, medical condition, and past medical history of brain-dead patients. To do this, education on the medical team and the establishment of donation consultation protocol are needed to explain the possibility of PBD, and donation of organs at early consultation to protectors, active treatment of brain-dead people is needed to maintain the donor's vital signs and optimal function of each organ. Since the brain death state is unstable, bedside examination are mainly performed, so there may be limitations in organ evaluation. The improvement of stability by supplementing evaluation of organ, and close discussion on suitable exam based on the donor's condition are needed.

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Korean J Transplant 2023;37 Suppl 1:S100
https://doi.org/10.4285/ATW2023.F-6821

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Histoplasmosis masquerading as hemophagocytic lymphohistiocytosis in renal allograft recipient: a case report

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Histoplasmosis, caused by Histoplasma capsulatum, is a dimorphic fungal infection prevalent in soil contaminated with pigeon and bat droppings. Most commonly it presents as pulmonary histoplasmosis and disseminated histoplasmosis with involvement of bone marrow in up to one third cases presenting as anemia, leukopenia and refractory thrombocytopenia. Only a few cases of histoplasmosis are reported from the Gangetic plains in India. Due to rarity of the entity and nonspecific symptoms early diagnosis can be challenging. It can be easily misdiagnosed as tuberculosis in Indian setting due to high endemicity of tuberculosis which my lead to delay in treatment. A 44-year-old male with posttransplant status of 1 year with stable graft function presented with low-grade fever, weakness, ecchymotic patches all over his body, and oral mucosal bleed. He had pancytopenia with hemoglobin of 6.8 mg/dL, total leucocyte count of 3,150/cu mm, platelet count of 1,000/mcL, with normal creatinine (1.01 mg/dL). Three weeks prior to this presentation, the patient had a history of mild coronavirus disease 2019 (COVID-19) infection. Various infectious causes were ruled out. In view of pancytopenia, high serum ferritin of 4,025 ng/mL, serum triglyceride of 165 mg/dL, patient was started on intravenous immunoglobulin and intravenous steroids suspecting hemophagocytic lymphohistiocytosis secondary to post-COVID-19 infection. Further, a bone marrow biopsy was done which showed histoplasmosis. To rule out disseminated infection, a chest computed tomography scan was done which was normal. However, the urinary antigen for histoplasmosis was positive. Subsequently, treatment with liposomal amphotericin B (4 mg/kg/day) led to a gradual improvement in pancytopenia. The patient was discharged on oral itraconazole, with reduced immunosuppression using steroids and tacrolimus. Currently, the patient's condition is stable with normal blood counts, and graft function. This case highlights the importance of considering opportunistic infections, such as histoplasmosis, in immunosuppressed patients, especially after organ transplantation. Early diagnosis and prompt treatment are crucial for better outcomes in such cases.

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Korean J Transplant 2023;37 Suppl 1:S101
https://doi.org/10.4285/ATW2023.F-6825

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Association of human leukocyte antigen homozygosity and *de novo* malignancies in kidney transplant recipients

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Background: Human leukocyte antigen (HLA) plays a crucial role in the immune response through antigen recognition. Homozygosity at HLA loci may lead to reduced immunosurveillance and an increased risk of malignancy. However, the impact of HLA diversity on *de novo* malignancy in kidney transplant recipients has not been thoroughly assessed.
Methods: We conducted a retrospective analysis of 2,157 adult kidney transplant recipients who underwent transplantation at Severance Hospital between 2006 and 2020. To address the diverse timeframes for malignancy occurrence after transplantation, we employed a nested case-control study design. The *de novo* malignancy group patients were carefully matched with the control group in a 1:3 ratio, considering both the year of transplantation and the malignancy index date.
Results: During a median follow-up of 99 months, a total of 184 patients were diagnosed with *de novo* malignancy after kidney transplantation. The *de novo* malignancy group exhibited significantly lower patient survival compared to the control group. However, there was no significant difference in death-censored graft survival between the two groups. Our multivariable analysis confirmed that HLA-B homozygosity was independently associated with *de novo* malignancy (odds ratio, 2.08; 95% confidence interval, 1.14–3.70; P=0.015). Furthermore, recipient older age, deceased donor kidney transplant, higher body mass index, hepatitis B virus carrier status, and a history of pretransplant malignancy were identified as independent risk factors for *de novo* malignancy.
Conclusions: Our findings suggest that HLA-B homozygosity is associated with an increased risk of *de novo* malignancies after kidney transplantation.

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Korean J Transplant 2023;37 Suppl 1:S102
https://doi.org/10.4285/ATW2023.F-6827

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Pretransplant dialysis vintage and outcomes after kidney transplantation: a retrospective cohort study

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Background: The advantage of preemptive kidney transplantation (KT) is well established, but the association of dialysis vintage with allograft survival is less clear. We evaluated the prognosis of KT recipients according to pretransplant dialysis vintage.
Methods: We retrospectively evaluated 1,843 first KT recipients transplanted between 2006 to 2021 at Seoul St. Mary's Hospital. Duration of dialysis was used as a categorical variable divided by tertiles according to distribution of time of analysis, and preemptive transplantation was categorized as a separate group. Primary outcomes were death-censored graft loss and all-cause mortality and composite outcomes.
Results: Preemptive KT was received by 369 patients, with average pretransplant dialysis periods of 1.2 months, 21.4 months, and 107.6 months for each tertile, which included 491 patients, respectively. Mean duration of follow-up was 87 months, during which 88 (4.8%) deaths and 232 (12.6%) graft losses occurred. There were no significant differences in overall survival for the first or second tertile compared to preemptive KT group. However, the third tertile showed a significantly higher all-cause mortality (adjusted hazard ratio, 3.156; 95% confidence interval, 1.476–6.750; P=0.003). Although the rate of graft failure was highest in the third tertile, there were no statistically significant differences in death-censored graft loss or the composite outcome.
Conclusions: A longer period of pretransplant dialysis was associated with a higher risk of all-cause mortality. However, the association between longer dialysis vintage and increased risk of graft failure was unclear.

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Korean J Transplant 2023;37 Suppl 1:S103
https://doi.org/10.4285/ATW2023.F-6862

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Endocrine and exocrine function replacement by pancreas transplant alone: a case report on the oldest recipient in Korea

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In general, pancreas transplantation alone (PTA) is contraindicated for recipients older than 60 years. However, it could be performed if the recipient was healthy enough to undergo transplantation and the benefits of transplantation are evident. Here, we present a case of successful pancreas transplantation in Korea's oldest patient. A 71-year-old male who was diagnosed with intraductal palliary mucinous neoplasm of pancreas visited to outpatient clinic. Through a total pancreatectomy and biopsy, an intraductal papillary mucinous tumor without malignant transformation was identified. Following surgery, he complained of upper abdominal pain, dyspepsia, and disordered blood sugar control. In 19 months, his weight decreased from 75 kg to 52 kg, and his HbA1c level rose from 5.8% to 7.8%. Due to the severity of his symptoms and the inconvenience of exogenous insulin treatment, he underwent PTA. One year after transplantation, his HbA1c level had normalized, decreasing from 7.9% before pancreas transplantation alone to 5.2% 1 year after transplantation. The recipient had no dyspepsia symptoms without the use of digestive medications. And the recovered weight was 64 kg. The PTA is an option for treatment not only for insulin-dependent diabetes, but also for exocrine dysfunction. And the biologic age of the recipient may be more significant than the chronological age in pancreas transplants alone.

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Korean J Transplant 2023;37 Suppl 1:S104
https://doi.org/10.4285/ATW2023.F-6876

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A therapeutic study of stem cell transplantation in rat stroke model

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Background: Stem cell therapy is an advanced method of regenerative medicine that replace damaged stem cells to recover irreversible damaged tissues. Especially, the therapeutic strategy has been noticed in a field of neurological disease such as brain injury. Here, we performed *in vivo* study to investigate engraftment rate and efficacy of neural stem cells (NSCs) in rat stroke model.

Methods: The subcortical capsular infarct (SCI) with persistent motor impairment was induced by internal capsule destruction by photothrombotic methods in rats (n=12). NSCs were cultured from rat fetal brain (TP 14), and lenti virus containing them was labeled with green fluorescent protein (GFP). Hyaluronic acid was also injected to improve the engraftment rate of NSCs. NSCs were injected to the infarction area about 7 days after capsular infarct. The Single Pellet Reaching Task (SPRT) and open field tests was conducted to assess the motor system improvement. H&E staining and immunohistochemistry was performed to evaluate infarction measurement and engraftment rate.

Results: As a result, motor deficits and complete infarction of posterior limb of internal capsule were observed. In GFP staining, some of NSCs were successfully transplanted nearby infarction site and engraftment rate were also improved by co-treatment with 1% hyaluronic acid. In addition, we observed that some of injected NSC population differentiated into early stage of neurons (DCX+), oligodendrocytes (Olig2+), and astrocytes (GFAP+) in the penumbra, however most remained undifferentiated (Sox2+). SPRT score increased about 20% compared to pre-SCI modeling in two animals for 3–5 weeks after transplantation, but no significant improvement in motor function was detected in other animals.

Conclusions: In this study, the possibility of recovery by NSCs injection was presented in SCI model. It is expected that successful engraftment of NSCs can be differentiated into functional cells, leading to an effective therapeutic strategy for patients with stroke.

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Korean J Transplant 2023;37 Suppl 1:S105
https://doi.org/10.4285/ATW2023.F-6878

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A case report of antibody-mediated rejection after re-pancreas transplant alone

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In insulin-dependent diabetic patients without renal dysfunction, pancreas transplantation alone (PTA) is one of the treatment options. However, antibody-mediated rejection (AMR) after organ transplant is the one of the primary obstacles to expanding the PTA criteria. Here, we report graft failure in a re-pancreas transplant recipient due to AMR. A 42-year-old male with type 1 diabetes and frequent hypoglycemia received a transplant of the pancreas alone. The operation itself was successful, and the recipient was discharged from the hospital in a normoglycemic state without any exogenous insulin treatment. However, serum levels of amylase and lipase were elevated 4 months after transplantation. A biopsy guided by ultrasound was performed, and the pathology report revealed indeterminate acute cellular rejection. After steroid pulse therapy, the enzyme level was normalized, but the function of the graft was impaired. A second pancreas transplant was conducted 2 years after the initial transplant. The anti-DQ8 antibody at the retransplant was donor-specific antibody (MFI 1717). The recipient was discharged with a functioning pancreas transplant. One month after retransplantation, serum amylase and lipase were elevated. Again, a biopsy was performed; the C4d stain was positive, and the result was consistent with pancreas graft AMR. The total of seven times of plasmapheresis and thymoglobulin treatment was done as an antirejection treatment; however, the graft function decreased, and finally, reuse of insulin was needed. The risk of transplantation is nearly eliminated completely, but rejection, especially AMR, remains a complex issue in pancreas transplantation. Retransplantation of the pancreas should be performed with caution, and it is preferable to avoid donors with the same human leukocyte antigen against the recipient's antibody.

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Korean J Transplant 2023;37 Suppl 1:S106
https://doi.org/10.4285/ATW2023.F-6884

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Successful robotic kidney transplantation for surgeons with no experience in minimally invasive surgery: a single institution experience

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Background: Robotic kidney transplantation (RKT) is a novel and welcomed innovation yielding good surgical outcomes. However, data on the feasibility and safety of performing RKT by surgeons with a lack of prior minimally invasive surgery (MIS) experience are limited. We aimed to evaluate the surgical and functional RKT and present the learning curves (LC) of RKT by a single surgeon with no prior experience in MIS.
Methods: This was a retrospective study of all RKT performed between November 2019 and April 2023 at Severance Hospital in Seoul, Republic of Korea. We analyzed surgical and functional outcomes, as well as complication rates. We evaluated LC using the cumulative summation method to describe the number of cases associated with competency of a single surgeon.
Results: Fifty patients (mean age, 45.1±11.2 years; male:female ratio, 35:15) successfully underwent robotic living donor kidney transplantation. Surgical console time was 201.9±3.4 minutes (range, 118–327 minutes), vascular anastomoses time was 39.1±5.9 minutes (range, 28–58 minutes), and rewarming time was 64.7±12.0 minutes (range, 43–112 minutes). Mean estimated blood loss was 126.0±90.7 mL (range, 50–400 mL). No patient required conversion to open surgery. No anastomosis revision or wound infections occurred. There were no cases of delayed graft function. Mean serum creatinine level at discharge was 1.2±0.3 mg/dL (range, 0.6–2.1 mg/dL). LC analysis revealed that surgical competence was achieved after 15 cases.
Conclusions: RKT with regional hypothermia is a safe and effective minimally invasive alternative to open kidney transplantation, yielding comparable clinical outcomes. Even surgeons without prior robotic or laparoscopic surgery experience can rapidly and effectively overcome the LC.

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Korean J Transplant 2023;37 Suppl 1:S107
https://doi.org/10.4285/ATW2023.F-6891

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Optimal tacrolimus trough levels and allograft outcomes in kidney transplant recipients: insights from a multicenter real-world study in South Korea

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Background: The optimal tacrolimus trough levels after kidney transplantation (KT) and its impact on allograft outcomes remains uncertain. Evidence regarding the association with long-term outcomes is limited. Our study aimed to evaluate the relationship between time-varying periodic mean tacrolimus trough levels and composite allograft outcomes in KT recipients across five transplant centers in South Korea.
Methods: Data from 10,329 patients who underwent KT during 2005–2020 was retrieved from the institutional clinical data warehouse. Two-month periodic mean was derived from outpatient tacrolimus trough levels for 2–12 months posttransplant and categorized into seven ranges. The inverse probability of treatment weighting method with stabilized weights was utilized to assess the relationship between time-varying tacrolimus levels and the 1-year composite outcome (biopsy-proven acute rejection, renal dysfunction, *de novo* donor-specific antibodies (dnDSA), and death-censored graft failure). We also analyzed the association between the 1-year periodic mean from 2–6 years posttransplant and the 6-year outcomes.
Results: The overall incidence of the composite allograft outcome at 2–12 months and 2–6 years posttransplant was 11.2% and 23.1%. With 8 ng/mL as reference, tacrolimus levels below 3 ng/mL and 3–3.9 ng/mL were associated with a higher likelihood of developing the 1-year composite allograft outcome, while 4–4.9 ng/mL showed higher hazards of dnDSA development and graft failure. Conversely, 5–5.9 ng/mL, 6–6.9 ng/mL, and 7–7.9 ng/mL groups had lower risks of developing the composite allograft outcome. For the 2–6 year outcome, trough levels 5–5.9 ng/mL and 6–6.9 ng/mL showed benefit over 8 ng/mL (adjusted hazard ratio [aHR] 0.68, 95% confidence interval [CI] 0.53–0.87, P=0.0024; and HR 0.65, 95% CI 0.50–0.85, P=0.0012)
Conclusions: This real-world multicenter study in South Korea provides important insights into the association between tacrolimus trough levels and allograft outcomes in KT recipients. The findings suggest that maintaining a target trough level of 5–7.9 ng/mL during 2–12 months posttransplant, and 5–6.9 ng/mL during 2–6 years posttransplant, is associated with better allograft outcomes.

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Korean J Transplant 2023;37 Suppl 1:S108
https://doi.org/10.4285/ATW2023.F-6892

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The pancreas after kidney transplant is the second-best option, comparable to the simultaneous pancreas and kidney transplant

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Background: The simultaneous pancreas and kidney transplant (SPK) is the most common type of pancreas transplant performed worldwide. The number of pancreases after kidney transplants (PAK) has fallen. There are a few drawbacks to PAK, such as the requirement for an additional operation, the immunologic risk for organs from different donors, the burden on the graft kidney resulting from two induction therapies and a higher tacrolimus dose, etc. SPK is the best option, but because to a lack of cadaveric donors and a lengthy waiting period, it is not always possible to use it.
Methods: From 2015 to 2022, we performed 21 PAKs at the Pusan National University Yangsan Hospital in Korea. Ten recipients received kidney transplants from living donors, while the remaining 11 received transplants from deceased donors. We compared the findings of PAK and SPK conducted within the same time period.
Results: Throughout the monitoring period, just one pancreatic graft was lost in PAK patients, and 7-year graft survival was 95%, with no statistically significant difference compared to SPK (87.5%, P=0.326). Moreover, the graft survival of SPK or PAK was superior to pancreatic transplant alone (59.0%, P=0.022). Due to postoperative lymphoproliferative disease, the one pancreatic graft loss was a case of mortality with a functioning graft. No kidney transplant loss was observed in PAK recipients. Among PAK patients, there was no variation in creatinine levels between the pretransplant and posttransplant periods. There were two incidents of pancreatic graft rejection, but grafts entirely recovered following rejection treatment. Two kidney transplants were rejected; however the transplanted kidneys are salvaged after rejection treatment.
Conclusions: According to our experiences, PAK could be a second-best choice for individuals with diabetic end-stage renal disease, especially in cases where cadaveric donors were severely deficient but living donor kidney transplants were actively performed in countries like Korea.

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Korean J Transplant 2023;37 Suppl 1:S109
https://doi.org/10.4285/ATW2023.F-6893

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Incidence of polyvascular disease and associated risk factors in kidney transplant patients

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Background: The aim of this study is to determine the incidence of polyvascular events and factors associated with these events among the kidney transplant population, considering the high prevalence of cardiovascular risk factors in these patients, which accounts for increased mortality.
Methods: We conducted a retrospective analysis on a consecutive series of 84 kidney transplant recipients who underwent kidney transplantation at our institution between April 2019 and July 2023. The analysis focused on polyvascular disease, including cardiovascular disease, cerebrovascular disease, and peripheral arterial disease, and examined variables associated with these conditions.
Results: The mean age of the patient cohort was 54.5±9.9 years, with 59.5% being male patients. Before the surgery, 16 individuals were diagnosed with cardiovascular disease. The mean follow-up period was 21.4 months, during which eight patients experienced polyvascular events after the transplant surgery. There were six patients with cardiovascular disease: one underwent cardiopulmonary resuscitation, three underwent percutaneous coronary intervention, and two only received coronary angiography. In patients with cerebrovascular disease, symptoms improved after conservative care, while in patients with peripheral vascular disease, percutaneous transluminal angioplasty was performed. All these patients had hypertension, and 62.5% of them had a history of both diabetes mellitus and coronary artery disease. In a multivariable logistic regression conducted by considering various variables, it was found that the presence of preoperative cardiovascular disease was significantly associated with the occurrence of polyvascular disease, with a P-value of 0.005.
Conclusions: Through this study, it was observed that the prevalence of polyvascular disease in the kidney transplant patient group is notably high at 9.5%, consistent with previous knowledge. In analyzing the factors associated with this condition, including various underlying diseases such as hypertension, diabetes, and others, it was found that only a history of cardiovascular disease had a significant impact on the occurrence of polyvascular disease.

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Korean J Transplant 2023;37 Suppl 1:S110
https://doi.org/10.4285/ATW2023.F-6899

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Drug-drug interaction of potassium competitive acid blocker with tacrolimus and mycophenolate in kidney transplant recipients: a randomized controlled trial using smart clinical trial platform

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Background: Potassium competitive acid blocker (P-CAB) is a newly developed gastric acid inhibitor exhibiting faster action and lower drug toxicity than proton pump inhibitor (PPI). The study aimed to compare the changes in the blood concentration of immunosuppressants after the administration of P-CAB.
Methods: A total of 62 kidney transplant recipients (KTRs) were randomized to either P-CAB (tegoprazan) or PPI group. A smart clinical trial platform monitored the enrolled patients with remote monitoring and safety management systems. Remote monitoring system transmitted data about drug adherence, blood pressure, body temperature, and electrocardiogram. Questionnaires for general and gastrointestinal (GI) symptoms were surveyed using a self-developed app installed on the patient's phone. One non-face-to-face video visit was scheduled during the study period. Trough levels of tacrolimus and mycophenolate were checked monthly for 3 months.
Results: Baseline characteristics including trough levels did not differ between groups. The adherence to the study medication was 100% in both groups. A total of 13,726 biometric information and 5,031 questionnaire answers were collected. We conducted 5,704 feedback messages and 56 non-face-to-face video visits. Mean trough levels of tacrolimus and mycophenolate did not differ between P-CAB and PPI groups at 3 months (5.5±1.6 vs. 5.8±2.0 ng/mL, P=0.50 and 2.7±1.4 vs. 2.6±1.4 ug/mL, P=0.57, respectively). The intragroup difference of the trough levels between baseline and 3 months was not significant in both groups. The average questionnaire scores of GI symptoms were comparable between groups. The vital signs and allograft function maintained stable without significant difference during the study period.
Conclusions: P-CAB does not affect the serum trough levels of tacrolimus and mycophenolate in KTRs. P-CAB showed a similar effect on the patient-reported GI symptoms compared to PPI. Our smart clinical trial system with non-face-to-face video visits demonstrated the efficacy and safety in performing randomized trials.

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Korean J Transplant 2023;37 Suppl 1:S111
https://doi.org/10.4285/ATW2023.F-6900

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Factors influencing liver regeneration after living donor hepatectomy: a retrospective study in a small-volume center

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Background: Liver transplantation (LT) is a life-saving procedure for patients with end-stage liver disease. Living donor LT (LDLT) has emerged as a viable alternative to deceased donor transplantation, due in part to the livers unique ability to regenerate. For many years, understanding the extent of liver regeneration has been deemed crucial for the safety of living donors and the effectiveness of the transplantation process. This study aimed to delve deeper into liver regeneration following LDLT and evaluate the impact of various factors on this process.
Methods: A retrospective analysis was conducted on 66 patients who underwent LDLT at Keimyung University Dongsan Medical Center, Daegu, Korea, from 2005 to 2022. Liver volume changes were monitored through computed tomography imaging for 1 year postsurgery. Factors such as age, sex, and presence of fatty changes were examined for their impact on liver regeneration.
Results: Our findings suggest that the liver regenerates maximally within 6 weeks post-LDLT, beyond which the liver volume remains relatively constant. Age, sex, and the presence of fatty changes did not significantly impact the liver regeneration rate (age: r=−0.086, P=0.536; sex: P=0.9927; fatty changes: micro P=0.267, macro P=0.243). However, the estimated remnant volume was found to be a significant determinant of the liver regeneration rate (r=−0.583, P<0.00001). On long-term follow-up, regardless of the different factors, the liver volume grew to approximately 83% of the preoperative whole liver volume.
Conclusions: The study sheds light on the complex process of liver regeneration following LDLT. These findings contribute to refining surgical techniques, postoperative care strategies, and the selection process for living donors, thereby improving the outcomes of living donor hepatectomy and ensuring donor safety.

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Korean J Transplant 2023;37 Suppl 1:S112
https://doi.org/10.4285/ATW2023.F-6908

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Low fasting glucose of living donor and risk for graft loss after liver transplantation

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Background: The liver regulates glucose metabolism through a balance of uptake and the release of glucose. After receiving a liver from a donor with low fasting glucose, there is an increased risk of graft failure. However, no information has been disclosed about the fasting glucose of living donors and the outcome after living donor liver transplantation (LDLT).
Methods: In this retrospective study with single centric data, total 851 LDLT patients were divided into two groups according to the fasting glucose level of living donor; <85 mg/dL (low-donor fasting glucose [DFG], n=106) and 85 mg/dL (control group, n=745). Graft survival (retransplantation or death) was analyzed in entire and 1:3 propensity score-matched groups.
Results: In entire population, 5-year graft survival was significantly lower in the low-DFG group (72.7%) than that in the controls (79.9%) with P=0.049. In multivariable Cox regression, the low-DFG group was independently associated with graft loss even after adjusted with other donor and recipient risk factors (hazard ratio [HR], 1.59; 95% confidence interval [CI], 1.04–2.43; P=0.032). In matched population, low-DFG group also showed significantly low graft survival than the controls (P=0.027). Small-for-size-syndrome occurred 17.6% of the low-DFG group and 8.7% of the control group in matched cohort, although significance was not reached (P=0.315). Upon analysis using low-DFG and graft-to-recipient weight ratio (GRWR), it was observed that patients who exhibited both low-DFG and GRWR <1.0 (n=34) had significantly reduced graft survival rates compared to others. (5-year graft survival: GRWR ≥1.0 and glucose 85 mg/dL, 79.7% [n=534]; GRWR <1.0 and glucose 85 mg/dL, 80.2% [n=211]; GRWR ≥1.0 and glucose <85 mg/dL, 77.4% [n=72]; GRWR <1.0 and glucose <85 mg/dL, 62.2% [n=34]; P=0.061).
Conclusions: Low-DFG is identified as an independent risk factor for graft survival in LDLT. This is presumed to have a functionally detrimental effect, particularly in cases with lower graft volume. Consequently, when selecting living donors, fasting glucose levels should also be carefully assessed as one of the risk factors.

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Korean J Transplant 2023;37 Suppl 1:S113
https://doi.org/10.4285/ATW2023.F-6921

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Hepatitis B virus reactivation in a liver transplant recipient using hepatitis B immunoglobulin plus antiviral drug

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Background: The combination of hepatitis B immunoglobulin (HBIG) and antiviral drugs after liver transplantation is considered the standard of care for prophylaxis against HB virus (HBV) recurrence. However, there is no consensus regarding the duration of use and dose of HBIG. This study aims to compare the HBV reactivation in patients who had been prophylaxis with long-term antiviral drugs combined with short-and long-course HBIG.
Methods: We conducted a retrospective study. Liver transplant recipients who had HBsAg positive between January 2008 to June 2023, a total of 85 patients, were included in the analysis. Baseline characteristics of patients, usage of antiviral and HBIG, including the period of HBIG usage were recorded. The data was analyzed for the reactivation of hepatitis B, defined as the re-appearance of HBsAg in serum.
Results: Among the study population, 23 patients received the antiviral drug and HBIG for less than 12 months, and 62 patients received the antiviral drug and HBIG for more than 12 months. Of 85 liver transplant patients, HBV reactivation occurred in eight recipients (9.4%). Reactivation was found in one patient who received HBIG for less than 12 months, and seven patients who received HBIG for more than 12 months (4.3% vs. 11.3%, P=0.33).
Conclusions: There was no significant difference in HBV reactivation between those on short- or long-course HBIG combined with long-term antiviral drug regimens. So, a short-course of HBIG combined with a long-term antiviral drug regimen seems to be cost-effective, without any impact on HBV recurrence.

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Korean J Transplant 2023;37 Suppl 1:S114
https://doi.org/10.4285/ATW2023.F-6958

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

ABO-incompatible kidney transplantation: a single-center experience

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Background: Kidney transplantation (KT) is a renal replacement therapy that has a survival benefit compared to dialysis and improves the quality of life. According to the Korean Network for Organ Sharing Annual Report 2021, 31,055 patients were waiting for deceased donor KT (DDKT). Considering that only 2,227 underwent KT, ABO-incompatible KT has been an alternative to address this imbalance between demand and supply. We aim to share our experience with ABO-incompatible KT.
Methods: This study was a retrospective observational study conducted by extracting medical records. It included 42 patients who underwent ABO-incompatible KT at Jeonbuk National University Hospital (JBUH) from September 2014 to May 2023. All patients received a single dose of rituximab (mainly 200 mg/m^2, 300 mg/m^2 in patients at high immunological risk) 1 month before transplantation and received immunosuppressive therapy with tacrolimus, mycophenolic acid, and prednisolone initially.
Results: The average age of the 42 ABO-incompatible KT recipients was 48.45±12.16. To reach the target isoagglutinin level (at least ≤1:16), plasmapheresis has repeated an average of 4.36±2.66 times, and the isoagglutinin titer or serum creatinine was elevated after surgery for two patients, leading to the need for additional plasmapheresis. During the median follow-up period, the patient's survival rate was 97.6%, and only one patient's death was confirmed due to gastrointestinal bleeding. During the same period, graft failure was confirmed in two patients because of chronic rejection and BK nephropathy, respectively. In 42 ABO-incompatible KT recipients, there were 19 episodes of infection complications requiring hospitalization, followed by urinary tract infection, pneumonia, and varicella infection. In addition, eight surgical complications were identified, mainly due to bleeding/hematoma. Moreover, malignant tumors such as pancreatic cancer and squamous cell carcinoma *in situ* were confirmed in two patients after transplantation, respectively.
Conclusions: The clinical results of ABO-incompatible KT performed at JBUH were excellent, similar to those reported by other major centers.

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Korean J Transplant 2023;37 Suppl 1:S115
https://doi.org/10.4285/ATW2023.F-6991

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Donor safety of remnant liver volumes of less than thirty percent in living donor liver transplantation: a systematic review and meta-analysis

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Background: This meta-analysis aimed to investigate the acceptability of donor remnant liver volume (RLV) to total liver volume (TLV) ratio (RLV/TLV) being <30% as safe in living donor liver transplantations (LDLTs).
Methods: Online databases were searched from January 2000 to June 2022. Pooled odds ratios (ORs) and standardized mean differences (SMDs) with 95% confidence intervals (CIs) were calculated using fixed- or random-effects model.
Results: One prospective and seven retrospective studies comprising 1,935 patients (164 RLV/TLV <30% vs. 1,771 RLV/TLV 30%) were included. Overall (OR, 1.82; 95% CI, 1.24–2.67; P=0.002) and minor (OR, 1.88; 95% CI, 1.23–2.88; P=0.004) morbidities were significantly lower in the RLV/TLV 30% group than in the RLV/TLV <30% group (OR, 1.82; 95% CI, 1.24–2.67; P=0.002). No significant differences were noted in the major morbidity, biliary complications, and hepatic dysfunction. Peak levels of bilirubin (SMD, 0.50; 95% CI, 0.07–0.93; P=0.02) and international normalized ratio (SMD, 0.68; 95% CI, 0.04–1.32; P=0.04) were significantly lower in the RLV/TLV 30% group than in the RLV/TLV <30% group. No significant differences were noted in the peak alanine transferase and aspartate transaminase levels and hospital stay.
Conclusions: Considering the safety of the donor as the top priority, the eligibility of a potential liver donor in LDLT whose RLV/TLV is expected to be <30% should not be accepted.

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Korean J Transplant 2023;37 Suppl 1:S116
https://doi.org/10.4285/ATW2023.F-7003

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Unveiling shared genetic risks of type 2 and posttransplant diabetes mellitus in East Asians through polygenic risk scores

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Background: Posttransplant diabetes mellitus (PTDM) contributes to adverse cardiovascular outcomes in kidney transplant recipients (KTRs). We examined whether polygenic risk scores (PRSs) for type 2 diabetes mellitus (T2D) can predict PTDM in an East Asian cohort. Further, partitioned T2D PRSs representing distinct clusters of cardiometabolic traits were utilized to investigate whether PTDM exhibits unique associations.

Methods: We constructed T2D PRSs with genome-wide association study (GWAS) data from BioBank Japan (PRS_{BBJ}) and from the East Asian ($PRS_{EastAsian}$) and Trans-ethnic (PRS_{Trans}) components of the Diabetes Meta-Analysis of Trans-Ethnic association studies. The performances of the T2D PRSs were validated in the general population (T2D, n=12,983; control, n=101,267) from the Korean Genome Epidemiology Study (KoGES). We devised a PTDM PRS (PRS_{PTDM}) with the previous PTDM GWAS by McCaughan et al. The associations of the PRSs and PTDM development were explored in 1,524 KTRs including 190 PTDM cases from the Korean Organ Transplantation Registry. We further acquired another set of T2D PRSs based on eight mechanistic clusters from the largest T2D multi-ancestry GWAS meta-analysis to date by Suzuki et al. 2023. We compared the associations of the mechanism-specific PRSs with T2D and PTDM to understand possible genetic discrepancy. Genotyping was performed using the Korea Biobank Array.

Results: PRS_{BBJ}, $PRS_{EastAsian}$, and PRS_{Trans} were externally validated to predict T2D using logistic regressions, with Nagelkerke pseudo-R^2 values of 0.088, 0.083, and 0.087, respectively. Cox regressions demonstrated that PRS_{BBJ} (hazard ratio [HR], 1.60; $P=1.08\times10^{-10}$), $PRS_{EastAsian}$ (HR, 1.58; $P=2.29\times10^{-10}$), and PRS_{Trans} (HR, 1.56; $P=7.04\times10^{-10}$) were significantly associated with the PTDM development. $PRSP_{TDM}$ (HR, 1.00; P=0.954) failed to predict PTDM, possibly due to the limited number of variants. Incident T2D from the KoGES and PTDM showed similar associations with mechanism-specific PRSs.

Conclusions: T2D PRS can stratify PTDM risks. Thorough PRS analyses suggest shared genetic mechanisms between T2D and PTDM.

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Korean J Transplant 2023;37 Suppl 1:S117
https://doi.org/10.4285/ATW2023.F-7006

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Cardioprotective effect of SGLT2 inhibitor in diabetic kidney transplant recipients

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Background: Kidney transplantation (KT) improves cardiovascular outcomes in patients with end-stage kidney disease. However, cardiovascular disease remains the leading cause of premature patient death and graft loss in diabetic KT recipients (KTRs). We evaluated the cardioprotective effect of sodium-glucose cotransporter 2 inhibitors (SGLT2i) in diabetic KTRs.
Methods: A total of 750 KTRs with diabetes were enrolled from four tertiary hospitals in South Korea. Among them, 129 patients (17.2%) were prescribed SGLT2i over 90 days. The primary outcome was a composite of death from cardiovascular causes, myocardial infarction, heart failure, or stroke. Multivariable Cox regression model was used to investigate the effect of SGLT2i on clinical outcomes.
Results: The mean age was 53.7 years and 69.6% were men. During a median of 56.3 months, the primary outcome occurred in 6 (4.7%) of 129 and 78 (12.6%) of 621 in the SGLT2i and non-SGLT2i groups, respectively (P=0.015). Incidences of death from cardiovascular causes and myocardial infarction were significantly lower in the SGLT2i group than in the non-SGLT2i group (0% vs. 3.2%, P=0.034; 1.6% vs. 8.9%, P=0.008, respectively). The multivariate analysis showed that the SGLT2i group had a lower risk of primary composite outcome than the non-SGLT2i group (adjusted hazard ratio [aHR], 0.40; 95% confidence interval [CI], 0.17–0.92; P=0.031). The risk of myocardial infarction was also lower in the SGLT2i group (aHR, 0.18; 95% CI, 0.04–0.73; P=0.016).
Conclusions: SGLT2i significantly decreased the risk of cardiovascular events in diabetic KTRs, particularly lowering incidences of death from cardiovascular causes and myocardial infarction. SGLT2i can be used to reduce the burden of cardiovascular disease in diabetic KTRs.

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Korean J Transplant 2023;37 Suppl 1:S118
https://doi.org/10.4285/ATW2023.F-7008

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The short- and long-term outcomes in living-donor liver transplantation using small-for-size graft: a systematic review and meta-analysis

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Background: A standard graft-to-recipient weight ratio (GRWR) 0.8% is widely accepted in living donor liver transplantation (LDLT); however, the potential donor pool is expanded to patients adopting small-for-size graft (SFSGs) with GRWR <0.8%. This study aimed to investigate the effect of SFSG on short- and long-term outcomes following LDLT.
Methods: Electronic databases were searched from January 1995 to January 2022 for studies comparing short- or long-term outcomes between patients with SFSG (GRWR <0.8%, SFSG group) and sufficient volume graft (GRWR 0.8%, non-SFSG group). The primary outcomes were 1-, 3-, and 5-year overall survival (OS) and graft survival (GS), while the secondary outcome was postoperative complications.
Results: Twenty-four studies comprising 7,996 patients were included. In terms of OS, SFSG group had poor 3-year OS (hazard ratio [HR], 1.48; 95% confidence interval [CI] 1.01–2.15; P=0.04), but there were no significant differences between two groups in 1-year OS (HR, 1.50; 95% CI, 0.98–2.29; P=0.06) and 5-year OS (HR, 1.40: 95% CI, 0.95–2.08; P=0.02). In GS, there were no significant differences in 1-year (HR, 1.31; 95% CI, 1.00–1.72; P=0.05), 3-year (HR, 1.33; 95% CI, 0.97–1.82; P=0.07), and 5-year GS (HR, 1.17; 95% CI, 0.95–1.44; P=0.13). The SFSG group had comparable postoperative complications, except for a high incidence of vascular complications and small-for-size syndromes.
Conclusions: Expanding the potential donor pool in LDLT to SFSG with GRWR <0.8% can be acceptable in terms of comparable long-term OS and GS, despite the risk for vascular complications and small-for-size syndrome.

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Korean J Transplant 2023;37 Suppl 1:S119
https://doi.org/10.4285/ATW2023.F-7017

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Effectiveness of renal transcatheter arterial embolization for kidney transplant waitlist Waitlist patients with autosomal dominant polycystic kidney: reduced cyst size and decreased pretransplant nephrectomy

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Autosomal dominant polycystic kidney (ADPKD) can cause pressure-related symptoms such as abdominal discomfort, pain, and dyspepsia due to the increased kidney size, often necessitating additional nephrectomy during transplantation. This article aims to report the effectiveness of renal transcatheter arterial embolization (TAE) in reducing cyst size and decreasing the need for pretransplant nephrectomy in ADPKD patients. A 44-year-old man with end-stage renal disease secondary to ADPKD visited the outpatient clinic for a pretransplant nephrectomy due to severe abdominal distension. He had been on maintenance hemodialysis for 1 month and faced challenges eating a normal portion of food. Both kidneys were palpable in the whole abdomen. Computed tomography revealed a significantly enlarged kidney with numerous cysts, compressing other abdominal organs. Due to his low hemoglobin level (6.9 mg/dL), raising concerns for blood transfusion during nephrectomy, renal TAE was performed to reduce kidney size. Six detachable coils (ConcertoTM, Medtronic Inc.) were used to embolize the right renal artery. The patient experienced severe abdominal pain in the first 3 days following the procedure, gradually subsiding over the next few days. Approximately 18 months later, there was a 56% decrease in the cross-section area of the right kidney. The patient reported an increase in appetite and a reduction in abdominal distension. Renal TAE appears to be an effective and safe therapeutic option that improves the quality of life by alleviating symptoms in ADPKD patients. Moreover, it offers the advantage of making transplantation possible without the need for nephrectomy, which is associated with higher complications. However, addressing and managing severe abdominal pain after the embolization procedure is essential. Additionally, the treatment may require considerable time to achieve the desired effect. Despite these considerations, renal TAE is recommended for patients on the kidney transplant waiting list as it brings numerous advantages.

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Korean J Transplant 2023;37 Suppl 1:S120
https://doi.org/10.4285/ATW2023.F-7036

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Metformin promotes regulatory T and B cells and suppresses Th17 via multiple pathways including microbiome modulation in liver transplant patients

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Background: In a previous study, we documented that a combination treatment with metformin and tacrolimus may improve immune homeostasis by modulating regulatory T cells (Tregs) and T helper17 cells (Th17). In the present study, we aim to observe serial changes in immune cells, including Tregs, regulatory B cells (Bregs), and Th17 cells, following the addition of metformin in liver transplant (LT) patients. Furthermore, we seek to elucidate the underlying pathways driving these changes in immune homeostasis, including the analysis of gut microbial changes in LT patients.
Methods: We prospectively enrolled 23 LT patients with newly diagnosed diabetes or prediabetes and administered metformin (500–1,000 mg/day). Subsequently, 12 patients gradually tapered their immunosuppressants (IS) to half dose (tapering group), while the remaining 11 maintained there IS dosage (maintenance group). The proportion of various immune cells, including Tregs, Bregs, Th1, and Th17, were analyzed in every 3 months. Fecal microbiome analyses were also performed before and after metformin treatment. RNA sequencing analyses were conducted to evaluate differences in gene expression in response to metformin and functional microbiome changes.
Results: After administering metformin, the proportions of Tregs, Bregs, Th1 cells gradually increased, while Th17 cells decreased over time in the maintenance group. These trends were consistently observed in the tapering group, further supporting the immunomodulatory effects of metformin. The maintenance group also showed a marginal increase in the abundance of Akkermansia and Bifidobacterium after metformin administration. Meanwhile, in the tapering group, the abundance of Faecalibacterium tended to increase after metformin treatment. RNA sequencing analysis revealed that these microbiomes increased the expression of the IL-10 gene. Moreover, the expression of STAT3 decreased, while CTLA-4 expression increased after metformin therapy.
Conclusions: This study demonstrated that metformin increases Tregs and Breg cells and suppresses Th17 via multiple pathways, including functional microbiomes, in LT patients.

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Korean J Transplant 2023;37 Suppl 1:S121
https://doi.org/10.4285/ATW2023.F-7040

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Comparative analysis of right and left retroperitoneoscopic donor nephrectomies

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Background: For living donor kidney transplantation, left kidney is recommended to be procured because of the anatomical reason. However, there are situations where the right kidney must be used, such as cases of kidney function asymmetry, right kidney tumors, or other specific reasons. This study aims to compare the right and left donor nephrectomy.
Methods: We retrospectively analyzed the 230 retroperitoneoscopic donor nephrectomies (RDN) performed at our institution from 2021 to May 2023. We compared the graft anatomical data, the donor perioperative outcomes, and graft and recipient outcomes of right-RDN with those of left-RDN.
Results: Right-RDN was performed in 31 donors (13.4%). As expected, right graft renal vein was significantly shorter than that of left one (18.3±5.7 vs. 23.8±5.8 mm, P<0.001). Although the operation time for right-RDN was significantly longer than that of left-RDN (253±69 vs. 219±63 minutes, P=0.006), there was no statistically significant difference in donor and recipient surgical complication and donor postoperative stay between the groups. The graft survival of right-RDN group was also comparable to that of left-RDN.
Conclusions: Despite the longer operation time required and the shorter length of the right graft renal vein compared to the left, both right-RDN and left-RDN demonstrated similar safety and graft outcomes in living donor kidney transplantation. Therefore, right-RDN should be considered when necessary.

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Korean J Transplant 2023;37 Suppl 1:S122
https://doi.org/10.4285/ATW2023.F-7052

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Predictors of postrecurrence survival in hepatocellular carcinoma patients after living donor liver transplantation

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Background: The prognosis of hepatocellular carcinoma (HCC) recurrence after liver transplantation (LT) has been poor despite active recurrence treatment and mammalian target of rapamycin (mTOR) inhibitor administration. The present study evaluated the postrecurrence survival after LT to assess its prognostic predictors.
Methods: This retrospective observational study evaluated postrecurrence survival in 115 patients who underwent living donor LT (LDLT) for HCC during 10 years between 2006 and 2015 at Asan Medical Center.
Results: Posttransplant follow-up up to 15 years, 100 of 115 patients had died due to HCC recurrence. The median disease-free survival, postrecurrence survival and overall patient survival periods were 10 months, 17 months and 32 months, respectively. Univariate analysis revealed that HCC recurrence within 12 months after LT (P<0.001), ADV score >5 log (P=0.019), mTOR inhibitor administration (P=0.031) were statistically significant risk factors, but Milan criteria (P=0.912) was not. In contrast, a combination of ADV score >5 log and beyond Milan criteria showed higher prognostic contrast (P=0.001). Multivariate analysis revealed that HCC recurrence within 12 months after LT (hazard ratio [HR], 3.2; P<0.001) and combination of ADV score >5 log and beyond Milan criteria (HR, 2.3; P=0.009) were significant, but mTOR inhibitor administration (HR, 1.5; P=0.108) was not. In contrast, these three factors were independent risk factors on overall patient survival.
Conclusions: Post-HCC recurrence survival after LDLT are affected by characteristics of tumor biology including early recurrence and high ADV score combined with Milan criteria. Administration of mTOR inhibitor appears to be beneficial to prolonged survival.

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Korean J Transplant 2023;37 Suppl 1:S123
https://doi.org/10.4285/ATW2023.F-7056

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical course of graft failure after kidney transplantation investigated focusing on immune rejection

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Background: One of the most critical side effects after kidney transplantation is graft failure, and one of them is rejection. Although we have tried many treatments for graft failure and are trying to achieve better results, we still cannot completely prevent failure, and still difficult to cure. Graft failure can even have fatal prognosis. Therefore, in order to find the cause of graft failure and to find a more suitable treatment for it, we reviewed cases of graft failure after transplantation.
Methods: A retrospective review was performed on 1,958 patients who underwent kidney transplantation from 2006 to 2020. Patients with immune rejection were identified, and their medical history, test results, postoperative condition, and biopsy were investigated. In particular, the causes and treatment methods for rejection were identified with emphasis.
Results: A total of 437 cases showed graft failure, and many causes of failure were investigated as follows: rejection, recur, vascular problems, viral infection, and autoimmunity. Especially, antibody-mediated rejection (AMR) was found in 72 cases. There were four deaths, showing a mortality rate of 5.6%. When treating AMR, it was divided into a steroid alone method, a method combining steroid and other drugs, and a conservative care method without steroids.
Conclusions: Graft failure is one of the most critical side effects that can occur after transplantation. A representative one of failure is rejection, and the method of treating rejection is variety of treatments depending on the cause of rejection.

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Korean J Transplant 2023;37 Suppl 1:S124
https://doi.org/10.4285/ATW2023.F-7078

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Early continuous renal replacement therapy in hepatectomy patient as an implementation of hospital protocol

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The postoperative hepatectomy mortality ranges from 7% to 20% after major or extended liver resection, but it may be bigger in developing countries due to limited resources and facilities. Multiple studies show that preoperative liver tests and function can predict postoperative fatal outcomes in hepatectomy patients, but urine output nor renal function tests were seldom to get noticed. This case highlights the importance of evaluating urine output as one of the prefailure organ markers in posthepatectomy patients. A 51-year-old male presented with a growing mass on the right hypochondriac along with pain. Abdominal examination revealed a palpable liver, no splenomegaly or ascites. He only had jaundice eyes but no other stigmata of chronic liver disease. A computed tomography revealed big hypodense hepatic lesions with ring enhancement. His hepatitis panels were all negative. We performed a hepatectomy and 6 hours after the operation he had oliguric, and slight overload (assessed by eV1000), with normal urea and creatinine serum tests. His vital sign showed early systemic inflammatory response syndrome. We performed continuous veno-venous hemofiltration (CVVH) with an AN-69ST filter for 18 hours. After CVVH, the urine was increased with normal kidney serum tests and the vital sign were stable. The patient was discharged after 7 days posthepatectomy. CVVH-based therapy offered stable intraoperative parameters, prevention of fluid overload, correction of metabolic disturbances, and wash-out of cytokines, which gave optimal circumstances for recovery of hepatectomy.

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Korean J Transplant 2023;37 Suppl 1:S125
https://doi.org/10.4285/ATW2023.F-7079

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Average number of organs donated by brain-dead children under the age of 10 years in Korea (2018–2022)

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Background: As of December 31, 2022, there were a total of 1,770 transplant recipients under the age of 10 years in Korea. However, between 2018 and 2022, only 38 brain-dead organ donors were recorded in this age group, with an annual average of 7.6. This indicates a significant shortage of donated organs for children under the age of 10 years. Therefore, we analyzed the average number of donated organs from donors aged ≤10 years between 2018 and 2022 to determine the need for increased organ donation efforts.
Methods: A retrospective analysis was conducted on cases of presumed brain that were reported to the Korea Organ Donation Agency (KODA) between 2018 and 2022. Cases of presumed brain death were divided into two groups: those aged ≤10 years (group A) and those aged ≥11 years (group B).
Results: Between 2018 and 2022, 179 individuals were diagnosed with presumed brain death in group A and 11,210 were identified in group B. Of these individuals, 38 from group A and 2,186 from group B eventually became brain-dead organ donors. The average number of organs donated per deceased donor was 2.61 for group A and 3.41 for group B, with a higher average in group B. A comparison of organ donation rates revealed that kidney (51.5%) donation was the most and which was followed by liver (24.6%), heart (11.4%), and lung (8.2%) in order for group B and kidney (35.3%), heart (26.2%), heart (11.4%), lung (22.2%), and lung (16.1%) in order for group A. Although kidney donation was the most common in both groups, group A had higher rates of heart and lung donations. During the same period, guardian rejection rates were 29.4% (4,484 individuals) for group B and 71.7% (104 individuals) for group A, indicating a higher rate of rejection among guardians in group A.
Conclusions: The number of individuals under the age of 10 years awaiting transplantation significantly exceeds the number of brain-dead organ donors in this age group. Hence, there is a mismatch between the demand and availability of donated organs, leading to prolonged waiting times for transplant recipients and their guardians. To address this issue, it is crucial to reduce the number of guardian refusals for organ donation. This can be achieved by improving public awareness and enhancing the interviewing skills of organ procurement nurses to better educate parents about the importance of organ donation. Furthermore, efforts are needed by organ procurement agencies, the government, and related academic societies to address the issue of organ shortage for children under 10 years old in Korea.

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Korean J Transplant 2023;37 Suppl 1:S126
https://doi.org/10.4285/ATW2023.F-7086

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Quality of life after liver transplantation of Vietnamese patients

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Background: In Vietnam, the number of patients receiving liver transplants is increasing. Quality of life is emerging as an important monitor target following liver transplantation. This study aims to describe some common characteristics and evaluate quality of life after liver transplantation.
Methods: A descriptive sectional study on 80 liver transplantation patients from October 2017 to July 2022 at the Hepato-Biliary and Pancreatic Department in 108 Military Central Hospital to evaluate quality of life after liver transplantation by 36-Item Short Form Survey. Patient characteristics and quality of life were collected through medical records and face-to-face interviews.
Results: The median age of patients was 51.7±10.3, 83.3% were male, 97.5% of patients received a liver transplant from a living donor, 25% indicated emergency transplants. The highest score for pain improvement with 90.8±16.3 points. The mean value of quality of life score of male patients tends to be higher than that of female patients. Physical functioning and role limitations due to physical health of patients due to cancer, cirrhosis and acute liver failure were 86.4±18.8, 80.3±36.9 and 58±46.7 respectively (P<0, 05). The quality of life in role limitations physical health of two groups patients under 12 months and over 12 months was 60.4±42.9 and 81.3±32.4, respectively. Role limitations due to emotional problems of patients who have received liver transplantation less than 12 months were 73.6±41.7 and lower than that of the group that over 12 months with a score of 86.9±30.3 (P<0.05 statistical significance).
Conclusions: Patients quality of life after liver transplantation at 108 Military Central Hospital improved markedly in 1 year in both physical and mental health. It proves that liver transplant surgery is a safe, effective, and initial treatment with good results for patients with end-stage liver disease.

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Korean J Transplant 2023;37 Suppl 1:S127
https://doi.org/10.4285/ATW2023.F-7087

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Periodontal pockets as a risk factor for cytomegalovirus infection after kidney transplantation: single-center retrospective analysis

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Background: Periodontal pockets are known to be a source of cytomegalovirus (CMV). CMV infection has been identified as a risk factor for acute kidney allograft rejection and even long-term mortality in organ transplant recipients. This study aims to investigate whether periodontal pockets may be a risk for CMV infection after kidney transplantation.
Methods: We conducted a retrospective analysis of 98 patients who underwent living donor kidney transplantation and received preoperative oral care at our institution. The extent of periodontal pockets was assessed as the percentage of tooth sites with probing pocket depth 4 mm (%PPD). We assessed the cumulative incidence of CMV infection within 3 months after transplantation.
Results: Cox hazard regression analysis showed that %PPD was a significant risk factor for CMV infection within 3 months after transplantation (hazard ratio, 29.0; 95% confidence interval, 2.2–252.0; P=0.004). The receiver operating characteristic curve determined the cutoff value for %PPD to be 26.7%. The cumulative incidence of CMV infection within 3 months after transplantation was significantly higher in patients with %PPD >26.7% compared to patients with %PPD ≤26.7% (27.8% vs. 7.6%, P=0.011).
Conclusions: Our study indicates that periodontal pockets may be a risk for CMV infection after kidney transplantation.

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Korean J Transplant 2023;37 Suppl 1:S128
https://doi.org/10.4285/ATW2023.F-7089

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of aging on repair process of renal ischemia-reperfusion injury

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Background: Immune cells regulate organ repair from ischemia-reperfusion injury (IRI), which affects outcomes after deceased donor organ transplantation. With a rising number of organs from elderly donors, there is an increasing recognition of senescence immune response, but it is less clear in kidney transplantation. We hypothesized that immune responses in IRI repair are affected by aging.
Methods: Renal IRI surgery with 45 minutes unilateral ischemia was performed in C57BL/6 mice of three different age groups (7 weeks, 6 months, and 12 months). The mice were followed up with measuring serum creatinine, and kidneys and spleens were collected after 4 weeks. Lymphocytes were analyzed using flow cytometry. Cytokine expression in kidneys was measured using multiplex protein assay.
Results: Serum creatinine levels were higher in older mice at 4 weeks from IRI (7-week-old, 0.25±0.05; 6-month-old, 0.41±0.04, P=0.01; 12-month-old, 0.39±0.02 mg/dL, P<0.01). NK T cells and regulatory T cells (Tregs) were lower in ischemic kidneys from 12-month-old mice than those from 7-week-old mice (NK T cells, 6.27%±0.5% vs. 2.51%±0.3%, P<0.01; Tregs, 13.42%±1.1% vs. 7.87%±0.5%, P<0.01). There were more activated B cells in ischemic kidneys from older mice (10.00±1.1; 16.37±2.0, P=0.04; 19.77%±1.7%, P<0.01) as well as in contralateral kidneys (2.78±0.2; 6.52±1.1, P<0.01; 7.81%±0.4%, P<0.01). Spleens from older mice had less Tregs after IRI. There was a downregulation of IL-10 in both ischemic (7-week-old vs. 12-month-old, 4.06±2.4 vs. 1.27±0.6 pg/mg; P<0.01) and contralateral (2.49±0.5 vs. 1.80±0.1 pg/mg, P<0.01) kidneys from 12-month-old mice, whereas MCP-1 (16.86±3.1 vs. 25.42±4.5pg/mg, P<0.01) and RANTES (15.54±3.8 vs. 26.92±8.5 pg/mg, P<0.01) were upregulated in contralateral kidneys.
Conclusions: Kidneys from older mice exhibited accelerated proinflammatory and diminished anti-inflammatory responses during IRI repair phase. Age-dependent abnormal immune responses could be a potential mechanism of inferior graft outcomes from elderly donors and may be a promising therapeutic target to improve the quality of organs for transplantation.

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Korean J Transplant 2023;37 Suppl 1:S129
https://doi.org/10.4285/ATW2023.F-7120

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Urinary tract infection incidence, risk factors and impact on short term outcome in kidney transplant recipients in Mongolia

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Background: According to literature review, incidence of urinary tract infection (UTI) which is one of the most common infectious complications in kidney transplant recipients was 25%–75%. The incidence is related to various factors including age, gender difference, immunosuppression type and amount and kidney function. Moreover, UTI may deteriorate graft function. However, there was lack of data addressing impact of UTI on patient and graft survival.
Methods: From 2015 to 2022, a total of 198 patients who received living kidney transplants at the First Central Hospital of Mongolia participated in this study. We divided study participants into two groups regarding whether diagnosed with UTI. Participants demographic data, comorbidity, kidney function and immunosuppression data were collected. Moreover, we evaluated the patients 1- and 3-years survival rate by study two groups. We also considered short term outcome as acute pyelonephritis, sepsis and graft failure. All analyses were performed using STATA 17.
Results: Study participants mean age was 42±12 years and 76.8% were male. Of the 198 patients, 58 patients (29.3%) suffered from UTI. Increasing age, female patients and taking high dose of immunosuppression were regarded as independent risk factors leading to UTI. Compared to control group, patients with UTI had higher risk of worsening graft function at discharge. Ciprofloxacin and nitrofurantoin are most commonly prescribed antibiotics.
Conclusions: UTIs are one of the main causes of graft dysfunction. Therefore, prevention and effective management of UTI are crucial in practice of renal transplantation.

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Korean J Transplant 2023;37 Suppl 1:S130
https://doi.org/10.4285/ATW2023.F-7140

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Resolution of hypertension after kidney transplantation is associated with better graft and patient survival in recipients with pretransplant hypertension

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Background: Patients with advanced chronic kidney disease (CKD) are often hypertensive, and kidney transplantation (KT) can potentially lead to resolution of hypertension. Although hypertension is expected to improve in a considerable number of CKD patients after KT, little is known about the exact prevalence and prognosis of resolved hypertension following KT in patients with pretransplant hypertension.
Methods: By using Health Insurance Review & Assessment Service and Korea National Health Insurance System, KT recipients (between 2006 and 2015) who had pretransplant hypertension were identified and subsequently categorized into "persistent hypertension" or "resolved hypertension" based on their post-KT hypertension status. Cox proportional hazard model for all-cause mortality and competing-risk analysis for graft failure (with a competing event of death before graft failure) were performed after adjusting for various clinical covariates and socioeconomic status.
Results: Of the 11,342 KT recipients who had pretransplant hypertension, 8,233 patients (73%) remained hypertensive, whereas hypertension resolved in 3,109 patients (27%) after KT. Recipients with resolved hypertension had lower rates of delayed graft function and less major comorbidities, including diabetes mellitus (DM), ischemic heart disease, and stroke compared to recipients who remained hypertensive. The resolved hypertension group had 0.59-fold (95% confidence interval [CI], 0.49–0.73) lower risk for graft failure and 0.59-fold (95% CI, 0.48–0.73) lower risk for all-cause death compared to the persistent hypertension group. Subgroup analyses revealed varying effects of resolved hypertension on graft survival by sex (stronger protection in females, P for interaction=0.045) and on overall survival by DM status (weaker protection in diabetic recipients, P for interaction=0.033).
Conclusions: A substantial proportion of patients recovered from hypertension following KT, which was associated with better graft survival as well as overall patient survival. We suggest that resolution of hypertension may be used as an indicator for predicting outcomes in KT recipients.

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Korean J Transplant 2023;37 Suppl 1:S131
https://doi.org/10.4285/ATW2023.F-7154

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Prediction of very early subclinical rejection with machine learning in kidney transplantation

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Protocol biopsy is a reliable method for assessing allografts status after kidney transplantation (KT). However, due to the risk of complications, it is necessary to establish indications and selectively perform protocol biopsies by classifying the high-risk group for early subclinical rejection (SCR). Therefore, the purpose of this study is to analyze the incidence and risk factors of early SCR (within 2 weeks) and develop a prediction model using machine learning. Patients who underwent KT at Samsung Medical Center from January 2005 to December 2020 were investigated. The incidence of SCR was investigated and risk factors were analyzed. For the development of prediction model, machine learning methods (random forest, elastic net, extreme gradient boosting) and logistic regression were used and the performance between the models was evaluated. The cohorts of 987 patients were reviewed and analyzed. The incidence of SCR was 14.6%. Borderline cellular rejection was the most common type of rejection, accounting for 61.8% of cases. In the analysis of risk factors, recipient age (odds ratio [OR], 0.98; P=0.03), donor body mass index (OR, 1.07; P=0.02), ABO incompatibility (OR, 0.15; P<0.001), human leukocyte antigen (HLA) II mismatch (two [OR, 6.44; P<0.001]), and antithymocyte globulin (ATG) induction (OR, 0.41; P<0.001) were associated with SCR in the multivariate analysis. The logistic regression prediction model (average area under the curve [AUC], 0.717) and the elastic net model (average AUC, 0.712) demonstrated good performance. HLA II mismatch and induction type were consistently identified as important variables in all models. The OR analysis of the logistic prediction model revealed that HLA II mismatch (OR, 6.77) was a risk factor for SCR, while ATG induction (OR, 0.37) was a favorable factor. Early SCR was associated with HLA II mismatches and induction agent and can be predicted by prediction model using machine learning.

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Korean J Transplant 2023;37 Suppl 1:S132
https://doi.org/10.4285/ATW2023.F-7155

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The effects of physical activity on fracture in kidney transplant recipients in South Korea: based on Korean National Health Insurance service data

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Background: Although kidney transplantation (KT) improves almost all functional aspects of the kidney, persistent renal osteodystrophy leads to bone frailty and fractures due to long-standing administration of immunosuppressants and prevailing sedentary lifestyle. We investigated the relationship between health behavior, especially physical activity and fractures in KT recipients (KTRs) using the database of Korean National Health Insurance Service (NHIS).
Methods: This retrospective study used the database of Korean NHIS. Of KTRs who received health check-up from 2009 to 2016, 10,083 subjects were finally included. We investigated fracture incidence and predictive factors for fractures in health behaviors (smoking, drinking, physical activity, obesity) and comorbidities. Physical activity was categorized into three groups by metabolic equivalent task (MET) 500 (nonphysical activity, MET 1–499 and MET500). Additionally, subgroup analysis was executed according to age and sex.
Results: Physical activity was protective for fractures in both categories of MET even after adjusting for all variables (MET 1–499: adjusted hazard ratio [aHR] 0.75, 95% confidence interval [CI] 0.62–0.92; MET500: aHR 0.84, 95% CI 0.70–1.0) and it was significant in individual fracture sites including vertebral and hip. In a subgroup analysis, although physical activity was not valid factor in the elderly, abdominal obesity was related to increase fracture risk in this group (aHR, 1.42; 95% CI, 1–2.02). Among established traditional risk factors for osteoporosis, female sex, age over 65 years, and diabetes mellitus also correlated with fractures in KTR.
Conclusions: As feasible and modifiable factors for fracture, physical activity is an effective strategy for prevention of fractures considering pleiotropic effects of exercise. Especially, resistance and endurance exercise should be executed for both decreasing abdominal obesity and preserving functional muscle mass.

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Korean J Transplant 2023;37 Suppl 1:S133
https://doi.org/10.4285/ATW2023.F-7160

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Pre- and posttransplant BK virus-specific ELISPOT assay for predicting the outcome of BK virus infection in kidney transplant recipients

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Background: It is needed to plan optimal therapeutic strategies for controlling BK viremia. Our previous study showed that BK virus (BKV)-specific T cell immunity measured by an interferon enzyme-linked immunospot (ELISPOT) are related to outcome of BKV infections. However, there was limitations about difference of time and viremia status.
Methods: We included 84 kidney transplant recipients (KTRs) who experienced at least one BK viremia at RQ-PCR of BKV-DNA. BKV-ELISPOT were measured in all included recipients at the time of pretransplant, 4 weeks posttransplant, 12 weeks post-transplant, and when viremia were detected. We divided into two groups, controller and noncontroller, according to sustained duration of BKV infection. We compared BKV-ELISPOT results at each time.
Results: We reduced or stop mycophenolic acid in 88.6% of BK viremia patients and used leflunomide for 48% patients (38.6% and 70% for each group). BKV-ELISPOT results were higher in controller groups at the time of pretransplant, 4 weeks post-transplant, 12 weeks posttransplant, first viremia detected. When first viremia detected, we analyzed BKV ELISPOT including five BKV peptide mixes. Controller group had higher LT, ST, VP1, VP2 ELISPOT results. Also, those who had no biopsy proven BKV-associated nephropathy (BKVAN) had higher LT, ST, VP1, VP3 ELOSPT results.
Conclusions: Pre- and post-BKV-ELISPOT assay may help to distinguish patients with well controlling BK viremia from those who have persisting BK Viremia who need more intensive therapy to prevent BKVAN.

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Korean J Transplant 2023;37 Suppl 1:S134
https://doi.org/10.4285/ATW2023.F-7182

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Leukocytoclastic vasculitis in transplant recipients

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Leukocytoclastic vasculitis (LCV) is a small vessel vasculitis that usually occurs on the skin but can also cause systemic small vessel disease. Pathogenesis of LCV involves the formation of immune complexes that deposit in small vessels and cause damage. We report a 53-year-old man who underwent a kidney transplant at the Kidney Transplant Center, Cipto Mangunkusumo Hospital, Jakarta. He had hypertension since 10 years ago and chronic kidney disease underwent hemodialysis since 1 year ago. He underwent a kidney transplant February 2023 with an unrelated donor and the same blood type. After the transplant he was on treatment with tacrolimus XL 8 mg once-daily, mycophenolate mofetil 500 mg twice-daily and methylprednisolone 16 mg once-daily. Two weeks after the kidney transplant, the patient complained of petechiae appears on the legs and kidney function began to decline. Laboratory tests showed levels of urea 128 mg/dL, creatinine 2.6, tacrolimus 13.6 ng/mL. The patient underwent a skin biopsy on the thigh and right leg, the histological results showed more support for LCV. In further treatment, kidney function progressively decreased and diagnosed as acute rejection, then it was decided to perform a nephrectomy, but the patient refused and the patient died due to sepsis. The most common cause of LCV is drugs although infection, malignancy, and connective tissue disease can also occur. Although the relationship between tacrolimus and LCV is lacking in the literature, such an association has been reported in a US Food and Drug Administration study report. In this patient, the cause of LCV cannot be proven due to tacrolimus administration or other causes, where this patient also suffers from a pneumonia infection which might also exacerbate LCV. It is critical for us to recognize and effectively manage LCV to prevent morbidity and mortality.

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Korean J Transplant 2023;37 Suppl 1:S135
https://doi.org/10.4285/ATW2023.F-7183

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Persistent positive cytomegalovirus immunoglobulin M before kidney transplantation

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The natural history of cytomegalovirus (CMV) forms latent infection after the resolution of acute infection, but it can reactivate in the setting of immunocompromised patients as in kidney transplants, and cause disease. Both, reactivation and disease, are associated with an increased risk of allograft failure and death. Therefore, management of CMV prevention is frequently used i.e. universal prophylaxis and preemptive therapy. However, CMV disease still can occur despite those two strategies, and they have barriers either drugs price or monitoring costs. A 28-year-old female was diagnosed with end-stage kidney disease and hypertension in 2016. She underwent hemodialysis one month after the diagnosis and finally got her kidney transplanted. Nine months before transplantation, her laboratory revealed positive CMV immunoglobulin G (IgG) and IgM. The results were the same when the examination was repeated 1 week before transplantation. Her donor was her mother with CMV IgG reactive. The patient was in clinically stable condition, with no specific symptoms, (normal leukocyte, lymphocyte, aspartate aminotransferase, and alanine aminotransferase). Her chest X-ray was normal. The kidney transplantation went well. The initial immunosuppressants were tacrolimus 4 mg twice-daily, mycophenolate mofetil 1,000 mg twice-daily, and methylprednisolone 500 mg intravenous in the first 3 days and changed to 16 mg per oral once-daily. One week after transplantation patient went home due to a stable condition. Ten days after transplantation the CMV DNA with the real time-polymerase chain reaction method, was undetected (limit of detection 54 copies/mL). The prophylaxis antiviral therapy was not given. Until 2 months after transplantation, she had no specific symptoms with normal allograft function. Another test of CMV DNA was planned. In certain condition clinical judgment play a significant role in the management of transplantation recipient with positive CMV serologic tests.

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Korean J Transplant 2023;37 Suppl 1:S136
https://doi.org/10.4285/ATW2023.F-7187

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Postoperative outcomes and quality of life after pure laparoscopic versus open donor hepatectomy in adult-to-adult living donor liver transplantation: first report from Thailand

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Background: Adult-to-adult living donor liver transplantation (ALDLT) was first performed at our institute in 2016, and we successfully initiated pure laparoscopic donor hepatectomy in 2022. While surgical outcomes between pure laparoscopic and open donor hepatectomy (PLDH) have been previously compared, the quality of life (QOL) after surgery remains unknown, especially in low-volume centers. This study aimed to compare the health-related QOL between PLDH and open donor hepatectomy (ODH) in ALDLT.
Methods: All patients who underwent donor hepatectomy for ALDLT at our center between 2016 and 2023 were included in this study. Demographic data, operative details, postoperative complications, and health-related QOL were prospectively collected. The SF-36 questionnaire survey was used to evaluate health-related QOL at 1, 3, 6, and 12 months postoperatively. Repeated measure analysis was employed to analyze the results.
Results: Fifty donors were included in this study, with 27 undergoing ODH and 23 undergoing PLDH. Baseline characteristics did not show significant differences between both groups. Intraoperative blood loss and blood transfusion were also not significantly different between both groups. The length of hospital stay was shorter in the PLDH group; however, it did not reach statistical significance. Postoperative complications were not significantly different between the groups. Regarding the overall 1-year QOL, the PLDH group exhibited significantly better physical function, bodily pain, general health perception, and social function. However, emotional role and mental health were not significantly different.
Conclusions: In low volume LDLT setting, PLDH is still a safe procedure for ALDLT. Moreover, it is associated with better long-term health-related quality of life compared to ODH.

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Korean J Transplant 2023;37 Suppl 1:S137
https://doi.org/10.4285/ATW2023.F-7199

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The efficacy and safety of continuous epidural analgesia in kidney transplant recipients: a propensity score matching analysis

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Background: The modality of postoperative analgesia after kidney transplantation is limited due to specific conditions of recipients patient. Epidural analgesia (EA) is an analgesic mainstay for abdominal surgery but controversial for kidney transplantation due to risk of bleeding from platelet dysfunction. The aim of this study is to compare the postoperative analgesic effect as well as safety between continuous EA and intravenous opioid analgesia in kidney transplant recipients.
Methods: In this single center, retrospective study, 361 end-stage renal failure adults, who underwent kidney transplantation from 2005 to 2020, were reviewed. Continuous EA was administered to 218 patients, while intravenous opioids (IO) were given to 143 patients. Confounders were adjusted by propensity-score matching with a 1:1 matching ratio. Cumulative fentanyl consumption at 72 hours postoperatively were recorded as primary outcome. Secondary outcomes were complications-associated IO and EA, length of hospital and intensive care unit (ICU) stay.
Results: After propensity score matching, the final sample included 94 patients per group with balanced preoperative covariates. Patients in the EA group had significant lower postoperative fentanyl consumption in 72 hours compared to the IO group (50 [0–100] vs. 100 [50–200] mcg; P<0.001). Nevertheless, the incidences of postoperative nausea, vomiting, bradycardia, and respiratory depression were similar in two groups. There was no difference in length of hospital and ICU stay. Furthermore, no patient receiving epidural block had developed an epidural hematoma.
Conclusions: The continuous EA is effective and safe technique. It significantly reduced postoperative opioid consumption comparing to intravenous opioid analgesia after kidney transplantation.

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Korean J Transplant 2023;37 Suppl 1:S138
https://doi.org/10.4285/ATW2023.F-7211

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Robotic assisted kidney transplant from deceased donor: initial experience

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With emerging concept of the minimally invasive procedures and the rising obesity prevalence, robotic-assisted kidney transplant (RAKT) is performed for the first time in France in 2001. During past two decades, RAKT has been proven feasible in various studies and accepted as a modality of KT besides open and laparoscopic KT. However, while other countries have reported many RAKTs performed on deceased donors, there was no report in Korea despite its eligible medical environment. This case report aims to provide an overall assessment of the preoperative evaluations, surgical techniques, and patient outcomes in the first attempt of robotic-assisted deceased donor kidney transplant in Korea. The donor was 36 years old hypoxic brain injury female who is relatively young age and had no sign of renal damage without any underlying disease (kidney donor profile index, 37%; kidney donor risk index, 0.87). While in determination of brain death, 58-year-old female patient with the chronic glomerulonephritis history was selected for recipient. The recipient had completed the work-up 3 months before the surgery through close collaboration with the nephrologist, and there was no limitation for surgery. The procedure was performed with DaVinci-Xi robotic surgical system in the manner of transperitoneal regional hypothermia (modified Vattikuti Urology Institute-Medanta technique). As the operator was expert in open KT, but not in robotic modality, operation proceeded with the assistance of an expert alongside the surgeon. The surgery was completed without any specific complications. Basiliximab was used as induction therapy, and sustained with tacrolimus and mycophenolate. The recipient was discharged on the 12th day without any abnormal finding in the ultrasound and magnetic resonance angiography. We have not done enough number of cases for establishing statistical significance, and there are some limitations such as increased rewarming time. But based on this case, with decent collaboration with the nephrologist, RAKT could be a viable option for deceased donor kidney transplant in Korea.

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Korean J Transplant 2023;37 Suppl 1:S139
https://doi.org/10.4285/ATW2023.F-7223

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Regulatory macrophages as potential cell-based immunotherapy for organ xenotransplantation

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Due to the critical shortage of donor organs, researchers have long considered using pig organs for xenotransplantation. However, differences in cell surface glycans between pigs and humans can lead to stronger immune responses, causing inflammation and coagulation issues in the transplanted organ. Overcoming these challenges is vital for successful pig-to-primate xenotransplantation. Regulatory macrophages (Mregs) have emerged as a promising cell population that can suppress inflammatory and T cell responses. They are generated from monocytes and macrophages using M-CSF and IFN-gamma. Mregs express various markers, including CD163, CD169, CD204, CD206, CD209, and MerTK, with dehydrogenase/reductase 9 as a stable marker for human Mregs. These cells secrete anti-inflammatory cytokines, induce regulatory T cells, and promote a balanced immune response. Current pharmacological approaches to prevent graft rejection have limitations, leading to side effects. In contrast, Mregs offer a potential cell-based immunosuppressive therapy for xenotransplantation. Their ability to modulate immune responses makes them promising candidates to address the challenges faced in organ transplantation. Further research in this area could revolutionize the field of xenotransplantation with more effective and targeted immunosuppressive therapies.
This research was financially supported by the Institute of Civil Military Technology Cooperation funded by the Defense Acquisition Program Administration and Ministry of Trade, Industry and Energy of Korean government under grant No. 22-CM-EC-18.

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Korean J Transplant 2023;37 Suppl 1:S140
https://doi.org/10.4285/ATW2023.F-7242

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Nano-biomarker-based surface-enhanced Raman spectroscopy for noninvasive discrimination of kidney transplant rejection types

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Background: Accurate identification and differentiation of rejection types in kidney transplant patients is crucial in clinical practice. While renal biopsy is currently the gold standard for diagnosis, its disadvantages necessitate the development of novel noninvasive approaches. This study applies surface-enhanced Raman spectroscopy (SERS) to blood samples from transplant recipients to detect molecular changes associated with rejection. It explores the potential of SERS to differentiate between antibody-mediated rejection (ABMR) and T cell-mediated rejection (TCMR) based on molecular fingerprints distinguished from normal.

Methods: We collected serum from three distinct groups: control (n=9), ABMR (n=14), and TCMR (n=3), each substantiated by pathological findings. A nanorod array-based surface-enhanced Raman chip was fabricated; a single-drop (5 uL) of serum was deposited on gold-ZnO nanoparticle-coated Si chips and 785 nm wavelength laser were irradiated to obtain Raman spectra. The principal component analysis (PCA) and partial least-squares discriminant analysis (PLS-DA), a machine learning algorithm, were applied to establish Raman spectroscopy-based diagnostic criteria.

Results: The average Raman spectra for each study group, when normalized at 1,000 cm-1, displayed unique peaks illustrating the capacity of Raman spectroscopy to distinguish between rejection types. A diagnostic classifier was developed using PCA to segregate the resultant spectra into rejection and control categories. By scoring based on principal components and deploying the PLS-DA machine learning algorithm with 50 principal components, the samples were successfully further classified into control, TCMR, and ABMR groups. The diagnostic accuracy, determined by the area under the curve, was recorded at 95.2% for ABMR and 98.5% for TCMR, respectively.

Conclusions: Our research demonstrated that the implementation of a SERS-based nano-chip holds immense promise as a novel noninvasive method for early detection of various rejection types, facilitating prompt medical intervention as needed.

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Korean J Transplant 2023;37 Suppl 1:S141
https://doi.org/10.4285/ATW2023.F-7261

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A comparative analysis of kidney transplantation outcomes in systemic lupus erythematosus patients with disease flare versus nonflare

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Background: While kidney transplantation is becoming a favored treatment for end-stage renal disease in systemic lupus erythematosus (SLE) patients, it comes with risks like rejection, infections, and lupus flares. This research aimed to investigate the incidence and clinical features of lupus flare in postkidney transplantation periods, and identify potential flare risk factors.
Methods: A retrospective study was conducted on 93 SLE patients who underwent kidney transplants at Asan Medical Center from 1995 to 2021. Patients were categorized into flare (posttransplant disease flare) and nonflare (remission) groups. The study gathered and analyzed clinical data such as patient demographics, flare details, immunosuppression regimens, and patient and death-censored graft survival (DCGS) rates.
Results: The comparison of flare (n=11) and nonflare (n=82) groups revealed higher pre- and posttransplant anti-dsDNA levels in flare patients, with levels decreasing significantly for both groups posttransplant. No significant differences were found in other markers or medication use. Most flares occurred around 8 months posttransplant, primarily manifesting as lupus nephritis recurrence or hematologic symptoms. Pretransplant anti-dsDNA levels predicted flares (hazard ratio, 1.030; 95% confidence interval, 1.008–1.053; P=0.008). The 20-year survival rates were similar (83.3% flare, 94.7% nonflare, P=0.577), with no significant DCGS rate difference (P=0.435).
Conclusions: Our findings indicate that the level of anti-dsDNA serves as a predictive marker for flare occurrence in SLE patients who have received a kidney transplant. These flares, typically occurring within the first year posttransplant, can result in biopsy-confirmed recurrences of lupus nephritis. Regardless of flare incidences, patient and graft survival rates show no significant disparities. Future research is required to establish the best methods for managing disease flares in posttransplant SLE patients and to understand their overall impact on patient outcomes.

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Korean J Transplant 2023;37 Suppl 1:S142
https://doi.org/10.4285/ATW2023.F-7270

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Comparison of ABO-incompatible kidney transplant outcomes between robot-assisted and open techniques

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Background: While robot-assisted kidney transplantation (RAKT) offers potential benefits such as minimal postoperative pain, better cosmesis, fewer wound infections, and shorter hospital stay, its efficacy in ABO-incompatible (ABO-i) KT compared to open KT (OKT) remains understudied. This study aims to compare ABO-i KT outcomes between RAKT and OKT.
Methods: The study utilized data from 29 ABO-i RAKT and 210 ABO-i OKT cases performed at Asan Medical Center from October 2020 to February 2023. Univariate and multivariate analyses were performed to evaluate factors associated with a composite of biopsy-proven acute rejection (BPAR), *de novo* donor-specific antibodies (DSA), and overall graft failure.
Results: With the exception of recipients of RAKT having a shorter median dialysis duration compared to the OKT group (1 vs. 4 months, P=0.02), the baseline characteristics were mostly alike between the two groups. Although univariable analysis revealed that human leukocyte antigen (HLA)-incompatible kidney transplant (P=0.007), pretransplant DSA (P=0.0028), and thymoglobulin use for induction immunosuppression (P=0.021) were associated with a composite outcome, there was no significant factor for a composite outcome in the subsequent multivariable analysis. HLA-incompatible kidney transplant was likely to be associated with a composite outcome in multivariable analysis (hazard ratio, 2.889; 95% confidence interval, 0.974–8.564; P=0.0557).
Conclusions: In conclusion, this study demonstrates that there was no significant difference in a composite outcome of overall graft failure, BPAR, and *de novo* DSA between ABO-i RAKT and ABO-i OKT. Further research is necessary to corroborate the long-term outcomes of ABO-i RAKT compared to ABO-i OKT.

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Korean J Transplant 2023;37 Suppl 1:S143
https://doi.org/10.4285/ATW2023.F-7280

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

MD-3 maintenance therapy for liver allotransplantation in nonhuman primate

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MD-3 is a monoclonal antibody targeting intercellular adhesion molecule-1 (ICAM-1) in humans. Its unique property lies in its ability to promote tolerogenic myeloid cells and induce donor-specific T cell unresponsiveness instead of inhibiting cell adhesion. In previous nonhuman primate (NHP) studies, a short-term (3 months) administration of MD-3 effectively suppressed liver allograft rejection and extended allograft survival. However, over time, chronic rejection and graft failure became evident. Building on these promising findings, our current investigation sought to explore whether MD-3 could serve as an alternative to toxic calcineurin inhibitors for long-term maintenance therapy. Using a Rhesus macaque liver transplantation model, we divided the animals into three groups: a no immunosuppression group (n=2), a conventional immunosuppression group (n=4) receiving standard treatment, and an MD-3 maintenance group (n=4). The no immunosuppression group experienced severe acute allograft rejection and had very short allograft survival. The conventional immunosuppression group exhibited acute or chronic allograft rejection and eventually lost their liver allografts. In contrast, the MD-3 maintenance group showed prolonged liver allograft survival with only one member experiencing allograft loss due to liver cirrhosis related to hepatic venous obstruction. The remaining three members in the MD-3 maintenance group maintained well-functioning liver allografts (POD853, 888, 1364). During the protocol biopsies, one member in the MD-3 group displayed mild liver function abnormalities and mild acute T cell-mediated rejection, while the other two showed normal liver function and no signs of rejection. Notably, the MD-3 trough levels were lower in the member who experienced mild rejection compared to the other members of the MD-3 maintenance group. Overall, our study demonstrates that long-term MD-3 mono-maintenance therapy effectively suppresses liver allograft rejection and sustains allograft survival without the need for conventional immunosuppressants, including calcineurin inhibitors.

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Korean J Transplant 2023;37 Suppl 1:S144
https://doi.org/10.4285/ATW2023.F-7282

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Nutritional intervention process for a patient with lung transplantation: a case report

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Lung transplantation is a life-saving treatment for patients with end-stage lung disease. However, lung transplant recipients are at a higher risk of malnutrition, which can negatively impact their short-term prognosis. A 49-year-old male patient with idiopathic pulmonary fibrosis and diabetes underwent a deceased donor lung transplantation at the 108 Military Central Hospital in Vietnam. Before the transplant, the patient had a height of 174 cm, a weight of 56.0 kg, a body mass index of 18.5kg/m^2, albumin level of 28 g/L, and subjective global assessment (SGA)-B. Enteral refeeding was initiated on the third day posttransplantation (HD#3) with small amounts of clear liquid diet. During the first week posttransplant, the patient developed pneumonia and acute kidney injury, which increased his long-term mortality risk. Intensive nutrition management was implemented following the guidelines of Kidney Disease: Improving Global Outcomes and European Society for Clinical Nutrition and Metabolism. From HD#7 (albumin 39.3 g/L, hemoglobin 91.0 g/L, lympho 1.2, SGA-B) to HD#14 (albumin 32.4 g/L, hemoglobin 84 g/L, lympho 5.2 g/L, SGA-B), the patient was fed with an energy intake of 1,000–1,200 kcal/day and a protein intake of 1.3–1.5 g/kg/day. This dietary intake was maintained for 3 weeks. After HD#21 (albumin 25 g/L, hemoglobin 73 g/L, lympho 6.7 g/L, SGA-B), when the patients kidney function had stabilized, he started with oral feeding. From HD#28 (albumin 35 g/L, hemoglobin 78 g/L, lympho 8.9 g/L, SGA-B), the patient was comprehensively fed by oral feeding. The patient's energy and protein intake were gradually increased, and by HD#60 (albumin 27.7 g/L, hemoglobin 87 g/L, lympho 1.2 g/L, SGA-B), his energy intake was 1,500–1,700 kcal/day. After HD#90 (albumin 27.7 g/L, hemoglobin 101 g/L, lympho 1.2 g/L, SGA-B), the patients nutrition markers were stable, but his lung function had not improved significantly due to infection and clinical status. In conclusion, lung transplant recipients should be screened for nutritional risk and provided with preoperative nutritional support to improve their prognosis.

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Korean J Transplant 2023;37 Suppl 1:S145
https://doi.org/10.4285/ATW2023.F-7292

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Experience of liver transplantation in National Scientific Center for Surgery Named after A.N. Syzganov

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Background: Liver transplantation (LT) is a radical treatment method for recipients with end-stage liver disease. The first LT in Kazakhstan was performed in December 2011 year. Our hospital has more than 10 years of experience in LT by December 2022. This study shows the results after LT in a leading clinic of Kazakhstan.
Methods: From December 2011 to December 2022, 233 LT were performed at the National Scientific Center of Surgery named after A.N. Syzganov. Twenty-four (10.3%) LT were performed from deceased donor and 169 (72.5%) from a living donor. Pediatric LT from a living donor was performed in 40 cases (17.1%). The next graft types were used: right lobe 155, left lobe 23, posterolateral sector-1, dual-graft-1, left lateral sector 29, whole liver 24. Indications for LT were cirrhosis in the outcome: hepatitis C 27, hepatitis B 18, hepatitis B with delta agent 102, primary biliary cirrhosis 30, primary sclerosing cholangitis 5, cryptogenic cirrhosis 8, alimentary-toxic hepatitis 3, Budd-Chiari 1, myofibroblastic tumor 1, steatohepatitis 2, Wilson-Konovalov 1, biliary atresia 23, secondary biliary cirrhosis 2, autoimmune hepatitis 10. Clinical results were retrospectively analyzed.
Results: The overall 5- and 10-year survival rate after LT were 75% and 72.4% correspondingly. Biliary complications after LT were observed in 32 (13.7%), vascular complications in 10 (4.2%), bleeding in 25 (10.7%), rejection crisis in 12 cases (5.1%).
Conclusions: LT in Kazakhstan and in our hospital is actively developing. The main problem at present is the need to develop organ transplantation from deceased donors.

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Korean J Transplant 2023;37 Suppl 1:S146
https://doi.org/10.4285/ATW2023.F-7325

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The landscape of indication biopsy results by biopsy timing and the corresponding prognosis of transplanted kidneys

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Background: We conducted a retrospective multicenter study to investigate the results of clinically indicated graft kidney biopsies and subsequent graft outcomes.
Methods: We included a total of 414 patients who underwent indication biopsy for the transplanted kidney during the study period. The study aimed to examine the timing of the biopsy after transplantation, the histological findings, and the loss of graft function.
Results: We examined the distribution of histological findings in graft kidneys from the time of kidney transplantation to the time of indication biopsy. Within 1 year posttransplantation, the most common finding among rejections was acute T cell-mediated rejection (TCMR), but chronic antibody-mediated rejection (ABMR) and relapsing glomerulonephritis (GN) predominated after 1 year. Out of 398 patients, excluding those lost to follow-up, approximately 37.2% experienced graft failure. Among patients maintaining graft function, acute TCMR was most prevalent where rejection was identified. Conversely, in those losing graft function, acute TCMR (27.7%) was followed by relapsing GN (18.9%) and chronic ABMR (16.2%). Among relapsing GN cases, 54.9% lost graft function during the study, demonstrating the highest failure rate compared to other histological outcomes. Immunoglobulin A nephropathy was most common among GN, followed by focal glomerular segmental sclerosis and membranous glomerulonephritis.
Conclusions: This study revealed that chronic ABMR and relapsing GN should be the primary considerations in indication biopsies performed after 1 year posttransplantation. Additionally, a result of relapsing GN in the biopsy may indicate the greatest risk of losing graft function.

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Korean J Transplant 2023;37 Suppl 1:S147
https://doi.org/10.4285/ATW2023.F-7328

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The method and experience of managing transplant waiting lists using computer programs

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Organ transplantation stands as a crucial treatment method, enhancing both survival rates and the quality of life for patients grappling with end-stage organ failure. However, the recent decrease in brain-dead donors has extended the waiting period for transplant candidates. This elongated waiting period, resulting from a disparity between available brain-dead donors and those awaiting transplantation, poses potential risks. These risks include the potential cancellation of surgeries due to inadequate evaluation of waitlisted patients in emergency preparations or insufficient time to prepare for subsequent patients, ultimately impacting final organ recipients. To address this, organ transplant coordinators must promptly assess the waiting list status upon discovering a brain-dead donor, ensure seamless communication with transplant and extraction medical teams, and efficiently manage the waiting list. Consequently, our institution employs the computer program Evernote to systematically organize and share information pertaining to managing transplant waiting patients. This approach facilitates communication, aids decision-making, enhances the assessment of patients awaiting transplantation, improves communication among medical staff, and assists in determining necessary tests and confirmation criteria. We aim to share our experience utilizing such programs to aid other medical institutions in fostering rapid and accurate communication and decision-making among medical teams. Moreover, we anticipate that this approach will contribute to positive outcomes post-transplantation for individuals awaiting organ transplants.

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Korean J Transplant 2023;37 Suppl 1:S148
https://doi.org/10.4285/ATW2023.F-7348

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical and histopathological findings are more useful in predicting hepatocellular carcinoma recurrence after liver transplantation than genetic markers

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Background: Liver transplantation (LT) provides the optimal treatment option for patients with unresectable hepatocellular carcinoma (HCC). Despite careful selection of patients, HCC may still recur after LT, which is associated with the dismal prognosis of posttransplant survival. We aimed to discover susceptibility loci by performing the first genome-wide association study (GWAS) of HCC recurrence after LT, along with clinical and histopathological findings.
Methods: All samples of cases and controls were genotyped using Korea Biobank Array with about 830K variants. We used a discovery cohort of 148 patients with HCC recurrence as cases and 1,427 patients without HCC recurrence as controls after LT to perform a GWAS. Additive logistic regression was performed by adjusting age and gender using EPACTS software. We validated our GWAS results using new replication cohort consisting of 53 as cases and 588 as controls. In addition, candidate variants were imputed using IMPUTE v4 with the merged reference panel of 1,000 Genomes project and Korean Reference Genome. On the other hand, the clinical and histopathological findings were estimated for their potential as risk factors for HCC recurrence after LT.
Results: At genome-wide thresholds of significance as $P<10^{-7}$, one locus (rs1961614) of the C1orf100 was associated with HCC recurrence after LT. The C1orf100 gene was recently discovered to be associated with white cell telomere length. However, this locus was not reproduced in the replication cohort. On the other hand, among clinical and histopathological findings, a single tumor <5 cm, a maximum of three tumors with <3 cm, no macrovascular invasion, and no metastasis were statistically associated with lower HCC recurrence after LT ($P<0.05$).
Conclusions: In the limited Korean LT cohort from the Korean Organ Transplantation Registry database, clinical and histopathological findings are more useful in predicting HCC recurrence after LT than genetic markers.

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Korean J Transplant 2023;37 Suppl 1:S149
https://doi.org/10.4285/ATW2023.F-7349

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Transcriptomic analysis of the coexisting nonhuman primate kidney with a transgenic pig kidney

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Background: Xenotransplantation using a pig's kidney is a method that serves as a bridge to buy waiting time for allotransplantation to overcome the donor shortage problem. During pig-to-nonhuman primate (NHP) kidney transplantation, it is unclear what happens to NHP kidneys that coexist with the pig kidney.
Methods: NHP kidneys coexisting with pig kidneys for 14 (GTKO/hCD39/hCD55), 67 (GTKO/hCD46), and 75 (GTKO) days were analyzed by mRNA sequencing. Ingenuity pathway analysis was used to analyze the differential-expression data.
Results: The gene expression levels associated with the neutrophil extracellular trap signaling pathway were down-regulated, whereas genes associated with acute phase response signaling were upregulated at day 14 (GTKO/hCD39/hCD55). Also, the genes related to interferon signaling was commonly increased at days 67 (GTKO/hCD46) and 75 (GTKO). A significant decrease in the acute phase responses signaling was observed in the kidney on day 75. Through the gene network in the DEGs following kidney xenotransplantation, The kidney in GTKO/hCD39/hCD55-D14 case shows that systemic inflammation may occur due to innate immune response. The case of GTKO/hCD46-D67 and GTKO-D75 present that they are commonly associated with antiviral response through IRF3 and 9.
Conclusions: A genetically engineered pig kidney could induce the situation of systemic inflammation or antiviral immune responses in a remaining NHP kidney.

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Korean J Transplant 2023;37 Suppl 1:S150
https://doi.org/10.4285/ATW2023.F-7353

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of solid organ transplantation on the effectiveness of COVID-19 vaccination in hospitalized patients with COVID-19: a propensity score-matched cohort study

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Background: The effectiveness of coronavirus disease 2019 (COVID-19) vaccination in solid organ transplant recipients (SOTRs) remains a subject of investigation. Solid organ transplantation requires immunosuppressive therapy to prevent organ rejection, which may potentially affect the efficacy of COVID-19 vaccination in SOTRs. This study aimed to evaluate the impact of solid organ transplantation on the effectiveness of COVID-19 vaccination in hospitalized patients with COVID-19.
Methods: We retrospectively collected the data of 7,327 patients hospitalized with COVID-19. To address potential confounding factors, such as age, sex, and COVID-19 diagnosis date between SOTRs and non-SOTRs, we employed a 1:2 propensity score-matching method. We compared the overall and within-group clinical outcomes and course of hospitalization between the two groups based on the appropriateness of the vaccination.
Results: Among the 83 SOTRs, 48 (57.8%) received appropriate vaccination, and of the 160 non-SOTRs, 79 (49.4%) received appropriate vaccination (P=0.211). SOTRs had a significantly higher risk of high-flow nasal cannula use, mechanical ventilation, acute kidney injury, and composite of COVID-19 severity outcomes than non-SOTRs. Among SOTRs, no significant differences were observed in the clinical outcomes or course between the appropriately and inappropriately vaccinated groups. Among non-SOTRs, the appropriately vaccinated group exhibited better clinical outcomes and course than the inappropriately vaccinated group.
Conclusions: Hospitalized SOTRs with COVID-19 had a worse prognosis than non-SOTRs. Furthermore, unlike in non-SOTRs, the effectiveness of vaccination in SOTRs was low, indicating that vaccination may not prevent severe COVID-19 progression in this population.

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Korean J Transplant 2023;37 Suppl 1:S151
https://doi.org/10.4285/ATW2023.F-7375

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical outcomes of ABO- and human leukocyte antigen-incompatible living donor kidney transplantation: a nationwide study

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Background: ABO-incompatible (ABOi) or human leukocyte antigen-incompatible (HLAi) living donor kidney transplantation (LDKT) is increasing, however, still inferior to immune-compatible transplantation. We aimed to analyze clinical outcomes of ABOi or HLAi LDKT using nationwide cohort data.
Methods: We utilized the nationwide data repository from the Korean Organ Transplantation Registry with the cases of LDKT between 2009 and 2018. The kidney transplants were classified according to the presence of anti-A/B or donor-specific anti-HLA (HLA-DSA) antibodies. We compared the incidence of biopsy-proven acute rejection, graft survival, and patient survival.
Results: A total of 5,046 patients were classified into four groups: transplants in recipients with HLA-DSA and ABOi donors (DSA+ & ABOi, n=192), with HLA-DSA and ABO compatible donors (DSA+ & ABOc, n=320), without HLA-DSA and ABOi donors (DSA- & ABOi, n=1,188), and without HLA-DSA and ABO compatible donors (CONTROL, n=3,346). The incidence of acute antibody-mediated rejection (AABMR) was the highest in the DSA+ & ABOi group, followed by DSA+ & ABOc group, both higher than the CONTROL group (P<0.001, DSA+ & ABOi vs. CONTROL; P<0.001 DSA+ & ABOc vs. CONTROL; P=0.008, DSA- & ABOi vs. CONTROL). The overall 5-year graft survival was 95.5% and was superior in the CONTROL group compared to other groups (P=0.001, DSA+ & ABOi vs. CONTROL; P=0.047, DSA- & ABOi vs. CONTROL). The overall 5-year patient survival was 98.9% and comparable between groups. The multivariable analysis resulted that AABMR (hazard ratio [HR], 4.300; 95% confidence interval [CI], 1.788–10.341; P<0.001), ATCMR (HR, 4.609; 95% CI 1.865–11.389; P<0.001), presence of delayed graft function (HR, 7.119; 95% CI, 2.328–21.767; P=0.001), and severe infection (HR, 2.370; 95% CI, 1.205–4.661; P=0.012) were risk factors of graft loss.
Conclusions: The presence of anti-A/B or donor-specific anti-HLA antibodies had unfavorable impacts on clinical outcomes in LDKT. The appropriate management for risk factors should be undertaken to improve graft and patient survival.

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Korean J Transplant 2023;37 Suppl 1:S152
https://doi.org/10.4285/ATW2023.F-7385

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Factors affecting discard of deceased donor kidneys of Korea

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Background: Kidney transplantation has a significant survival advantage compared to dialysis but kidney supply is less than demand for transplantation. We analyzed characteristics and outcomes of deceased donor kidneys to assess and probabilities of organ discard.
Methods: This study included 5,592 deceased donor kidneys which are candidate for kidney transplantation from 2013–2018 in the Korean Network for Organ Sharing and the National Health Insurance Data Sharing Service. Kidneys were classified by not procured (n=385), both procured (n=5,144), single procured (n=63). single procured were divided into single transplanted (n=62), single discarded (n=1). Both procured were divided into bilateral transplanted (n=5,058), unilateral transplanted (n=33), unilateral discarded (n=33), both discarded (n=20). We compared characteristics of transplanted, discarded, not-procured subgroups and assessed causes of kidney discard. Also we analyzed outcomes as death, graft failure requiring maintenance of dialysis in transplanted subgroups.
Results: Discard rate was 1%. Kidney discard rate combining not-procured kidneys were 439 (7.9%). Compared with transplanted donor, not-procured kidney donors were older, had high body mass index, more hypertension and diabetes mellitus, high serum creatine, low serum hemoglobin and high kidney donor risk index (KDRI). The causes of not-procurement were all organ damage. The most common cause of kidney discard was organ damage (n=36, 66.6%), and second-most reason was no recipient located (n=7, 12.9%). In transplanted subgroups (bilateral vs others), there were no significant differences in outcome as death (bilateral 346 [6%], others 9 [9%] kidneys; P=0.3) and graft failure (bilateral 208 [4%], others 6 [6%] kidneys; P=0.3). While mean KDRI of discarded plus not-procured kidneys (1.9±0.7) was higher than that of transplanted organs (1.5±10.5), a large overlap in the quality was observed.
Conclusions: Although discard rate of donors' kidney was low in Korea (1%, 2013–2018), but factors beyond organ quality still affect kidney discard. So it is necessary to use kidneys that are discarded for reasons other than organ quality to the fullest.

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Korean J Transplant 2023;37 Suppl 1:S153
https://doi.org/10.4285/ATW2023.F-7395

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Effectiveness of smart toothbrush for remote oral hygiene management in liver/kidney transplant patients

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Background: Immunosuppressive therapy in organ transplantation reduces immunity, making patients vulnerable to infections. Pretransplant dental care is vital to minimize posttransplant infection risks and improve transplant success. Regular dental check-ups and maintenance are crucial due to the infection risk from immunosuppressive drug use. This study investigates the efficacy of telemonitoring oral care using a smart toothbrush in liver or kidney transplant patients.
Methods: The study included patients scheduled for liver or kidney transplant patients with at least 16 teeth, including implants and bridges, were divided into three subgroups: smart toothbrush without telemonitoring (Oral-B iO9; OB), smart toothbrush with telemonitoring and expert advice (Mombrush; MB), and manual toothbrush (Benco; MTB). Evaluations were conducted at baseline (V1), immunosuppressive drug cessation day (V2), and 3 months after V2 (V3). Relative plaque removal efficacy, halitosis, and oral and gut microbiome were assessed.
Results: The MB group showed the most significant improvement in plaque control based on QHI changes, with all groups returning to baseline levels at V3. Halitosis levels were similar between groups and visits. Oral microbiome analysis revealed no significant differences in high-risk periodontal bacteria among groups at different time points. In caries-related bacteria, caries-risk bacteria decreased and anticaries bacteria increased over time in the MB group compared to the MTB and OB groups. Similarly, in the gut microbiome, it was found that *enterobacterales* with potential pathogenicity were relatively reduced in the MB, OB group compared to the MTB group.
Conclusions: Interest in oral care declined after immunosuppressive drug cessation, but telemonitoring with Mombrush facilitated continuous oral hygiene maintenance. However, patient interest in smart toothbrushes decreased after 3 months. Oral hygiene management is critical for liver or kidney transplant patients, considering the correlation between oral and gut microbiome. Adequate monitoring and follow-up notifications are essential to keep users engaged.

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Korean J Transplant 2023;37 Suppl 1:S154
https://doi.org/10.4285/ATW2023.F-0000

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Current safety and outcomes of kidney allograft biopsy

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Background: Kidney allograft dysfunction has various causes and presentations. Although many studies on biomarkers for detection of kidney allograft dysfunction were performed, kidney biopsy remains the gold standard for the diagnosis of kidney allograft dysfunction. However, there are concerns about the risks and complications. This study aimed to clarify the safety and clinical significance of kidney allograft biopsy.
Methods: We retrospectively reviewed histopathological findings of 485 patients who received kidney allograft biopsy between 2005 and 2021. All kidney allograft biopsies were performed by nephrologist using ultrasound guidance.
Results: The mean period from kidney transplantation to allograft biopsy was 56.3±67.6 months. Of the 485 allograft biopsies, there were 61 (12.6%) protocol biopsies. Eighty-six patients (17.7%) suffered complications and the complication rate between indication biopsy and protocol biopsy was comparable (18.2% vs. 14.8%, P=0.515). The rate of major complications including blood transfusion and radiologic intervention was 1.9% and there was no graft loss. Patients who received blood transfusion had significantly lower kidney allograft chronicity scores (cg, ci, ct, and cv) and higher levels of blood urea nitrogen and creatinine than those without transfusion. Multivariable Cox proportional hazard models revealed that rejections (hazard ratio [HR], 3.714; 95% confidence interval [CI], 1.166–11.831; P=0.026) and glomerular disease (HR, 8.580; 95% CI, 2.627–28.029; P<0.001) were associated with increased risk of death censored graft failure compared to minor glomerular change.
Conclusions: Kidney allograft biopsy is considered to be safe with acceptable complications. Also, it is essential for the correct diagnosis and future therapeutic plan.

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Korean J Transplant 2023;37 Suppl 1:S155
https://doi.org/10.4285/ATW2023.F-7407

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Short-term external biliary drainage in living donor liver transplantation using duct-to-duct anastomosis: a single-center experience

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Background: In living donor liver transplantation (LDLT), biliary complication (BC) is most common and intractable complication. There are various methods of biliary reconstruction to reduce this complication, but there is no optimal method of reconstruction. The most common biliary reconstruction is duct-to-duct anastomosis (DDA) in LDLT. And placing external biliary drainage (EBD) across the biliary anastomosis is easy and good method to reduce BC. Unlike the general method of maintaining the drainage tube for 3 months to 12 months, our institution tried a short-term placement method of 6 weeks. This study reported the single institutional experience of short-term EBD in LDLT.
Methods: A total of 123 patients underwent LT from January 2013 to November 2022 in The Catholic University of Korea Incheon St. Mary's Hospital. Fifty-three patients who underwent deceased donor liver transplantation and 11 patients with lack of data (follow-up loss, no EBD) were excluded. A retrospective cohort study was conducted on total 59 patients who underwent a LDLT with EBD and DDA. EBD (feeding tube, 500 mm, 5Fr, JMS, Republic of Korea) was placed across the biliary anastomosis during operation. EBD was naturally drained for the first 1 to 3 weeks and was removed after 6 weeks.
Results: The overall BC was occurred in 16 patients (27.1%). Two (3.4%) of early biliary fistula, five (8.5%) of early biliary stricture, and nine (15.3%) of late biliary stricture was occurred. All of BC was resolved by nonoperative treatment. There was no mortality related to BC. There was no bile leakage after removal of the drainage tube.
Conclusions: A single institutional experience showed the effectiveness and safety of short-term EBD.

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Korean J Transplant 2023;37 Suppl 1:S156
https://doi.org/10.4285/ATW2023.F-7429

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Isolated testicular tuberculosis in a kidney transplantation recipient

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Genitourinary tuberculosis (Tb) is a rare form of extrapulmonary Tb. Especially, isolated testicular Tb is extremely uncommon. The precise diagnosis of testicular Tb might be challenging due to ambiguous clinical symptoms and imaging test results. Our case involved a 36-year-old male kidney transplantation (KT) patient, presenting with left scrotal pain and tenderness. He had undergone living donor KT 8 years ago and took tacrolimus, mycophenolate mofetil, and prednisolone. Laboratory tests revealed anemia, leukocytosis, and elevated inflammatory markers. Computed tomography showed left scrotal wall thickening and enlargement which means left testicular abscess. We hold mycophenolate mofetil and used intravenous antibiotics. Also, we performed incision and drainage of abscess. Nevertheless, the clinical course did not improve. Thus, we performed radical left orchiectomy and biopsy. Biopsy revealed extensive chronic granulomatous inflammation with caseous necrosis, consistent with tuberculous orchiepididymitis. Quadruple anti-Tb drug was given, and the patients clinical course has been improved. This is the first case of testicular Tb in KT recipients. It is necessary to include testicular Tb in the differential diagnosis of testicular infection and mass to prevent unnecessary surgical intervention.

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Korean J Transplant 2023;37 Suppl 1:S157
https://doi.org/10.4285/ATW2023.F-7434

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Reinitiating living donation kidney transplantation in COVID-19 pandemic: Indonesia experience

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Background: The coronavirus disease 2019 (COVID-19) pandemic significantly impacted healthcare procedures, including kidney transplantation (KT). Many global KT centers, including those in Indonesia, suspended programs, especially living donor KT. In April 2020, Indonesia's Jakarta-based KT centers halted operations after detecting the country's first COVID-19 case in March 2020. However, after implementing COVID-19 prevention protocols according to international and national health guidelines, the program resumed to adapt to the pandemic era. Nevertheless, comprehensive data on profile, trends, adaptation, and safety measures for living donation KT during the pandemic in Indonesia are lacking. This study aims to collect and report such data.

Methods: This study retrospectively analyzed KT procedures at Dr. Cipto Mangunkusumo Hospital and Asri Hospital, Jakarta, from January 2020 to June 2023. It primarily focused on KT procedures in Indonesia before and after the May 2020 program resumption, implementing COVID-19 prevention protocols.

Results: In January to March 2020, an average of 9.67 KT procedures/month were performed. No KT procedures in April 2020. In May 2020, three KT procedures were done after the reboot. From May 2020 to June 2023, an average of 10 KT procedures/month were performed. Out of 404 KT schedules from May 2020 to June 2023, 382 were performed on schedule, 13 were rescheduled due to non-COVID-19 clinical conditions, and 12 (2.97%) were due to patients COVID-19 infection confirmed by polymerase chain reaction. Pediatric recipients constituted 3.96% of the total recipients. Starting from October 2020, the laparoscopic approach shifted to retroperitoneal to minimize COVID-19 risk. Based on the data, 97% of KT recipients remained uninfected by COVID-19 until this study, while six recipients were infected, two within 14–28 days after the procedure and four after 14–28 days.

Conclusions: Despite COVID-19 challenges, Indonesia's KT centers adapted, performing more monthly KT procedures than prepandemic. Adjustments like laparoscopic changes and COVID-19 screening ensured safety and continuity, as revealed by this study.

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Korean J Transplant 2023;37 Suppl 1:S158
https://doi.org/10.4285/ATW2023.F-7447

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A case of crescentic immunoglobulin A nephropathy associated with Henoch-Schonlein purpura after kidney transplantation

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Crescentic glomerulonephritis (GN) is a glomerular disease in which renal function deteriorates rapidly within days to months, and without appropriate treatment, it can progress to end-stage renal disease (ESRD). Henoch-Schonlein purpura is a systemic small vessel vasculitis in which immunoglobulin A (IgA) dominant immune complexes are mainly deposited. Histological findings in renal involvement are generally the same as those of IgA nephropathy, but progression to crescentic GN is very rare. We report a case of successful treatment of crescentic IgA nephropathy in a kidney transplant patient. The authors performed a kidney biopsy in a hospitalized renal transplant patient when the patient newly developed proteinuria during treatment of Henoch-Schonlein purpura. After biopsy, crescentic GN was confirmed, and the patient was treated with steroids. A 59-year-old female ESRD patient was hospitalized with abdominal pain, diarrhea, and bilateral extremity purpura 4 years after receiving a deceased donor kidney transplant at our hospital. During hospitalization, a transplanted kidney biopsy was performed for newly developed proteinuria, and the result confirmed Crescentic IgA nephropathy (IF: moderate megangial IgA deposits, LM: total glomeruli (9), global sclerosis (1), crescent (7). At the time, urine protein (+++), urine protein-creatinine ratio (uPCR) 3.55 mg/mgCr, BUN/Cr 18.2/0.74 mg/dL, and after steroid treatment (methyl-prednisolone 500 mg/day for 3 days), abdominal pain, diarrhea, bilateral purpura, and diarrhea all improved, and the patient was discharged. Immunosuppressive agents such as tacrolimus and mycophenolate mofetil were maintained at the same dose, and steroids were gradually reduced to 7.5 mg/day after steroids therapy. After 5 months, transplanted kidney biopsy was performed, and the biopsy confirmed Henoch-Schonlein purpura nephritis. Interstitial fibrosis and tubular atrophy (grade I) (Banff Score: ci1, ct1, as1) was confirmed, and urine protein (–), uPCR 0.24 mg/mgCr, and BUN/Cr 38.6/1.09 mg/dL are under observation.

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Korean J Transplant 2023;37 Suppl 1:S159
https://doi.org/10.4285/ATW2023.F-7449

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Rituximab induction therapy in deceased donor kidney transplantation: a case series analysis

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Background: This retrospective observational study presents a case series involving deceased donor kidney transplant (DDKT) recipients who received rituximab induction therapy, aiming to assess the impact of rituximab.
Methods: Among the 33 patients in this study, basiliximab was used as induction immunosuppression in all cases. Maintenance immunosuppression consisted of a triple regimen involving tacrolimus, mycophenolic acid, and steroids. Among the patients, five individuals received rituximab on the day of transplantation (RTX group). Rituximab was administered intravenously at a dose of 375 mg per square meter of body surface area over a 4-hour period before transplant.
Results: In the RTX group, the average panel-reactive antibody values were significantly higher at 76.8% for class I and 80.0% for class II, compared to the control groups 3.5% and 4.2%, respectively. Acute rejection occurred in 40% of the RTX group and 32.1% of the control group, with antibody-mediated rejection observed in 20% and 3.6%, respectively, showing no significant difference between the groups. The average estimated glomerular filtration rate at 6 months posttransplant was 51.8 mL/min in the RTX group and 68.1 mL/min in the control group, with no statistically significant difference. Cytomegalovirus and BK virus viremia were reported in 60% and 40% of the RTX group, and in 53.6% and 14.3% of the control group, respectively, with no significant difference. Incidences of coronavirus disease 2019 infection or bacterial infections leading to hospitalization did not differ significantly between the two groups. Notably, there were no cases of graft failure in either group.
Conclusions: This case series study indicates that highly sensitized DDKT recipients who received rituximab induction therapy exhibited comparable rates of acute rejection, renal function, infections, and graft survival to those in the control group. However, larger-scale studies are required to confirm the efficacy of rituximab as an induction therapy in highly sensitized DDKT candidates.

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Korean J Transplant 2023;37 Suppl 1:S160
https://doi.org/10.4285/ATW2023.F-7457

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Incidence of immunosuppressant agent related complications in solid organ transplant patients: a nationwide analysis

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Background: Immunosuppressive agents have a crucial role in enhancing graft survival and overall patient outcomes in end-stage organ failure. It is essential to acknowledge complications associated with prolonged use of immunosuppressive agents in transplant recipients. Therefore, we aim to estimate acute and chronic complications of immunosuppressive agents comprehensively in all types of solid organ transplants (SOTs) and investigate the timing of the occurrence of each outcome.
Methods: We conducted a retrospective cohort study that included adult SOT recipients from the National Health Insurance Sharing Service claims database between January 1, 2007, and December 31, 2018. The complications of transplantation include both acute and chronic outcomes. Acute outcomes include infections, acute kidney injury (AKI), and hypertensive emergency, while chronic outcomes include new onset or worsening of chronic kidney disease (CKD), hypertension, diabetes mellitus (DM), dyslipidemia, and osteoporosis. Outcomes were defined by ICD-10 diagnostic code and hospitalization or emergency room visits.
Results: Of the total 768,948 immunosuppressant users, we have identified 30,997 adult transplant patients eligible for a full 3-year follow-up. The incidence of overall adverse events was lowest in pancreatic transplants (171.5/1,000 patient-years), followed by liver transplants (398.5/1,000 patient-years). Lung transplant patients had the highest incidence rate of immunosuppressive-related harm (796.8/1,000 patient-years) compared to all other organ types. The incidence rate of AKI during the 0–1-month period after starting immunosuppressive therapy was 3.3 times higher than the rate observed after 7 months to 1 year. Similarly, CKD was 2.7 times higher, and DM was 9.6 times higher when comparing the incidence rates during the 0–1-month period to the 7-month to 1-year period.
Conclusions: Our findings highlight the importance of acknowledging the potential risk linked to prolonged use of immunosuppressive agents in transplant recipients, emphasizing the need for vigilant monitoring and management of potential complications to optimize patient outcomes.

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Korean J Transplant 2023;37 Suppl 1:S161
https://doi.org/10.4285/ATW2023.F-7465

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical outcomes of retransplantation in elderly kidney recipients

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Background: There has been an increase in demand for kidney retransplantation. Key issues in retransplantation are the surgical and immunological challenges. Moreover, older age at organ transplantation is associated with an increased risk of infection and malignancy. In this context, we investigated the clinical outcomes of elderly patients who underwent multiple kidney transplantations (KTs).

Methods: Between January 2010 and December 2019, a total of 1,459 KTs were performed at Seoul St. Mary's Hospital. Of these, we included 162 patients who underwent a second or third KT. They were divided into two groups based on the recipients age at the time of KT (60 or <60 years); elderly (n=21) and young (n=141). We compared the allograft outcomes and complications.

Results: Pretransplant immunologic risk factors, such as crossmatch positivity, number of human leukocyte antigen mismatches, and ABO incompatibility, did not differ between the groups. The incidence and cumulative rate of biopsy-proven acute rejection (BPAR), development of *de novo* donor-specific antibodies, and graft failure were also similar between the groups (BPAR, log-rank P=0.17; graft failure, log-rank P=0.63). In the elderly group, there were no cases of primary nonfunction compared to the young group, which had two cases. Patient mortality was higher in the elderly group (log-rank P=0.03), and 75% of the deaths were caused by infection, compared to the young group where 12.5% of deaths were related to infection.

Conclusions: In retransplantation in elderly recipients, graft survival and acute rejection-free survival were not inferior to those of young recipients. Immediate surgical complications were lower in elderly recipients. However, infection-related deaths were increased in elderly recipients. These results indicate that repeat KT in elderly recipients is a reasonable choice when done with caution to avoid overimmunosuppression.

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Korean J Transplant 2023;37 Suppl 1:S162
https://doi.org/10.4285/ATW2023.F-7467

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Successful treatment of symptomatic lymphocele after kidney transplantation

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Lymphocele after kidney transplantation is one of the most common surgical complications with total incidence of 0.6% to 51%, and symptomatic in 5% of the cases. It is defined as lymphatic fluid collection resulting from the disruption of lymphatics in the recipient or lymph leak from the donor kidney, which usually occurs 2 weeks to 6 months after kidney transplantation. Most lymphoceles are asymptomatic and incidentally diagnosed during routine ultrasound examinations. Symptomatic lymphoceles, however, not only cause pain and discomfort, but also may result in graft dysfunction due to mass effect, so treatment is essential. Treatment consists of aspiration or drainage, surgical intervention, or embolization. Here, we present two cases of successful treatment of refractory lymphocele by lymphangiography and embolization, which is nowadays considered as minimally invasive and effective therapeutic procedure.

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Korean J Transplant 2023;37 Suppl 1:S163
https://doi.org/10.4285/ATW2023.F-7486

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Comparison of incidence of acute rejection according to serum magnesium levels after kidney transplantation

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Background: Acute rejection is a major complication associated with allograft function and survival in kidney transplantation (KT). Several methods have been devised to predict acute rejection, but it involves costly surveillance including donor-specific human leukocyte antigen antibody (HLA-DSA) or cell-free DNA. Serum magnesium level is readily obtainable data, and post-KT hypomagnesemia is commonly observed. Magnesium deficiency in human can affect T cell-mediated immune responses, leading to alterations in the immune system to fight infections and regulate inflammatory processes. We investigated the incidence of acute rejection based on serum magnesium levels.

Methods: We analyzed patients who underwent KT between April 2019 and December 2022. Serum magnesium level was defined as the value at the time of the first discharge after KT. After excluding the patients transferred to other hospitals, loss of follow-up, and patient deaths, a total of 63 patients were divided into two groups based on serum magnesium levels: the hypomagnesemia group (n=41) and the normomagnesemia group (n=22). Clinical outcomes measured included overall acute rejection, acute T cell-mediated rejection (TCMR), acute antibody mediated rejection, *de novo* HLA-DSA (dn-HLA-DSA), and non-dn-HLA-DSA, all of which were developed after the first discharge.

Results: Acute TCMR was a higher incidence in the normomagnesemia group (31.8%) than hypomagnesemia group (9.8%; P=0.039). There was a trend of higher incidence of overall acute rejection in the normomagnesemia group (36.4%) than the hypomagnesemia group (9.1%), but it was not statistically significant (P=0.062). dn-HLA-DSA within 6 months was a trend of higher incidence in the normomagnesemia group (27.3%) than the hypomagnesemia group (5.8%), but it did not showed statistical significance (P=0.06).

Conclusions: Serum magnesium level within normal range at the time of discharge of KT may help predict early detection and treatment of acute TCMR.

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Korean J Transplant 2023;37 Suppl 1:S164
https://doi.org/10.4285/ATW2023.F-7490

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The first successful uterus transplantation in Korea: from a longing wish to become a mother

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Here we report the case of 35-year-old woman with Mayer-Rokitansky-Kuster-Hauser (MRKH) syndrome, a congenital condition characterized by an absent or underdeveloped uterus and vagina. She underwent uterus transplant from a living donor and retransplant from a brain-dead donor. According to the official response document from the Ministry of Health and Welfare, the uterus transplantation was carried out as part of a clinical trial, which was approved by Institutional Review Board (2022-02-048) and funded by Research Institute for Future Medicine (SMO122083). In July 2022, uterus transplantation was performed using a uterus graft from her 59-year-old, menopausal, mother. Doppler ultrasonography, computed tomography angiography, and magnetic resonance angiography were employed to check the blood perfusion after transplantation, per protocol. The graft failed due to uterine artery and vein thrombosis, necessitating graftectomy 2 weeks posttransplant. Despite the failure, she kept in mind to become a mother. Six months later, she was given an opportunity to receive a uterus graft from a 44-year-old brain-dead female donor. The retransplantation was performed after notifying National Institute of Organ, Tissue and Blood Management (prev. Korean Network for Organ Sharing) and Korea Organ Donation Agency. In similar fashion to first transplant, between the grafts bilateral anterior branch of internal iliac arteries and the recipient's external iliac arteries, and between the graft's bilateral uterine veins and the recipient's external iliac veins, anastomosis was performed. In addition to connecting the right gonadal vein to the recipient's inferior vena cava, the left gonadal vein was ligated. Since the recipients first menstruation on posttransplant day 29, she has had regular menstrual cycles. Under the maintenance of immunosuppression, the 2, 4, 6-week, 4-month, and 6-month posttransplantation protocol biopsies revealed no indications of rejection, and the recipient is currently waiting for embryo transfer. The subsequent successful uterus transplantation from a brain-dead donor demonstrates the possibility for patients with MRKH syndrome, despite the initial failure from a living donor transplant.

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Korean J Transplant 2023;37 Suppl 1:S165
https://doi.org/10.4285/ATW2023.F-7491

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Outcomes of bilateral and unilateral dual kidney transplantation: a comparative study in a single institution

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Background: Dual kidney transplantation (DKT) has become recognized as a strategy of reducing organ discards by utilizing marginal donors unsuitable for single kidney transplantation. Two common surgical techniques for DKT are bilateral DKT (BDKT) and unilateral DKT (UDKT). This study reviews the surgical techniques and outcomes of DKTs in our institute.
Methods: Twenty-five DKTs were performed in adult kidney transplantation between January 2014 to December 2022. All donors from marginal donors meet our criteria, including anyone with the following: donor age more than 70 years, terminal serum creatinine more than 3 mg/dL, pretransplant glomerulosclerosis more than 15%.
Results: Twenty-one BDKTs and four UDKTs were performed for DKTs. The mean recipient age of BDKTs was 56±14 years compared UDKTs 58±7 years. Significant decreases in total operative times were seen with 501.58 minutes (±107.45) for BDKTs and 341.25 minutes (±42.10) for UDKTs (P=0.008). No significant differences were observed in surgical complications, delayed graft function, acute rejection, length of stay, and blood loss.
Conclusions: The outcomes of BDKTs and UDKTs are similar and satisfactory. UDKT is better than BDKT, with less operative time. UDKT is also beneficial for retransplantation by sparing the contralateral iliac fossa.

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Korean J Transplant 2023;37 Suppl 1:S166
https://doi.org/10.4285/ATW2023.F-7510

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Retrospective study of superficial wound complication comparison between monofilament absorbable versus monofilament nonabsorbable sutures for skin closure in kidney transplant

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Background: Wound complications after kidney transplantation occurs from several risk factor. The surgical technique of wound closure may affect wound complications. There are many wound closure techniques to decrease the incidence of wound complications in kidney transplantation. This study compares the incidence of superficial wound complications between the vertical mattress technique with nonabsorbable sutures and the subcuticular technique with absorbable sutures in kidney transplant patients.
Methods: Collected data from January 2019 to December 2022. All kidney transplant patients received a similar immunosuppressive protocol. The superficial wound complications were measured within 1 month after kidney transplantation, including surgical wound dehiscence and superficial surgical site infection. Skin closure is performed by surgical trainees in both techniques.
Results: Collected data from January 2019 to December 2022. All kidney transplant patients received a similar immunosuppressive protocol. The superficial wound complications were measured within 1 month after kidney transplantation, including surgical wound dehiscence and superficial surgical site infection. Skin closure is performed by surgical trainees in both techniques.
Conclusions: Skin closure by subcuticular technique with absorbable sutures was shown the incidence of superficial wound complications lower than the vertical mattress technique with nonabsorbable sutures.

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Korean J Transplant 2023;37 Suppl 1:S167
https://doi.org/10.4285/ATW2023.F-7511

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Increased risk of infections, renal dysfunction, and *de novo* malignancy in elderly liver transplant recipients on tacrolimus based immunosuppressive therapy: a propensity score-matched study from a single center

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Background: With the aging population, the number of organ transplants in elderly patients is on the rise. However, it is crucial to recognize that elderly patients often experience age-related decline in immune function and pharmacokinetic changes of immunosuppressive drugs. Despite these differences, elderly recipients are typically administered the same immunosuppressive therapy as young recipients. This study aimed to assess the incidence of rejection and adverse events in elderly liver transplant recipients.

Methods: This retrospective cohort study from a single center included elderly patients (65 years or order) and 1:2 propensity score matched nonelderly group (aged 19–64 years) on tacrolimus-based immunosuppressive therapy after liver transplantation from 2011 to 2018. We estimated the 3-year incidence of rejection and adverse events, which included infections, diabetes, hypertension, dyslipidemia, renal dysfunction, osteoporosis, and *de novo* malignancy and compared these rates with the nonelderly group. Additionally, we compared the exposure and the ratio of serum concentration to dosage (C/D ratio) of tacrolimus during the first year between the two groups.

Results: Among the 120 elderly patients, 11.7% experienced rejection, 70.0% had infections, 54.2% experienced renal dysfunction, 36.7% had dyslipidemia, 21.7% and 11.7% experienced diabetes and hypertension, respectively, 4.2% developed *de novo* malignancy, and 3.3% had osteoporosis within 3-years. Elderly patients had a 1.43-fold increased risk of infections (adjusted hazard ratio [aHR], 1.43; 95% confidence interval [CI], 1.08–1.88), 2.21-fold higher risk of renal dysfunction (aHR, 2.21; 95% CI, 1.59–3.07) and 14.44-fold higher risk of *de novo* malignancy (aHR, 14.44; 95% CI, 1.60–130.32) compared to the nonelderly group. However, there was no statistically significant difference in tacrolimus exposure and C/D ratio between two groups.

Conclusions: Elderly liver transplant recipients exhibited a higher risk of complications, particularly infections, renal dysfunction, and *de novo* malignancy compared to nonelderly patients. Therefore, it is essential to consider age-specific immunosuppressive therapy and implement careful monitoring for elderly transplant recipients.

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Korean J Transplant 2023;37 Suppl 1:S168
https://doi.org/10.4285/ATW2023.F-7512

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A rare case of concurrent diffuse large B cell lymphoma and chromophobe renal cell carcinoma in a 50-year-old pancreas-kidney transplant recipient: a comprehensive clinical presentation and management

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A 50-year-old patient with a history of pancreas-kidney transplantation (2006), on triple immunosuppressant regimen with stable graft function, visited outpatient clinic presenting with symptoms of appetite loss, diarrhea, and a significant weight loss of 5 kg over 3 months. Subsequent upper and lower gastrointestinal endoscopies revealed various polypoid lesions of different sizes extending from the stomach to the colon. Tissue biopsies confirmed the diagnosis of monomorphic posttransplant lymphoproliferative disorder, Epstein-Barr-negative, diffuse large B Cell lymphoma. Furthermore, a 13 cm mass, suspected to originate from the right kidney, was detected on abdominal computed tomography (CT), along with multiple enlarged lymph nodes in the mesentery and retroperitoneum. Positron emission tomography (PET)-CT showed hypermetabolic lesions in the gastric body (maximum standardized uptake value [SUVmax], 6.6) and multiple hypermetabolic lymph nodes whole abdomen. Notably, the mass observed on CT in the right kidney showed an isometabolic profile on PET (SUVmax, 2.8). Ultrasonography-guided core needle biopsy of the right kidney mass revealed features consistent with oncocytic and clear cell neoplasm, favoring chromophobe renal cell carcinoma. The patient discontinued mycophenolate mofetil and underwent a radical nephrectomy, and permanent biopsy confirmed chromophobe renal cell carcinoma. After 1 month, the patient was scheduled of six cycles of R-CHOP chemotherapy. After received three cycles of R-CHOP chemotherapy, follow-up PET-CT and abdominal CT showed improved findings of multiple abdominal lymphadenopathy. Repeat GFS and CFS demonstrated the resolution of previously observed polypoid lesions with whitish scars. The patient's digestive symptoms improved, and body weight increased by 5 kg compared to preoperative levels. This highlights the significance of both discerning posttransplant lymphoproliferative disease from other malignancies through diligent investigations and actively addressing coexisting disorders to improve patient outcomes.

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Korean J Transplant 2023;37 Suppl 1:S169
https://doi.org/10.4285/ATW2023.F-7522

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Retrospective review of seven thousand kidney transplant cases at Asan Medical Center: patient demographics and graft survival analysis

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Asan Medical Center initiated its first living donor kidney transplant in June 1990. Recently, in December 2022, the milestone of the 7,000th kidney transplant was reached. This study aims to review the outcomes of these cases and analyze patient demographics and graft survival. Among the patient population, females comprised 41.4% (2,900/7,000 cases). The leading cause of end-stage renal disease (ESRD) was unknown ESRD with 30.6% (2,145 cases), followed by diabetes (21.8%, 1,532 cases), and hypertension (10.4%, 734 cases). The majority of patients underwent hemodialysis, totaling 72.2% (5,054 cases), while preemptive patients accounted for 15.2% (1,066 cases) of the cohort. Donor classification revealed 77.9% (5,457 cases) from living donors and 22.1% (1,543 cases) from deceased donors. Among the 7,000 cases, 420 (6%) were retransplants, with one case receiving a fourth transplant. From an immunological perspective, 14.1% (986 cases) were ABO-incompatible, 5.1% (353 cases) were flow-positive, and 0.9% (68 cases) were cytotoxicity-positive. The 1-year overall graft survival rate was 98.5%, 5-year was 94.9%, 10-year was 89.5%, and 20-year was 68.3%. Analyzing the cases in seven groups of 1,000 each, a trend of improved 1-year and 5-year graft survival rates in more recent cases was observed. When dividing donors into deceased and living, there was not a significant difference in survival rates. However, slightly higher survival rates were seen in the living donor group at 1-year, 5-year, 10-year, and 20-year intervals. Moreover, as time passed, the gap in survival rates between living and deceased donor recipients widened gradually (98.7% vs. 99%, 93.3% vs. 95.3%, 85.3% vs. 89.2%, 62.8% vs. 69.4%). Finally, this study presents the analysis of 7,000 kidney transplant cases at Asan Medical Center, examining patient demographics and graft survival rates. The findings from this research can contribute to enhancing this medical procedure and improving patient outcomes.

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Korean J Transplant 2023;37 Suppl 1:S170
https://doi.org/10.4285/ATW2023.F-7552

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Modified patch-conduit venoplasty for hypoplastic portal vein in pediatric liver transplantation

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Background: Portal vein (PV) interposition can induce various PV complications, making more reliable techniques necessary. The present study describes the development of a modified patch venoplasty technique, combining the native PV wall and a vein homograft conduit, called modified patch-conduit venoplasty (MPCV).
Methods: The surgical technique for MPCV was optimized by stimulation and applied to seven pediatric patients undergoing liver transplantation (LT) for biliary atresia combined with PV hypoplasia.
Results: Simulation study revealed that insertion of the whole-length native PV wall as a longitudinal rectangular patch was more effective in preventing PV conduit stenosis than the conventional technique using triangular partial insertion. These findings were used to develop the MPCV technique, in which the native PV wall was converted into a long rectangular patch, acting as a backbone for PV reconstruction. A longitudinal incision on the vein conduit converted the cylindrical vein into a large-sized vein patch. The wall of the native PV was fully preserved as being the posterior wall of PV conduit, thus preventing longitudinal redundancy and unwanted rotation of the reconstructed PV. This technique was applied to seven patients with biliary atresia undergoing living donor and deceased donor split LT. None of these patients has experienced PV complications for up to 12 months after transplantation.
Conclusions: This newly devised MCPV technique can replace conventional PV interposition. MCPV may be a surgical option for reliable PV reconstruction using fresh or cryopreserved vein homografts during pediatric LT.

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Korean J Transplant 2023;37 Suppl 1:S171
https://doi.org/10.4285/ATW2023.F-7583

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Differential effects of desensitization therapy on BK virus viremia after living donor kidney transplantation

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Background: BK virus (BKV) is a major opportunistic infection in kidney transplant recipients. The clinical effects of desensitization therapy on BKV viremia are unclear.
Methods: We retrospectively analyzed 1,356 adult living-donor kidney transplant recipients between 2006 and 2020 at our hospital. Patients were divided into four groups according to desensitization strategy. A comparison of BKV viremia incidence between groups was performed.
Results: Rituximab group had a 2.2-fold, and rituximab with low-dose intravenous immunoglobulin (IVIG) group had a 1.9-fold higher risk of BKV viremia than control group. Rituximab with high-dose IVIG group had s similar risk of BKV viremia compared to control group. BKV viremia was independently associated with an increased risk of death-censored graft loss in multivariable analysis (hazard ratio, 1.856; 95% confidence interval, 1.094–3.151; P=0.022). Overall patient survival rates were comparable regardless of BKV viremia. Patients with BKV viremia showed inferior graft renal function compared to those without BKV viremia since 2 months prior to BKV viremia diagnosis.
Conclusions: Rituximab increases the risk of BKV viremia, whereas high-dose IVIG reduces the risk of BKV viremia.

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Korean J Transplant 2023;37 Suppl 1:S172
https://doi.org/10.4285/ATW2023.F-7590

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Comparative analysis of kidney transplantation outcomes between extended criteria donors and waiting list in patients aged 60 and above

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Background: The decision to perform kidney transplantation with extended criteria donor (ECD) kidneys in elderly patients remains a topic of ongoing debate. This study aims to evaluate whether receiving an ECD kidney provides a survival benefit in patients aged 60 and above compared to remaining on the waiting list.
Methods: A retrospective analysis was conducted on 178 patients aged 60 and above who received deceased donor kidney transplants and 909 patients on the waiting list from January 2008 to February 2023 at a single center. Transplant recipients were stratified based on the presence or absence of heart or cerebrovascular diseases.
Results: Multivariate analysis identified age (hazard ratio [HR], 1.162; 95% confidence interval [CI], 1.061–1.273), arrhythmias (HR, 4.047; 95% CI, 1.432–11.436), and history of cerebrovascular accidents (HR, 2.912; 95% CI, 1.174–7.223) as significant predictors of reduced survival. In contrast, factors such as ECD status, kidney donor profile index, and dialysis duration were not significant. The Kaplan-Meier survival analysis revealed that transplant recipients without these comorbidities had comparable survival rates to those on the waiting list, while those with comorbidities had significantly lower survival (P<0.001).
Conclusions: This study suggests that, in patients aged 60 and above, heart or cerebrovascular diseases are a more significant determinant of survival rates than receiving an ECD kidney. Therefore, a comprehensive pretransplant assessment for these comorbidities is crucial in this patient population.

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Korean J Transplant 2023;37 Suppl 1:S173
https://doi.org/10.4285/ATW2023.F-7599

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Three-dimensional auto-segmentation of biliary structure of living liver donors using magnetic resonance cholangiopancreatography

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Background: Bile duct division during donor hepatectomy is a challenging and crucial procedure. To address this, all potential donors undergo magnetic resonance cholangiopancreatography (MRCP) prior to surgery. In our center, the biliary structures obtained by MRCP are manually segmented and reconstructed into three-dimensional (3D) structures for better visualization during operation. The aim of the study is to leverage the accumulated annotated dataset to train a deep-learning model capable of automatically segmenting biliary structures from MRCP.
Methods: Included in the study were 250 living liver donors at Samsung Medical Center between January 2014 and February 2021. Demographic data including age, sex, and body mass index, and 3D MRCP images using a gradient and spin echo (GRASE) technique were collected. 3D GRASE MRCP datasets were manually labeled for the common bile duct, intrahepatic duct, cystic duct, and gall bladder (GB) by two trained biomedical artists and the results were confirmed by a board-certified abdominal radiologist and several hepatic surgeons. The study utilized a 3D residual U-Net model, and training and test sets were allocated in a 9:1 ratio.
Results: The mean age was 34.4±11.3 years old with 58% of males (145/250) and type I bile duct as the most common (183/250, 73.2%) anatomical type. There were no statistical differences in demographic and morphological characteristics between training and test sets. The results of the manual segmentation and automatic segmentation using the 3D residual U-Net model for each case are summarized in the figure, showing the 3D reconstructed structures. The mean DSC for the biliary structure with GB was 0.79±0.19, and without GB was 0.65±0.07.
Conclusions: The proposed deep-learning model demonstrated promising performance in automatically segmenting bile ducts from MRCP images. The application of this technique holds significant promise in enhancing the preoperative understanding of bile duct structures and augmenting surgical guidance during living donor liver transplantation procedures.

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Korean J Transplant 2023;37 Suppl 1:S174
https://doi.org/10.4285/ATW2023.F-7617

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Outcomes of living donor liver transplantation recipients with high model for end-stage liver disease score over 35: a Korean national registry study

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Background: Recent studies have reported comparable outcomes of living donor liver transplantation (LDLT) in patients with a high Model for End-Stage Liver Disease (MELD) score, predominantly over 25. However, the dearth of research concerning MELD scores over 35 and multicentric cohorts is of particular significance in a nation with limited deceased donor organs.
Methods: We conducted an observational study using a population of 3,918 LT cases from the Korean Organ Transplantation Registry. The survival outcomes of LDLT recipients with MELD ≥35 (n=80) were compared with those of deceased donor LT (DDLT) recipients with MELD ≥35 (n=367), both in the entire and propensity-matched cohorts. Similarly, the outcomes of LDLT in MELD≥35 were compared with LDLT in MELD <35 (n=3,471).
Results: Five-year survival was 84.2% in the LDLT recipients with MELD ≥35 group and 68.4% in the DDLT recipients with MELD ≥35 (P=0.0057). Bile duct complication rate was higher in LDLT group (P=0.0011), while acute rejection and vascular complications were comparable between the groups. In the matched population, 5-year survivals were not different between the groups (P=0.13). Multivariable Cox analyses showed that recipient age was a risk factor for mortality (hazard ratio, 1.02; P=0.033) in LT population with MELD ≥35. When compared to LDLT in MELD <35, 5-year survival was comparable in the LDLT in MELD ≥35 group, in both the entire cohort (P=0.22) and the matched cohort (P=0.27). Bile duct complication, acute rejection and vascular complication rates were similar between the two groups. Multivariable Cox analyses showed that low recipient body mass index, hepatocellular carcinoma, refractory ascites, intensive care unit hospitalization before LT, ABO incompatibility, old age donor and graft to recipient weight ratio <0.8 were risk factors for mortality in LDLT population.
Conclusions: LDLT in MELD ≥35 showed comparable survival outcomes compared to both DDLT ≥35 in MELD and LDLT in MELD <35. The results suggest that a MELD score as high as over 35 should not be considered a contraindication to LDLT.

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Korean J Transplant 2023;37 Suppl 1:S175
https://doi.org/10.4285/ATW2023.F-7631

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of COVID-19 vaccination to SARS-Cov-2 infection and outcomes among end-stage renal disease patients in South Korea

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Background: End-stage renal disease (ESRD) patients are known to have high morbidity and mortality from severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection. We investigated the impact of single dose or multiple doses of vaccination on SARS-CoV-2 infection, hospitalization rate, and mortality in a nationwide scale using a claim database.
Methods: This study used Korea Disease Control and Prevention Agency coronavirus disease 2019 (COVID-19) Korean National Health Insurance Service cohort data. ESRD patients were study population. SARS-CoV-2 infections, hospitalizations from SARS-CoV-2 infections, and 30-day mortality after SARS-CoV-2 infections were study outcomes. We used public COVID-19 infection database which contains available data since October 8, 2020. Vaccination started since February 26, 2021. The study period was from February 26, 2021 to December 31, 2021. Patients with prior COVID-19 infection before ESRD or before vaccination were excluded. In the multivariable logistic regression models, age, sex, comorbidities (hypertension, diabetes mellitus, chronic kidney disease), and ESRD duration were adjusted as covariables. This research was funded by Seoul National University Bundang Hospital (No.2022-04590).
Results: Total 109,671 ESRD patients were COVID-19 vaccinated. Among 85,971 dialysis patients, 2,550 (3.0%) received single dose, and 83,421 (97.0%) received multiple doses. Among 23,700 kidney transplantation (KT) recipients, 452 (1.9%) received single dose and 23,248 (98.1%) received multiple doses. KT recipients who were vaccinated multiple doses showed reduced SARS-CoV-2 infection (odds ratio [OR], 0.450; 95% confidence interval [CI], 0.237–0.856; P=0.015), reduced 30-day mortality (OR, 0.139; 95% CI, 0.089–0.432; P=0.016). Dialysis patients with multiple vaccination doses also showed reduced COVID-19 infection (OR, 0.612; 95% CI, 0.436–0.858; P=0.004), and reduced 30-day mortality (OR, 0.196; 95% CI, 0.089–0.432; P<0.001). In both populations, multiple doses of COVID-19 vaccination did not reduce COVID-19-related hospitalization.
Conclusions: We present the first nationwide scale evidence that multiple doses of SARS-CoV-2 vaccination significantly reduced 30-day mortality, and SARS-CoV-2 infection rate in the dialysis population and KT recipients.

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Korean J Transplant 2023;37 Suppl 1:S176
https://doi.org/10.4285/ATW2023.F-7648

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

ABO incompatibility is a risk factor for cytomegalovirus infection with living donor liver transplantation

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Cytomegalovirus infection is the most common viral infection among liver transplant recipients. ABO incompatibility is considered a risk factor for cytomegalovirus infection because of the need for desensitization and immunosuppression. Whether ABO-incompatible living donor liver transplantation is associated with an increased incidence of cytomegalovirus infection remains controversial. We analyzed 630 patients who underwent living donor liver transplantation between 2012 and 2021 at Severance Hospital. Patients who were younger than 18 years of age, who died or underwent repeat transplantation within a 30-day period, who underwent combined organ transplantation, and those with incomplete data were excluded. We compared the incidence of cytomegalovirus infection within 1 year after liver transplantation of the ABO-incompatible (n=153) and ABO-compatible (n=477) groups. The cumulative incidence of cytomegalovirus infection of the ABO-incompatible group was approximately twice as high as that of the ABO-compatible group. According to the multivariate Cox proportional hazard model, ABO incompatibility was an independent risk factor for cytomegalovirus infection (hazard ratio, 2.138; P<0.001). The overall survival rate of ABO-incompatible recipients with cytomegalovirus infection was significantly lower than that of recipients without cytomegalovirus infection. ABO incompatibility is associated with a higher incidence of cytomegalovirus infection and an independent risk factor for cytomegalovirus infection when a preemptive treatment strategy is implemented.

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Korean J Transplant 2023;37 Suppl 1:S177
https://doi.org/10.4285/ATW2023.F-7653

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Early hemoglobin levels after kidney transplantation predict clinical outcomes: a nationwide cohort study

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Background: Anemia is associated with significant adverse outcomes in kidney transplant recipients (KTRs). However, the association between early hemoglobin levels after KT and long-term clinical outcomes is uncertain. We investigated the clinical impact of hemoglobin levels at 6 months after KT on posttransplant outcomes.
Methods: We analyzed 7,501 KTRs from a nationwide cohort data, the Korean Organ Transplant Registry (KOTRY). KTRs were divided into six hemoglobin categories: <10, 10 to <11, 11 to <12, 12 to <13, 13 to <14, ≥14 g/dL. The multivariable Cox regression model was used to investigate the effect of hemoglobin levels on all-cause mortality, cardiovascular events, and graft loss.
Results: The mean age was 49.6±11.6 and male ratio was 60.4%. The prevalence of diabetes and cardiovascular diseases were higher and that of hypertension was lower in hemoglobin levels 10 g/dL. There were 122 patient (1.4%) deaths, 568 (6.7%) cardiovascular events, and 200 (2.4%) graft losses during the study period; the incidences of each outcome were the highest in hemoglobin levels <10 g/dL (all P<0.05). Hemoglobin levels <10 g/dL was associated with increased risk of all-cause mortality, cardiovascular events, and graft loss compared with hemoglobin of 12 to <13 g/dL as reference (adjusted hazard ratio [aHR] 4.82, 95% confidence interval [CI] 2.69–8.65, P<0.001; aHR 1.76, 95% CI 1.06–2.94, P=0.030; aHR 9.79, 95% CI 5.54–17.3, P<0.001, respectively). Hemoglobin levels ≥14 g/dL were independent factors for better mortality (aHR 0.32, 95% CI 0.14–0.73, P=0.007).
Conclusions: The posttransplantation anemia below 10 g/dL was an independent predictor of all-cause mortality, cardiovascular event, and graft loss in KTRs. However, hemoglobin levels greater than 14 g/dL showed a protective effect on patient survival. Appropriate monitoring and correction of hemoglobin should be a target of management in the early period after KT.

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Korean J Transplant 2023;37 Suppl 1:S178
https://doi.org/10.4285/ATW2023.F-7655

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Analysis of one-thousand ABO-incompatible kidney transplantation in a single center

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Background: ABO-incompatible kidney transplantation (ABOi KT) has emerged as a promising option for patients with end-stage renal disease who face limited access to compatible donors. Over the past few years, ABOi KT has been steadily gaining traction due to advancements in immunosuppressive therapies and desensitization protocols. This study aims to analyze the outcomes of 1,000 ABOi KT cases in Asan Medical Center, evaluating the feasibility, safety, and efficacy of ABOi KT.
Methods: From January 2009 to January 2023, a total of 3,727 patients underwent living donor KT, and among them, 1,001 patients received ABOi KT. We classified 1,001 patients into Era 1(2009–2011), Era 2(2012–June 2018), and Era 3 (July 2018–) according to the time periods. There are differences in protocols across each time period. Preoperative desensitization protocols, including plasmapheresis and immunoadsorption, were utilized to reduce anti-A/B antibody titers. Overall patient survival rate, graft survival rate and biopsy proven acute rejection rate were calculated using the Kaplan-Meier method and compared using the log-rank test.
Results: We compared the outcomes of the ABO-compatible (ABOc) KT group with the ABOi KT group divided into Era 1, 2, and 3. For short term patient survival, only the Era 1 ABOc group showed lower survival rates than the ABOc KT group, while the other two groups showed no statistically significant difference from the ABOc KT group. Similar results were observed for short term graft survival. But long-term survival was not different between four groups. In terms of rejection, there were no statistically significant differences among the four groups.
Conclusions: Our study demonstrates that ABOi KT is a viable and effective option for patients with end-stage renal disease, particularly in situations where ABOc donors are scarce. The implementation of appropriate desensitization protocols and careful patient selection are crucial for achieving successful outcomes.

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Korean J Transplant 2023;37 Suppl 1:S179
https://doi.org/10.4285/ATW2023.F-7663

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Creatinine-cystatin C ratio and death with a functioning graft in kidney transplant recipients

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Background: Given that the number of elderly kidney transplant recipients with multiple comorbidities continues to rise, death with a functioning graft is becoming an increasingly common and important issue. However, little research has focused on death with a functioning graft, an important cause of overall graft loss. Therefore, clinical parameters to reliably identify patients at higher risk of death with a functioning graft are urgently required.
Methods: In this study, we evaluated the association between posttransplant creatinine-cystatin C ratio and death with a functioning graft in 1,592 kidney transplant recipients. We divided the patients into tertiles based on sex-specific creatinine-cystatin C ratio.
Results: Among the 1,592 recipients, 39.5% were female, and 86.1% underwent living donor kidney transplantation. The cut-off value for the lowest creatinine-cystatin C ratio tertile was 0.86 in males and 0.73 in females. The lowest tertile had a significantly lower 5-year patient survival rate and was independently associated with death with a functioning graft (adjusted hazard ratio, 2.574; 95% confidence interval, 1.339–4.950; P<0.001). Infection was the most common cause of death in the lowest tertile group, accounting for 62% of deaths.
Conclusions: A low creatinine-cystatin C ratio was significantly associated with an increased risk of death with a functioning graft after kidney transplantation, and the creatinine-cystatin C ratio can be used as a clinical parameter to predict death with a functioning graft.

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Korean J Transplant 2023;37 Suppl 1:S180
https://doi.org/10.4285/ATW2023.F-7666

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Late occurrence of nonanastomotic biliary stricture after liver transplantation

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Biliary complications after liver transplantation are not uncommon and it is still a challenging problem in post operative period. Biliary strictures are classified into anastomotic biliary stricture and nonanastomotic biliary stricture. We would like to present about a case of late occurrence of nonanastomotic biliary stricture which occurred 46 months after liver transplantation. He underwent living donor liver transplantation from his niece with low graft-to-recipient weight ratio 0.51 with adequate outflow with two right inferior hepatic veins. Cold ischemic time was just 1 hour 27 minutes. Arterial reconstruction had to be done three times during operation due to intima damage and dissection. Bile duct anastomosis was with tailored telescopic reconstruction. Postoperative period was uneventful and no complications were detected until 48 months follow-up. Yellow sclera was noted and liver function tests at that time was total bilirubin 145 μmol/L and alkaline phosphate 359 U/L. Intrahepatic biliary dilatations were noted in ultrasonography and computed tomography and magnetic resonance cholangiopancreatography (MRCP) were proceeded. Both right anterior and posterior sectoral ducts were dilated with stricture at bifurcation was noted in MRCP. Endoscopic retrograde cholangiopancreatography (ERCP) and stenting was done. Several cannulations must be done due to difficult cannulation and failed to remove previous stents. Now ERCP was done 11 times stent was changed five times with plastic stents in both anterior and posterior sectoral ducts. Biliary cirrhosis and portal hypertension was present in imaging. Enzyme levels were decreasing but not satisfactorily. This patient developed strictures only after 48 months of transplant which is unusual. Although he had some difficulties in arterial anastomosis during operation, no hepatic artery thrombosis was detected in postoperative period and follow up. We will have to do further investigations and work up to know the etiology of nonanastomotic biliary strictures and their management.

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Korean J Transplant 2023;37 Suppl 1:S181
https://doi.org/10.4285/ATW2023.F-7677

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical treatment experience of xanthogranulomatous pyelonephritis in both native kidneys 20 years after kidney transplantation

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Xanthogranulomatous pyelonephritis is a rare condition, which is rarer still in an allograft recipient. The disease was first described in 1984 in a single native kidney following a living donor kidney transplantation and was surgically treated. We have clinical experience of this situation. A 66-year-old male visited for fever and flank pain. He had diabetes, hypertension, and surgical history of kidney transplantation from nonrelated living donor 20 years ago. Computed tomography scan showed hydronephrosis of transplanted kidney and right native kidney and ureteritis. Although empirical antibiotic therapy has relieved fever and pain, abdominal discomfort and leukocytosis persisted for more than 2 weeks. After in-depth and candid consultation with the patient, the patient agreed to resection of the right kidney. Tissue obtained after robotic nephrectomy was diagnosed as xanthogranulomatous pyelonephritis based on pathological findings. However, in the patient who visited the hospital again with the same symptoms, hydronephrosis and ureteritis of the left native kidney were observed this time. One month after the right nephrectomy, we performed a left nephrectomy again, and the histological findings also concluded that it was xanthogranulomatous pyelonephritis. The patient is currently improving after emergency open surgery due to early sepsis due to adhesive enteritis and acute abdominal pain during the recovery process.

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Korean J Transplant 2023;37 Suppl 1:S182
https://doi.org/10.4285/ATW2023.F-7679

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Risk of posttransplantation recurrence in hepatocellular carcinoma patients within the Milan criteria: importance for evaluating the recurrence potential

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Background: The optimal timing of transplantation for hepatocellular carcinoma is still under debate regarding the tumor biology and locoregional control with various treatments
Methods: We analyzed hepatocellular carcinoma patients within the Milan criteria in the initial treatment stage who subsequently underwent liver transplantation. Between 2007 to 2020 were included to the study. Patients who underwent locoregional therapy in our center were included. The number of locoregional treatment as well as the data regarding tumor recurrence and survival were analyzed. Recurrence potential index was calculated by logarithmizing the inversed mean recurrence-free duration of each patient.
Results: During the period, 423 patients within the Milan criteria during the initial treatment stage underwent liver transplantation. The median number of locoregional treatment before transplantation was two with an interquartile range of zero to four. There were 112 patients (26.5%) who underwent liver transplantation as the initial treatment. Multivariable Cox analyses showed that number of locoregional therapies (hazard ratio [HR], 1.114; confidence interval [CI], 1.035–1.200; P=0.004), Child score at initial stage (HR, 0.561; CI, 0.362–0.868; P=0.010), PIVKA-II change ratio (HR, 1.002; CI, 1.001–1.004; P=0.005), tumor size (HR, 1.276; CI, 1.084–1.502; P=0.003) and tumor thrombosis (HR, 17.454; CI, 6.609–46.095; P<0.001) were significant factors related to recurrence-free survival. In a subgroup with patients with previous treatments, recurrence potential index (HR, 1.632; CI, 1.092–2.438; P=0.017) showed significant relationship with recurrence-free survival along with other factors.
Conclusions: This study showed that the risk of recurrence after transplantation does not significantly increases when the number of locoregional therapies and recurrence potential index. Optimal timing of liver transplantation should be cautiously decided in regards of recurrence potential of each patient.

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Korean J Transplant 2023;37 Suppl 1:S183
https://doi.org/10.4285/ATW2023.F-7693

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of donor hepatic duct bifurcation location and angle on posttransplant biliary complications in recipients following living donor liver transplantation

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Background: Biliary complication remains an unresolved issue in liver transplantation, despite improvements in surgical techniques and perioperative care. The aim of this study was to evaluate the influence of the location of hepatic duct bifurcation in donors with type I bile duct on posttransplant biliary complications in recipients.
Methods: We retrospectively analyzed 109 cases of living donor liver transplantation from January 2021 to December 2022. All donors had type I bile duct, and donor hepatectomies were performed laparoscopically by a single surgeon. We used indocyanine green fluorescence to determine the location of the hepatic duct bifurcation, which was classified into intrahepatic and extrahepatic. The bifurcation angle was assessed via three-dimensional modeling and reconstruction from preoperative magnetic resonance cholangiopancreatography images.
Results: There were 76 and 33 cases in the extrahepatic and intrahepatic bifurcation groups, respectively. The groups significantly differed in terms of Model for End-stage Liver Disease score, posttransplant hepatic artery-related complications, and hepatic duct bifurcation angle. The surgical outcomes of donors were not different between the two groups. The intrahepatic bifurcation group showed lower biliary complication-free survival in recipients (P=0.018). We identified a cut-off point of 91.5 degrees (area under the curve=0.887) for the bifurcation angle to predict extrahepatic and intrahepatic bifurcation. Comparing biliary complication-free survival based on this cut-off, we observed a trend towards worse survival in those with an angle greater than 91.5 degrees, although the difference was not statistically significant. Upon multivariable analysis, the recipient's body mass index (hazard ratio [HR], 1.12; P=0.006) and an intrahepatic location of the donors bile duct bifurcation (HR, 1.941; P=0.035) emerged as independent risk factors for biliary complications in recipients.
Conclusions: The findings of this study highlight that the location of hepatic duct bifurcation in donors significantly impacts posttransplant biliary complications in recipients. The results also suggest the potential predictive value of the bifurcation angle, emphasizing the importance of precise anatomical assessment before transplantation.

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Korean J Transplant 2023;37 Suppl 1:S184
https://doi.org/10.4285/ATW2023.F-7707

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Experience of transplantation of the kidney, ureter and part of the bladder as a single block in the experiment

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Background: In cases of microcystis with terminal kidney damage, the potential recipient undergoes augmentative or reconstructive cystoplasty to increase the bladder volume before transplantation. A few months later this recipient undergoes the second surgical intervention kidney transplantation. The performance of bladder augmentation surgeries with subsequent transplantation is accompanied by technical difficulties, has a number of complications and drawbacks.
Methods: The study was conducted on pigs in the amount of six individuals. Pigs were divided into two groups three donors and three recipients, each of which was each other's siblings. All operations were performed under general anesthesia. One kidney with a ureter, a part of the bladder and a second ureter without a kidney were taken from the donors as a single block. After perfusion and preservation, the organs were implanted into the recipients. All recipients received antibacterial, symptomatic therapy. After the operation, they were kept in separate cages, where they were fed, watered, and washed. Killing and disposal of animals were carried out in compliance with all bioethical norms and rules.
Results: Seven days after the operation, the efficiency and survival of transplanted organs were assessed in the recipients visually and by histological examination of tissues under general anesthesia. In all cases, the function of the graft, the condition of the bladder was satisfactory. In one case, failure of the uretero-ureteroanastomosis was noted against the background of necrosis of the wall of the ureter of the graft. The picture of the histological examination showed moderate circulatory disorders of the part of the bladder in all cases.
Conclusions: This study allows us to introduce this technology into clinical transplantation to solve the problem of choosing an effective method of bladder reconstruction, thereby improving the quality and increasing life expectancy, reduce disability in children and adult patients with a shriveled bladder with terminal kidney disease.

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Korean J Transplant 2023;37 Suppl 1:S185
https://doi.org/10.4285/ATW2023.F-7708

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of human CD31 transgenic modulation in xenotransplantation on neutrophil extracellular traps

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Background: Sustained systemic inflammation in xenograft recipients (SIXR) remains a barrier to the successful application of xenotransplantation. Neutrophil extracellular traps (NETs) could be a mechanism of SIXR; however, comprehensive studies on NETs in xenotransplantation remain scarce due to the technical hurdles of NETs observation. This study aims to investigate the presence and impact of NETs in a xenograft setting and explore the modulatory effect of human CD31 transgenic overexpression on NETs.

Methods: NETs were studied in an *ex vivo* xenotransplantation mimicking system using human clinical samples. Isolated human neutrophils were cocultured with various cell lines, including the wild-type porcine aortic endothelial cell line (PAEC), the hCD31 overexpressed PAEC, and the human aortic endothelial cell line (HAEC). NETs were assessed and quantified using label-free imaging by holotomography. The supernatant of coculture was used to measure cytokines and histone-DNA complexes.

Results: During coculture of human neutrophils with porcine-derived cell lines, the typical formation of NETs was observed, which showed typical autophagic vacuoles followed by chromatin swelling. In contrast, there was no sign of typical cellular changes of NETs in human neutrophils cocultured with HAEC. Intriguingly, the expression of the human CD31 transgene exerted a suppressive influence on NETs, resulting in altered dynamics of NET formation. The suppressive effect of hCD31 overexpressed PAEC on NETs was corroborated by the DNA-histone complex and human IL-8, measured by ELISA from the coculture supernatant. DNA-histone complex was reduced in the supernatant from hCD31 overexpressed PAEC coculture (1.062±0.092 vs. 0.477±0.146, P<0.005). Human IL-8 was also reduced in the supernatant from hCD31 overexpressed PAEC coculture (9.352±1.161 vs. 4.210±6.704, P<0.0005).

Conclusions: We provide the evidence that human CD31 overexpression in porcine cell show a suppressive effect on NETs formation, which might be the therapeutic target of SIXR.

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Korean J Transplant 2023;37 Suppl 1:S186
https://doi.org/10.4285/ATW2023.F-7717

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Unveiling the molecular signature of acute T cell-mediated rejection in human renal transplantation: a comparative analysis of pre- and posttransplant PBMCs and transplant tissues using single-cell RNA sequencing and spatial transcriptomics

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For decades, kidney transplants have been instrumental in saving the lives of numerous patients afflicted with chronic kidney failure. The advent of immunosuppressants, particularly those targeting T cells such as cyclosporin and tacrolimus, significantly contributed to the widespread adoption of kidney transplantation. Despite the availability of T cell-specific immunosuppressants, approximately 20% of kidney transplant recipients still experience acute T cell-mediated rejection (TCMR), a phenomenon whose underlying molecular biological mechanism remains poorly understood. To address this knowledge gap, we undertook a comprehensive study involving single-cell transcriptome analysis and spatial transcriptome analysis. This investigation involved the examination of both peripheral blood and tissue samples from patients who experienced acute TCMR after renal transplantation (n=2) as well as patients who did not encounter such rejection (n=2). Herein, we demonstrate significant insights into the molecular characteristics of TCMR in kidney transplantation. Comparing 2-week protocol biopsy tissue to zero-time biopsy tissue, we identified 270 upregulated differentially expressed genes (DEGs) in the interstitium considered as a target site of TCMR. Additionally, we discovered a hyper-expanded cell type in peripheral blood mononuclear cells, presumed to contain numerous alloreactive T cells, and further explored DEGs within this cell type between the groups. By integrating the results from both single-cell RNA sequencing (scRNA-seq) and spatial transcriptomics, we observed specific upregulation of LTB, GZMK, STAT1, PSME2, UBE2L6, and GBP5 genes in the group of TCMR patients potentially important in TCMR. Notably, network analysis revealed the connection of STAT1 with the other identified genes, suggesting its potential role in the rejection process. These findings highlight the importance of these genes in understanding and distinguishing the molecular characteristics of TCMR in kidney transplantation. The identified genes may serve as crucial targets for further research and potentially contribute to the development of improved therapeutic strategies for TCMR in kidney transplant patients.

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Korean J Transplant 2023;37 Suppl 1:S187
https://doi.org/10.4285/ATW2023.F-7737

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Usefulness of therapeutic drug monitoring with tacrolimus and mycophenolate in kidney transplantation

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Background: Tacrolimus and mycophenolate (MPA) are main maintenance immunosuppressive agents in kidney transplantation (KT). Therapeutic drug monitoring (TDM) of tacrolimus is useful to obtain a balance between allograft function and complications after KT. MPA levels also correlate closely with patient clinical outcomes, and it is a candidate for TDM analysis due to the high interindividual pharmacokinetic variability. MPA TDM is rarely assessed in Korea, therefore, we set up MPA TDM in our hospital for KT recipients and share our TDM experience of MPA along with TDM of tacrolimus.
Methods: TDM concentrations of tacrolimus and MPA were evaluated in KT recipients from April 2023 to July 2023. The performance of the TDM program was evaluated by comparing predicted trough concentrations based on patient dosing with actual measured blood trough levels at the outpatient's next visit. Tacrolimus TDM was performed on a total of six outpatients, and MPA TDM was performed on three out of six patients.
Results: For tacrolimus, TDM predicted mean level was 6.69±1.49 ng/mL and the mean measured drug concentration was 6.37±1.52 ng/mL. For MPA, TDM predicted average was 4.66±2.42 mg/L and the mean measured level was 3.79±1.70 mg/L. For tacrolimus, the correlation was r=0.9389 and the mean difference between TDM predicted level and the measured level was 5.69%. For MPA, the correlation was r=0.9999, and the mean difference between TDM predicted level and the measured level was 3.66%.
Conclusions: Both tacrolimus and MPA showed a high correlation between predictive levels and trough level. Adjustment of the drug dose is necessary when the KT recipients blood drug concentration is subtherapeutic or toxic range. We believe that an individual patient-optimized MPA TDM assay can help maintain MPA therapeutic concentrations in KT recipients.

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Korean J Transplant 2023;37 Suppl 1:S188
https://doi.org/10.4285/ATW2023.F-7740

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Coordinated indicator activities linked to counseling for brain-dead organ donation activation

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Background: In 2022, the number of organ transplant candidates steadily increased to over 410,000, while organ donations from brain-dead individuals decreased to 405 cases compared to the previous year. Unfortunately, finding direct methods to counteract the recent trend of declining organ donations has proven to be challenging. Brain-dead organ donation is a crucial issue influenced by various factors, including the experiential background of medical professionals and guardians. Therefore, timely and accurate information regarding organ donation should be provided to encourage informed choices. Based on the experience of quality improvement indicators for brain-dead organ donation activation in 2019, the Organ Transplant Center at Incheon University Hospital has implemented the following indicator activities from 2020 to the present.

Methods: Starting in 2020, we selected the contact rate indicator, which calculates the percentage of cases where information on organ donation was provided to guardians or consent was obtained from physicians among patients identified as brain-dead donors by the medical department. We monitored and conducted activities to improve the quarterly results of these indicators. Using the Annual Report of the Korea Organ and Tissue Donation Agency, we examined the percentage values of medically suitable cases (denominator) and family approach cases (numerator) for organ donation. These percentages were set as the targets for the respective year's indicator activities, with 2019 at 79%, 2020 at 83%, and 2021 at 78%. We facilitated continuous communication with the Neurosurgery Department, Emergency Medicine Department, and Intensive Care Medicine Department medical teams to plan and analyze indicator activities. If deficiencies were identified through the progress and analysis of these indicators, we encouraged specific feedback and coordination with the respective medical department for future opportunities for active organ donation counseling.

Results: In 2020, among 38 brain-dead potential donors who required organ donation information, the indicator activities were applied to 32 guardians (86.8%), reaching the target. In 2021, out of 33 potential donors, indicator activities were applied to 27 guardians (81.8%), falling short of the target. Consequently, we provided feedback to the respective medical department regarding the analysis of indicator values. In 2022, among 46 potential brain-dead donors, indicator activities were applied to 41 guardians (89%), achieving the target.

Conclusions: Through these coordinated indicator activities linked to counseling, we have actively played a direct and proactive role in providing accurate information about organ donation at the crucial moment when it is needed. This activity focuses not on increasing the overall number of organ donations but on actions that can be effectively implemented in practice. It serves as an activity to facilitate opportunities for individuals eligible for organ donation to make informed choices by providing accurate information about organ donation.

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Korean J Transplant 2023;37 Suppl 1:S189
https://doi.org/10.4285/ATW2023.F-7742

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Late hepatocellular carcinoma recurrence after living donor liver transplantation: unmet need

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A 50-year-old male patient at time of transplantation he received living donor liver transplantation for hepatocellular carcinoma (HCC) on top of hepatitis C virus (HCV) cirrhosis in March 2015 and had quite smooth operative and postoperative course. He had two sessions of transcatheter arterial chemoembolization before transplantation as down staging and the explant pathology showed partial tumor necrosis and moderately differentiated HCC with no vascular or capsular invasion single nodule in segment VIII with multiple viable nodules in the vicinity. Patient received direct acting antivirals after 3 months of transplantation for HCV in the form of sofosbuvir/daclatsvir and achieved sustained virologic response. Since then, he was on regular follow up liver functions, alpha-fetoprotein (AFP) and ultrasound every 3–6 months. In April 2022 he has rising trend of AFP (25-30-35 ng/dL) serially which was repeated in 1 month. Ultrasound showed homogeneous graft with no focal lesions so we decided to do positron emission tomography/computed tomography (PET/CT) that revealed left suprarenal mass 3×3 cm (maximum standardized uptake value, 5.8) and no other hepatic or extra hepatic metastasis. The patient underwent left adrenal excision, and the diagnosis of HCC recurrence was confirmed by histopathology of the excised mass. He received 3 months of Nexaver which was stopped because of intolerance to side effects and kept on low dose tacrolimus and mammalian target of rapamycin with follow up PET scan and AFP after 3 months then every 6 months and he is quite well with HCC recurrence free till now (last AFP in June 2023 was 1.5 ng/dL and FK trough level 2). We hereby report a case of late HCC recurrence after 7 years of transplantation that was early diagnosed through strict HCC surveillance protocol as per unit protocol.

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Korean J Transplant 2023;37 Suppl 1:S190
https://doi.org/10.4285/ATW2023.F-7749

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Outcomes of six-thousand living donor liver transplantation: a 30-year journey in a high-volume single center

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Asan Medical Center received global attention in 1999 with the first living donor liver transplantation (LDLT) using a modified right lobe graft. This landmark operation played a major role in improving recipient outcomes while ensuring donor safety. The objective of this study was to share the outcomes of 6,000 LDLTs with center around the world and identified risk factors for in hospital mortalities to optimize outcomes. We conducted a retrospective review of 6,000 recipients who underwent LDLTs from 6,570 live donors, including 312 children below 18 years old, at Asan Medical Center, Seoul, Korea, from December 1994 to January 2021. Our analysis revealed significant decreases in operative time, intraoperative red blood cell transfusion, postoperative hospital stays, and in-hospital mortality as the number of cases accumulated. Particularly noteworthy was the decline in hospital mortality from 6.1% in Era I to 3.2% in Era II, and a remarkable 1.2% in Era III (P=0.000) for adult-to-adult LDLT using single lobe recipients. Furthermore, multivariate analyses identified several significant and independent risk factors for in-hospital mortality in adult-to-adult LDLT using single lobe recipients, including age above 65 years (P=0.019), male gender (P=0.0006), Model for End-Stage Liver Disease score above 30 (P=0.0008), retransplantation (P=0.0033), earlier eras of LDLT (P=0.000), viral liver disease (P=0.0198), pre-LT renal replacement (P=0.0471), donor age below 50 years (P=0.0047), and graft-to-recipient body weight ratio below 0.7 (P=0.0211). In conclusion, our experience demonstrates excellent outcomes based on standardized surgical techniques, protocols for donor/recipient evaluation, and perioperative management. The data derived from Asan Medical Center's extensive experience serves as a valuable resource for the global medical community, contributing significantly to the advancement of the LDLT field.

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Korean J Transplant 2023;37 Suppl 1:S191
https://doi.org/10.4285/ATW2023.F-7757

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Development and validation of a machine learning-based prediction model for detection of early graft loss after liver transplantation

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Background: Identifying patients who are likely to experience early graft failure following liver transplantation (LT) is crucial, as this significantly impacts patient outcomes. This study aims to develop a machine learning-based model for observation-level risk estimation of graft failure after LT.
Methods: Between 1998 and 2023, 8,015 patients who underwent liver transplantation were retrospectively enrolled at Seoul Asan Medical Center. Logistic regression (LR) and XGBoost framework were utilized to develop prediction models from laboratory features during the first 7- and 14-days post-LT. Graft failure within three months after LT was defined as the primary event. Model performance was evaluated using receiver operating characteristic analysis. To explain the model, the Shapley Additive Explanations (SHAP) value of each feature was utilized to ascertain the features contribution to prediction.
Results: The median age of recipients was 53 years (range, 0–79 years), with males constituting 72%. Graft survival rates at 1 and 5 years were 91.1% and 84.7% respectively, with corresponding patient survival rates of 92.2% and 85.9%. Out of these patients, 413 (5.1%) experienced early graft loss, with 22% requiring re-LTs and 83.5%. The dataset was divided into training and validation sets at a 7:3 ratio. Our prediction model then incorporated laboratory features such as white blood cell and platelet counts, hemoglobin, pathologic tumor stage, aspartate aminotransferase, alanine aminotransferase, albumin, total bilirubin, and direct bilirubin. A LR-based model using data from the initial 14 days post-LT outperformed a model utilizing data from the first 7 days (area under the curve [AUC], 0.86 vs. 0.81). The XGBoost-based model achieved higher AUCs, both for the 7-day dataset (0.95) and the 14-day dataset (0.96). In the SHAP summary plots, total bilirubin and platelet count emerged as the most influential features.
Conclusions: The utilization of this model could potentially expedite the identification of graft failure, enabling prompt transition to retransplantation and thus potentially averting irreversible damage or patient mortality.

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Korean J Transplant 2023;37 Suppl 1:S192
https://doi.org/10.4285/ATW2023.F-7767

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Development and validation of a 1-year postnephrectomy estimated glomerular filtration rate prediction model using preoperative factors

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The purpose of this study was to develop a prediction model to estimate the postnephrectomy 1 year estimated glomerular filtration rate (eGFR) of living kidney donors based on preoperative factors and aid physicians in evaluating donor suitability. The preoperative factors included were baseline characteristics, laboratory results and kidney volume measured through an auto-segmentation program using predonation contrast computer tomographic images. Data was collected from a multicenter retrospective cohort of 1,219 living kidney donors. A generalized additive model with spline functions was used to capture potential nonlinear relationships and interactions between the predictors and outcome variable. The patient data from two tertiary hospitals (n=1041) were split into a 9:10 ratio for training and testing. The mean absolute error of the model created was 7.41. The model was applied to a third tertiary hospital (n=178) for external validation. The mean absolute error of the external validation cohort was 7.47. The prediction model demonstrated significant accuracy in estimating the 1-year postnephrectomy eGFR in living kidney donors. Preoperative calculation using this model may promote better informed decision-making and ensure safety of living donors. Further validation and prospective testing of the model in diverse populations are warranted to consolidate its utility and broaden its applicability in clinical settings.

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Korean J Transplant 2023;37 Suppl 1:S193
https://doi.org/10.4285/ATW2023.F-7778

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Applying integrative multiomic profiling in two human decedents receiving pig heart xenografts reveals early immune cell responses indicative of perioperative cardiac xenograft dysfunction

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Background: Recent advances in xenotransplantation in living and decedent humans using pig heart xenografts have laid promising groundwork towards future emergency use and first-in-human trials. Major obstacles remain however, including a lack of knowledge of the genetic incompatibilities between pig donors and human recipients, which may lead to harmful immune responses against the xenograft and/or physiological dysfunction. In 2022, two gene-edited pig heart xenografts were transplanted into two brain-dead human decedents, primarily to evaluate onset of hyper-acute antibody mediated rejection and sustained xenograft function over 3-days.

Methods: We performed multiomic profiling to assess the dynamic interactions between two pig heart-xenografts transplanted into two human decedents. We generated transcriptomic, lipidomic, proteomic and metabolomics datasets, across blood samples every 6 hours, as well as histological and transcriptomic tissue profiling, over the 3-day procedures to biological changes that correlate with immune-related outcomes and xenograft function.

Results: In decedent 1 we observed early immune-activation changes in Peripheral Blood Mononuclear Cells (using single-cell RNA-seq) and xenograft tissue (using single-nuclei RNA-seq and spatial transcriptomics) leading to profound downstream T cell and NK cell activity, which collectively represented over 20% of all blood cells in the final 3-day procedure timepoints. Longitudinal multiomic integrative analyses from blood and tissue, indicates ischemia reperfusion injury (IRI) in decedent 1, which is exacerbated by minimal immunosuppression of T cells, is consistent with perioperative cardiac xenograft dysfunction transcriptome signatures. We also observe significant cellular metabolism and liver damage pathway changes after 42 hours in decedent 1 that correlates with organ-wide physiological dysfunction. Decedent 2 had normal xenograft functioning with relatively minor changes across the multiomic profiling datasets.

Conclusions: Single-cell and multi omics approaches reveal fundamental insights into early molecular and immune responses indicative of IRI and perioperative cardiac xenograft dysfunction in a human decedent model receiving gene-modified pig heart xenografts, that were not evident in the initial clinical findings.

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Korean J Transplant 2023;37 Suppl 1:S194
https://doi.org/10.4285/ATW2023.F-7787

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Prevention and management of portal vein complications after pediatric living donor liver transplantation

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Background: Portal vein (PV) complications are common after pediatric living donor liver transplantation (LDLT) due to atretic PV following repeat cholangitis and PV size mismatching. Advancements in intraoperative modulations and perioperative care have improved outcomes over the years. We report our experience with the management of early and late PV complications after pediatric LDLT.
Methods: From June 1994 to December 2022, 356 pediatric patients received LDLT at Kaohsiung Chang Gung Memorial Hospital. Twenty-three children underwent intraoperative P4 stump stenting for inadequate PV flow during LDLT since 2009.
Results: Over a study period of 29 years, 43 pediatric patients developed PV complications after LDLT (12.1%). During the early era, PV complications occurred in 15.9%, and variceal bleeding was the most common late complication after pediatric LDLT (7%). After routinely performing the P4 stump approach for suboptimal PV flow, incidence of PV complications decreased to 11.4%, and no patients developed late variceal bleeding (0%). One patient who developed extrahepatic PV occlusion 12 years after LDLT suffered from repeat life threatening gastrointestinal bleeding. The patient underwent several failed attempts of treatment, including sclerotherapy, splenic artery embolization, percutaneous transluminal angioplasty, thrombectomy, distal spleno-renal shunt, and splenectomy. He was finally successfully treated with Viabahn-assisted Meso-Rex shunt combined with AngioJet thrombectomy.
Conclusions: Our results showed significant decrease in incidence of PV complications over time, due to improvements in surgical technique, particularly the intraoperative P4 stump approach, donor and recipient selection and perioperative management. Timely diagnosis and early management of PV complications improves overall survival and decreases incidence of late complications.

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Korean J Transplant 2023;37 Suppl 1:S195
https://doi.org/10.4285/ATW2023.F-7805

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Immediate postoperative renal endovascular interventions in kidney transplant patients: a case series on safety and efficacy

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Kidney transplant recipients often exhibit severe arterial calcification and atherosclerosis due to conditions such as end-stage renal disease, hemodialysis, and diabetes mellitus. These vascular complications can lead to detrimental outcomes, including emergent reoperation or graft loss. As one of the potential solutions, immediate postoperative renal endovascular interventions can treat these vascular complications. This retrospective case series aims to assess the safety and efficacy of such interventions in eight patients aged 16 to 65, who received either living or deceased donor kidney transplantation from 2015 to 2020. Interventions including balloon angioplasty, stent insertion, thrombolysis, and angiography were necessitated by intraoperative findings or early postoperative complications (<30 days) like sluggish arterial waveform in duplex sonography, renal artery thrombosis, and stenosis. Technical success rate was 88.5% (seven out of eight patients). No major adverse events were reported, and renal function remained stable. With the exception of one patient with elevated resistive index due to rejection, all patients' postintervention duplex ultrasonography showed improved arterial waveforms and resistive indices, indicating adequate blood flow restoration. This case series underscores the potential of immediate postoperative endovascular interventions to manage vascular complications in kidney transplant patients.

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Korean J Transplant 2023;37 Suppl 1:S196
https://doi.org/10.4285/ATW2023.F-7820

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Index cases of intracranial aneurysms in autosomal dominant polycystic kidney disease: longitudinal experience from a single renal transplantation center

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Background: The prevalence of intracranial aneurysms (ICAs) is higher in patients with autosomal dominant polycystic kidney disease (ADPKD), with suggestion that ICAs behave differently in ADPKD.
Methods: A retrospective review of prospectively collected clinical data for all patients who underwent nephrectomy/ies between January 1, 1995, and December 31, 2021 at Central and Northern Adelaide Renal and Transplantation Services. Cases of ICAs were reviewed for clinical history, mode of diagnosis, patient age at diagnosis, family history and significant risk factors, temporal relationship between diagnosis and nephrectomy/renal transplantation.
Results: In 81 individual patients who had ongoing follow-up, 111 nephrectomies were undertaken. Fourty-nine patients had ADPKD and 32 had another primary nephrological diagnosis. There were no significant differences for gender and age at follow-up, but ADPKD patients were more likely to have hypertension. Thirty ADPKD patients and 15 non-ADPKD patients had neuroimaging. Seven of 49 ADPKD patients had ICAs (14.3% of all patients, 23.3% of those with neuroimaging), compared to two of 32 non-ADPKD patients (6.25% of all patients, 13.3% of those with neuroimaging). The mean age of ADPKD patients with ICA(s) was 48.9±12.9 years at time of diagnoses; all had hypertension. Six did not meet current guidelines criteria for ICA screening. Five had no known family history of ICA. Three patients suffered aneurysmal rupture, at a mean age of 39 years. Aneurysmal rupture was known to involve smaller ICAs in two of these cases. Cases demonstrated detectable vascular changes on early neuroimaging, hypoplastic anatomical variants, aneurysmal growth, *de novo* ICA formation, and association with other vascular abnormalities.
Conclusions: Early detection of ICA and preaneurysmal changes is possible. Our data confirmed risk for aneurysmal rupture at a younger age and with smaller aneurysms: this requires further investigation and clinician vigilance. It is vital for a multidisciplinary, patient-centred approach of ICA screening, surveillance and management for ADPKD patients and their families.

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Korean J Transplant 2023;37 Suppl 1:S197
https://doi.org/10.4285/ATW2023.F-7833

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Emphasizing long-term isoagglutinin monitoring after ABO-incompatible kidney transplant: lessons from a case series on late antibody-mediated rejection

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ABO-incompatible kidney transplantation (ABOi-KT) broadens transplantation options in situations with a shortage of donors. After immediate transplantation, isoagglutinin titer rebound can cause acute antibody-mediated rejection (AMR), but several weeks later, even if the isoagglutinin titer increases, it is considered that there is no graft damage due to accommodation. Here we present three cases of late AMR and suggest prolonged isoagglutinin titer monitoring. A 61-year-old woman underwent ABOi-KT (recipient: B, donor: A). On postoperative day (POD) 6, she underwent small bowel resection due to panperitonitis. On POD 17, creatinine (Cr) levels began to rise along with the onset of fever. On POD 19, her isoagglutinin titer was increased (1:64), and continuous renal replacement therapy was initiated. On POD 27, graftectomy was performed. The second patient was a 52-year-old woman (recipient: B, donor: A). On POD 6, she underwent therapeutic plasma exchange (TPE) due to increased isoagglutinin titer (1:16). On POD 11, C-reactive protein (CRP), Cr levels, and isoagglutinin titer (1:32) increased, with onset of fever. She started daily TPE. On POD 20, computed tomography revealed graft necrosis, resulting in graftectomy on POD 22. The third patient was a 49-year-old male (recipient: O, donor: A). On POD 13, the patient had fever, reduced urine output, and increased Cr and CRP levels. On POD 14, Isoagglutinin titer (1:16) was elevated. On POD 34, Cr, isoagglutinin titer, and CRP started to rise, along with decreased urine output. The patient is now undergoing immunosuppressive treatment including TPE. The Korean National Medical Insurance guarantees ABO antibody titer testing up to 2 weeks after ABOi transplantation. However, as demonstrated in the above cases, there could be an elevation in isoagglutinin titer after 2 weeks leading to graft damage, often accompanied by increase in CRP. Long-term monitoring isoagglutinin titers should be possible when symptoms or laboratory findings related to infection are present, to prevent poor prognosis.

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Korean J Transplant 2023;37 Suppl 1:S198
https://doi.org/10.4285/ATW2023.F-7872

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of probiotic supplementation on kidney transplantation outcomes: a retrospective study

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Background: The impact of probiotic supplementation in kidney transplantation (KT) recipients on immunosuppressants has not been extensively studies, resulting in limited evidence regarding its effects. As a result, the potential pros and cons of probiotics in this specific population have not been well-established. This study aims to investigate the effects of probiotic supplementation on KT outcomes.
Methods: We conducted a retrospective analysis of medical records of 378 KT recipients at Korea University Anam Hospital from January 2010 to December 2020. Only patients who had taken probiotics within a year post-KT were included, and transplant outcomes including graft function, infections, and cardiovascular events from 1 to 3 years after KT were evaluated.
Results: Of the 378 recipients (mean age, 47.5 years; female, 30.2%), 98 received probiotics during the study, with 36 taking them for over 3 months. Probiotic types included *Lactobacillus* spp. (44%), *Bacillus subtilis* (14%), and others (39%), and an average duration of supplementation was 104.8 days. The probiotics group showed no significant difference in estimated glomerular filtration rate at 1 year and 3 years compared to the nonprobiotics group. Cytomegalovirus viremia occurred in 127 patients, with a higher incidence in the probiotics group (52.0% vs. 27.1%). However, there was no significant difference in BK viremia or coronavirus disease 2019 infection. During the study period, 220 cases received antibiotics for more than 1 week, and the prevalence of bacterial infection was significantly greater in the probiotics group than in the nonprobiotics group (73.5% vs. 52.9%). Additionally, 21 patients experienced new onset cardiovascular disease, with a significantly higher incidence in the probiotics group.
Conclusions: Personalized probiotic supplementation for transplant recipients should be guided by existing evidence. Further randomized controlled trials are necessary to comprehensively understand its effects.

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Korean J Transplant 2023;37 Suppl 1:S199
https://doi.org/10.4285/ATW2023.F-7877

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical course of obese advanced heart failure patients who underwent bariatric surgery

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Background: Heart transplantation (HTx) is the optimal treatment for selected patients with advanced heart failure (HF). However, morbid obesity is still a contraindication to HTx. While bariatric surgery (BS) is an effective treatment for obesity in general, the efficacy and safety of BS in advanced HF is not well known. We aimed to describe the trajectory of advanced HF patients who underwent BS and HTx.

Methods: We performed a retrospective review of obese (body mass index [BMI] >35 kg/m^2) advanced patients who underwent BS (n=15) at a single center from January 2010 to August 2022 and compared to the clinical courses of patients with obese advanced HF who did not undergo BS (control group, n=62) during the same period.

Results: A total of 15 patients underwent BS during the study period. Among 15 patients, 12 underwent sleeve gastrectomy and three underwent gastric bypass surgery. Mean hospital stay for BS was 5.7±2.4 days. Post-BS complications occurred in two patients (13.3%) including cellulitis and wound dehiscence. After BS, the mean value of BMI was significantly reduced (pre-BMI: 39.0 kg/m^2 [range, 30.0–42.1 kg/m^2], post-BMI: 35.4 kg/m^2 [range, 30.8–36.1 kg/m^2]; P=0.043) in BS group. Baseline characteristics including sex, etiology of HF, age, pulmonary capillary wedge pressure, and left ventricular ejection fraction were comparable between two groups. Similar proportions of patients underwent HTx and mechanical circulatory support (MCS) in both groups (HTx: 26.7% vs. 37.1%, P=0.555; MCS: 53.3% vs. 74.2%, P=0.128). Recurrent hospitalization due to HF was comparable between two groups (33.3% vs 33.9%, P=0.999), however, survival rates were significantly better in BS groups (P=0.049 by log-rank test).

Conclusions: BS in advanced HF patients is relatively safe and effective to reduce BMI. Further prospective studies are necessary to confirm these findings.

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Korean J Transplant 2023;37 Suppl 1:S200
https://doi.org/10.4285/ATW2023.F-7898

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Deciphering immunogenic diversity via glycan antigen characterization in genetically modified pigs for xenotransplantation

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Clinical application of xenogeneic tissue holds great potential to overcome human donor organ shortage. However, porcine xenografts are rejected by human antibodies that bind to pig antigens due to species differences. Notably, glycan antigens such as N-glycolylneuraminic acid (NeuGc), Sda, and terminal-gal antigens, are highly influential in driving tissue immunogenicity due to immense variability, both within and between species. Genetically engineered pigs lacking the expression of glycan antigens were produced to address the rejection mechanism and construct safer xenografts. To investigate the association between genotype and glycophenotype, glycan analysis was conducted using isomer-sensitive PGC LC/MS/MS. Isomeric glycan compositions with identical masses but different structures were separated on a PGC-based column and annotated based on retention time, accurate masses, MS/MS fragmentations, and previously reported structures. We characterized the structural diversity and expression levels of immunogenic glycans, encompassing NeuGc, Sda, and terminal-gal antigens in cardiac and renal tissues from WT and triple knockout (CMAH/GGTA/B4GALNT2B) pigs TKO. Our findings showed that Gal, Neu5Gc, and Sd(a) were markedly expressed in all the examined tissues in WT pigs but barely detected in TKO pigs. These results indicate that the glycan antigen of TKO pig is significantly reduced and the remaining xenoantigens on porcine tissues can be eliminated via a gene targeting approach. Moreover, our investigations uncovered significant intra- and interspecies differences in immunogenic glycan diversity and expression levels. Our study underscores the importance of investigating tissue-specific immunogenic glycans and suggests potential strategies for mitigating xenotransplantation-induced immune rejection by engineering the glycans of pig grafts.

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Korean J Transplant 2023;37 Suppl 1:S201
https://doi.org/10.4285/ATW2023.F-7904

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Long-term outcomes of liver transplantation in hepatocellular carcinoma with bile duct tumor thrombus: a comparison with portal vein tumor thrombus

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Liver transplantation (LT) in patients with hepatocellular carcinoma (HCC) with bile duct tumor thrombus (BDTT) remains controversial. This study analyzed the recurrence and overall survival rates through long-term results after LT in HCC patients with BDTT and compared the results after LT in HCC patients with portal vein tumor thrombus (PVTT). We performed a retrospective study of 45 patients with PVTT, 16 patients with BDTT, and 11 patients with coexisted PVTT and BDTT among HCC patients who underwent LT at a single center from 1999 to 2020. The HCC recurrence rates were 40.4% at 1 year, 30.3.3% at 2 years, and 27.6% at 3 years in PVTT group, 66.7%, 53.3%, and 46.7% in BDTT group, and 22.2%, 22.2%, and 0% in coexisted group (P=0.183). Overall patient survival rates were 68.4% at 1 year, 54.3% at 2 years, and 41.7% at 3 years in PVTT group, 81.3%, 62.5%, and 48.2% in BDTT group, and 63.6%, 27.3%, and 0% in coexisted group (P=0.157). In multivariate analysis, pretransplantation Model for Tumor Recurrence after LT score and Model for End-Stage Liver Disease score were found to be independent risk factors for recurrence and survival in all groups. HCC patients with BDTT showed no difference in recurrence and survival compared to HCC patients with PVTT at long-term follow-up after LT.

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Korean J Transplant 2023;37 Suppl 1:S202
https://doi.org/10.4285/ATW2023.F-7910

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Comparison of lung transplant patients as a cause of COVID-19 and non-COVID-19

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Background: As coronavirus disease 2019 (COVID-19) infection spread from 2020, lung disease patients due to COVID-19 infection occurred, and lung transplantation was performed as a treatment. We want to compare the data of the two groups, such as general characteristics and survival rates, of patients who received lung transplantation as a cause of COVID-19 and non-COVID-19, to identify differences.
Methods: Patients who received lung transplantation from January 2020 to December 2022 at Seoul National University Hospital were targeted. Data were collected through medical records before and after surgery by classifying patients with lung disease due to COVID-19 and non-COVID-19.
Results: Patients had a mean age of 54±17.0 years, 51% (n=26) were male, cause of COVID-19 11.8% (n=6), mean Sequential Organ Failure Assessment (SOFA) score of 6.4±4.0, mean Acute Physiology and Chronic Health Evaluation II score of 16.7±7.67 and admission period were 58.5±54.7 days. Forty patients (78.4%) had a comorbidity, the 1-year survival rate after lung transplantation was 80.4%. We analyzed lung transplantation as a cause of COVID-19 vs. non-COVID-19. In the univariate logistic model comorbidities (odds ratio [OR], 10.857; P=0.013) SOFA score pre-liver transplantation (LT; OR, 1.562; P=0.014.) admission period (OR, 1.015; P=0.037) were independently associated factors. SOFA score pre-LT (OR, 2.060; P=0.036) was only significant in multivariate logistic model.
Conclusions: The 1-year survival rate of lung transplant patients as a cause of COVID-19 (66.6%) was lower than the 1-year survival rate of non-COVID-19 (82%). It was similar to the 1-year survival rate of the National Institute of Organ Tissue and Blood Management (66.5%). Lung transplantation patients as a cause of COVID-19 had lower comorbidities than non-COVID-19, but had a higher SOFA score (pre-LT) and mortality. Lung transplantation patients as a cause of COVID-19, are expected to disease progress more rapidly before transplant than non-COVID-19, resulting in poor prognosis.

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Korean J Transplant 2023;37 Suppl 1:S203
https://doi.org/10.4285/ATW2023.F-7922

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Combined use of tocilizumab (IL-6 receptor blocking antibody) and mesenchymal stem cells attenuate the development of anti-HLA-A2.1 antibody in highly sensitized mice model

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The aim of this research to investigate the synergistic effects of IL-6 receptor blocking antibody (tocilizumab [TCZ]) and bone marrow derived mesenchymal stem cells (BM-MSCs) on the humoral immune responses of an allo-sensitized mouse model developed using HLA.A2 transgenic mice. Wild-type C57BL/6 mice were sensitized with skin allografts from C57BL/6-Tg (HLA-A2.1)1Enge/J mice and were treated with either TCZ or BM-MSC or both TCZ and BM-MSC. HLA.A2-specific immunoglobulin G (IgG) was reduced in all of TCZ, BM-MSC and TCZ+BM-MSC in comparison with allo-sensitized control group, and it was the most significant in TCZ+BM-MSC group. Combined use of TCZ and BM-MSC also resulted in the increased pre-pro B cells and decreased immature and mature B cell proportions in the BM ($P<0.05$ vs. control) than other groups. In the spleen, an increase in transitional, memory, and long-lived plasma B cells was observed with a significant decrease in marginal and follicular B cells ($P<0.05$ vs. control) in TCZ+BM-MSC group. In conclusion, combined use of TCZ and BM-MSC inhibit B cell differentiation and maturation in spleen and BM and finally resulting in the reduction of HLA.A2-specific IgG in highly sensitized mice model. Our data suggests that combined use of TCZ and BM-MSC may serve as a useful future strategy for desensitization therapy.

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Korean J Transplant 2023;37 Suppl 1:S204
https://doi.org/10.4285/ATW2023.F-7954

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of persistent and resolved *de novo* donor-specific antibodies on kidney transplant outcomes

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De novo donor-specific antibodies (dnDSA) are recognized as a critical risk factor for graft failure in kidney transplantation. However, the prognostic implications of the persistence or resolution of dnDSA after its initial occurrence remain poorly understood. This study aimed to investigate the transplant outcomes based on the presence of persistent or resolved dnDSA in kidney transplant recipients. We conducted a retrospective analysis on adult patients who underwent kidney transplantation at Severance Hospital between 2006 and 2020. During a median follow-up of 105 months, dnDSA was occurred in 444 recipients (33.6%, 444/1,322). Death-censored graft survival was significantly inferior in patients with dnDSA compared to those without dnDSA. Among the 444 patients with dnDSA, 139 patients experienced resolution of dnDSA, while 305 patients maintained persistent dnDSA throughout the follow-up. The persistent dnDSA group exhibited a higher proportion of multiple dnDSA (34.8% vs. 18.0%, P<0.001) and class I+II combined presence (15.4% vs. 3.6%, P=0.001) compared to the resolved dnDSA group. The median total mean fluorescence intensity (MFI) value (4,316 vs. 1,449) and the median MFI value of immunodominant dnDSA (3,887 vs. 1,436) were both significantly higher in the persistent dnDSA group. The median follow-up duration after dnDSA occurrence was 49 months (interquartile range, 19.3–65.0), and no significant difference in death-censored graft survival was observed between the two dnDSA groups (P=0.857). Once dnDSA occurs, even if it resolves, it exerts a lasting detrimental effect on kidney transplant outcomes. Efforts to prevent the development of dnDSA are crucial in improving long-term kidney transplant outcomes.

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Korean J Transplant 2023;37 Suppl 1:S205
https://doi.org/10.4285/ATW2023.F-7973

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Successful implementation of pure laparoscopic right donor hepatectomy in a small center with limited experience: the role of proctorship program

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Background: Pure laparoscopic donor right hepatectomy (PLDRH) has recently been widely performed. However, most of the PLDRH cases are carried out in larger volume centers with extensive experience in laparoscopic liver surgery and transplantation. In this study, we report the outcomes of five cases performed in a small center with limited experience, under the guidance of a proctorship program.
Methods: Between August 2022 and May 2023, five cases of adult-to-adult living donor liver transplantation (LDLT) were performed at our center, and all donors underwent PLDRH. The operator was a young surgeon with experience in about 20 laparoscopic major hepatectomies but no prior experience in open donor hepatectomy. All operations were performed under the proctorship program and followed their protocol.
Results: In all five cases, modified right grafts were obtained using pure laparoscopic hepatectomy. The median operative time was 270 minutes (range, 255–445 minutes), and there were no instances of open conversion. The median estimated blood loss was 400 mL (range, 200–700 mL), and there were no perioperative or postoperative transfusions. All donors were discharged on day 7 postoperatively, and no postoperative complications were observed.
Conclusions: In our experience, even a young surgeon with no prior experience in open donor hepatectomy in a small center can safely perform PLDRH with the support of a proctorship program, overcoming the learning curve.

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Korean J Transplant 2023;37 Suppl 1:S206
https://doi.org/10.4285/ATW2023.F-7984

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Prevalence and risk factors of frailty in long-term kidney transplant recipients: a prospective study

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Frailty is prevalent among kidney transplant candidates and has been associated with unfavorable outcomes. Although some studies have shown an initial improvement in frailty shortly after transplantation, there is limited study on frailty prevalence and risk factors in patients with long-term posttransplantation follow-up. This prospective study aimed to investigate the prevalence of frailty and its associated risk factors in long-term kidney transplant recipients at Severance Hospital from November 2022 to July 2023. Frailty was assessed using the Fried phenotype score, and individuals with a score of 2 or higher were classified as frail. The study included 487 patients, with a median age of 60 years (interquartile range [IQR], 55–65 years). Among them, 52.2% were male. The median posttransplantation follow-up was 91 months (IQR, 50–155 months). Glucocorticoids were maintained in 93.8% of patients, and 97.3% received tacrolimus as maintenance immunosuppressive agent. The overall prevalence of frailty among all patients was 13.8% (67/487). The prevalence of frailty in males and females was 12.6% and 15.0%, respectively. Within 1–5 years, 5–10 years, and over 10 years posttransplantation, the frailty prevalence was 10.9%, 10.7%, and 18.3%, respectively. Multivariate analysis identified several factors associated with a higher frailty risk, including low body mass index and longer time after transplant. Conversely, higher serum total protein and hemoglobin levels, as well as increased physical activity, were associated with a potential lower frailty risk. This study suggests that adequate nutritional support and exercise may help mitigate frailty risk in long-term kidney transplant recipients.

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Korean J Transplant 2023;37 Suppl 1:S207
https://doi.org/10.4285/ATW2023.F-7986

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Panel reactive antibody level according to history of blood transfusion and pregnancy in kidney transplant candidate

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Background: Pretransplant sensitization is known as a risk factor for posttransplant antibody-mediated rejection in kidney transplantation (KT). Factors that can cause sensitization include transfusion, pregnancy, and previous transplantation. Panel reactive antibody (PRA) is a useful screening test for pretransplant sensitization. We aim to evaluate the incidence of PRA positivity in KT candidates based on their history of transfusions and pregnancies before transplantation.
Methods: Our institution conducted a study involving a total of 258 patients awaiting KT from April 2019 to July 2023. They had undergone PRA test, and based on their medical records, we divided into four groups: patients with no history of transfusion and pregnancy (group 1, n=153); patients with a history of transfusion only (group 2, n=46); patients with a history of pregnancy only (group 3, n=43); Patients with a history of both transfusion and pregnancy (group 4, n=16). Primary outcome of this study was the proportion or positivity of PRA among the four groups. Secondary outcome was any differences in PRA positivity based on the number of transfusions and pregnancies.
Results: There was a significant difference in the positive rate of PRA between group 1 and group 3 classified according to pregnancy (P<0.001). Even among patients who received blood transfusion, the positive rate of PRA between group 2 and group 4 showed a significant difference according to pregnancy (P<0.001). On the other hand, there was no significant difference in the positive rate of PRA between group 1 and group 2 classified according to transfusion (P=1.000). Among groups 3 and 4 with a history of pregnancy, there was no difference in the positive rate of PRA by blood transfusion (P=0.703).
Conclusions: The proportion of preformed antibody before KT was influenced by the history of pregnancy, but not blood transfusion.

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Korean J Transplant 2023;37 Suppl 1:S208
https://doi.org/10.4285/ATW2023.F-7988

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical outcomes in one-thousand deceased donor kidney transplantation: a single-center experience

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Background: Recently, the clinical outcome of kidney transplantation (KT) has improved due to the development of effective immunosuppressive drug. At Seoul National University Hospital, after the first deceased donor KT (DDKT) in March 1988, it reached 1,000 cases in November 2022. The purpose of this study was to analyze the clinical results of DDKT in single center.
Methods: This is single center retrospective review of DDKTs from March 1988 to November 2022. Patients aged 19 years or older who underwent DDKT at Seoul National University Hospital in Korea were enrolled in this study.
Results: Mean age of recipients were 45.2±18.6 years and there were 595 males (59.6%). Mean waiting time for DDKT was 78.2 months. There were 133 zero human leukocyte antigen (HLA)-mismatch cases (13.3%), whose waiting time was significantly shorter than the average (non-zero HLA-mismatch vs. zero HLA-mismatch, 81.9±47.5 vs. 56.2±43.1 months; P<0.001). Of the overall recipients, 91 patients had previously received a transplant (9.1%). The most common cause of end-stage renal failure was glomerulonephritis (n=374, 37.4%), followed by diabetes (n=232, 23.2%). With a mean follow-up 113.6±79.1 months, overall 1-year, 3-year, 5-year, and 10-year death-censored graft survival were 98.2%, 97.6%, 97.5%, and 95.0% and overall 1-year, 3-year, 5-year, and 10-year patient survival were 98.2%, 97.6%, 97.1%, and 95.0%. The causes of mortality were pneumonia (n=22, 48.9%), cardiovascular disease (n=12, 26.7%), malignancy (n=4, 8.9%). Overall rejection rate was 2.2 % (n=22), of which T-cell mediated was 68.2 % (n=15).
Conclusions: The average waiting period for DDKT was approximately 6.5 years, and the rate of surgery earlier than the average waiting period with non-HLA-mismatches was 13.3%. The overall long-term graft survival rate was 95.0% at 10 years.

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Korean J Transplant 2023;37 Suppl 1:S209
https://doi.org/10.4285/ATW2023.F-7989

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Immune cells in brown adipose tissue are involved in allogeneic immune responses

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Background: Adipose tissues are associated with metabolic processes and immune functions. Brown adipose tissue is known for its involvement in energy expenditure and thermogenesis, particularly in infants and hibernating animals. The functions of the brown adipose tissue in immune response and transplantation are less investigated.
Methods: A mouse skin graft model was utilized, where BALB/C mice were employed as recipients and C57BL/6 mice as allogeneic donors. The recipients received tail skin grafts from C57BL/6 mice on the upper right back. The mice were sacrificed after 7 days. Flow cytometry was used to analyze immune cells from the brown fat and the draining lymph node. Glycerol and adenosine triphosphate (ATP) assays were performed using brown adipose tissue. A quantitative real-time polymerase chain reaction (qPCR) was conducted to assess the expressions of the genes in the brown adipose tissue.
Results: The weight of the brown adipose tissue from allogeneic skin graft mice exhibited a significant decrease, compared with that of syngeneic skin graft mice. The concentrations of glycerol and ATP were notably elevated in the brown adipose tissues of allogeneic skin graft mice than those of syngeneic skin graft mice. qPCR data revealed a downregulation of Pparg expression, while Leptin expression was upregulated in the brown adipose tissues of allogeneic skin graft mice. The frequencies of $CD8^+$, $CD44^+$ $CD62L^-$ memory $CD8^+$ T cells in brown adipose tissue were higher in allogeneic skin graft mice than in syngeneic ones.
Conclusions: This study suggests that the immune cells within the brown adipose tissue are involved in allogeneic immune responses while lipid metabolism in the brown adipose tissue is changed by allogeneic immune responses as well.

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Korean J Transplant 2023;37 Suppl 1:S210
https://doi.org/10.4285/ATW2023.F-8018

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Pure laparoscopic right hepatectomy via an anterior approach: a case report

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Background: In the past, right hepatectomy via the anterior approach has been regarded as one of the many standard approaches for hepatectomy. However, pure laparoscopic right hepatectomy (PLRH) from the anterior approach has been regarded as technically challenging and it is a minimally invasive liver surgery that leads to rapid recovery. We recently had a patient who underwent a PLRH for a large hemangioma by an anterior approach.
Methods: A 34-year-old female (height 168 cm, weight 68 kg) was admitted to our center with a diagnosis right upper quadrant pain with a large hemangioma. The lesion was located in right liver (9.1×5.9×8.8 cm), which was close to the middle hepatic vein by computed tomography. She was a no other medical history, nondrinker and nonsmoker. Hepatitis B surface antigen and hepatitis C virus antibodies were negative. Her liver function was fine, with a platelet count of 278 000/mL. Preoperative levels of alpha-fetoprotein, PIVKA, and CA19-9 were 3.4 ng/mL, 18 mAU/mL, and 15 U/mL, respectively, which were within normal limits. In December 2022, patient underwent total laparoscopic right hepatectomy using the anterior approach, but without the hanging maneuver.
Results: The operation time was 440 minutes, and the blood loss was 80 mL. A right hepatectomy were performed successfully with a purely laparoscopic procedure. The patient recovered well and was discharged on postoperative day 8. The pathological result was cavernous hemangioma of liver with severe myxoid-fibrous wall and chronic hyperplastic cholecystitis.
Conclusions: The PLRH using the anterior approach was feasible and safe in selected patients. A larger case series with a longer follow-up is needed, to determine the proper role of laparoscopic major resection in liver surgery.

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Korean J Transplant 2023;37 Suppl 1:S211
https://doi.org/10.4285/ATW2023.F-8022

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical significance of late onset antibody-mediated rejection without donor-specific anti-human leukocyte antigen antibodies in kidney transplantation

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Background: Late onset antibody-mediated rejection (AMR) is a leading cause of allograft failure after kidney transplantation. Although the presence of donor-specific antibodies (DSA) is no longer required for AMR diagnosis according to Banff 2017 classification, the clinical significance of late onset AMR without DSA remains unclear.
Methods: We analyzed 137 cases of late onset AMR (>6 months after transplant) that meet the Banff 2017 histologic criteria for AMR. All cases were diagnosed by for cause biopsy and grouped into DSA-positive (n=116) and DSA-negative (n=31) AMR groups.
Results: The diagnosis of AMR was made on median 87 months after transplantation. Two groups had similar histological pictures and graft renal function at the time of biopsy. Of the DSA-negative AMR group, 19 patients were tested for antibodies against angiotensin II type 1 receptor and six (31.6%) of them had antibodies. In total, 85.7% of patients received AMR-specific treatment, including rituximab, plasmapheresis, and/or intravenous immunoglobulin. During a median follow-up of 41 months after AMR diagnosis, 48 patients lost their grafts. The 5-year death censored graft survival rates were 61.6% for DSA-positive AMR and 70.6% for DSA-negative AMR (P=0.752). Multivariable analysis revealed that young age, interstitial fibrosis/tubular atrophy (ci+ct score), transplant glomerulopathy (cg score), and impaired renal function at the time of biopsy were independent risk factors for death-censored graft loss. During the follow-up, graft renal function after AMR diagnosis was comparable between DSA-positive and DSA-negative AMR.
Conclusions: DSA-negative late onset AMR have similar clinical outcomes compared to DSA-positive AMR.

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Korean J Transplant 2023;37 Suppl 1:S212
https://doi.org/10.4285/ATW2023.F-8023

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Comparison of the effectiveness and safety of rabbit anti-thymocyte globulin and basiliximab as induction agents in ABO-incompatible kidney transplants: a Korean Organ Transplantation Registry-based study

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This study compares the safety and effectiveness of rabbit anti-thymocyte globulin (rATG) and basiliximab, two widely used induction agents, in ABO-incompatible kidney transplants (ABOi KT). Leveraging the extensive data from the Korean Organ Transplantation Registry, the outcomes of 818 patients receiving either rATG (n=152) or basiliximab (n=666) were evaluated. The baseline characteristics, including age, gender, body mass index, and baseline diseases, were comparable between the two groups, as were the characteristics of the donors. The immunological features revealed a higher proportion of patients with donor-specific antibodies and high panel reactive antibodies in the rATG group, though pretransplant maximum Immunoglobulin G (IgG) and IgM antibody titers showed no difference between the groups. Effectiveness was evaluated through death-censored graft survival (P=0.208) and rejection-free survival (P=0.296). Safety was assessed through patient overall survival (P=0.597), infection-free survival (P=0.294), and malignancy-free survival (P=0.634). No statistically significant differences were observed between the two groups in terms of either effectiveness or safety. The use of rATG was not associated with a significant hazard ratio (HR) for any of the outcomes when compared to the use of basiliximab. The HR for death (HR, 1.00; 95% confidence interval [CI], 0.21–4.85; P=0.996), graft failure (HR, 2.42; 95% CI, 0.54–10.87; P=0.25), rejection (HR, 1.39; 95% CI, 0.88–2.19; P=0.158), infection (HR, 0.81; 95% CI, 0.51–1.28; P=0.368), and malignancy (HR, 0.85, 95% CI, 0.09–7.59; P=0.882) were reported, indicating no significant positive or negative impact. In conclusion, our findings suggest that the use of rATG as induction therapy in ABOi KT is comparable to the use of basiliximab in terms of both effectiveness and safety.

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Korean J Transplant 2023;37 Suppl 1:S213
https://doi.org/10.4285/ATW2023.F-8034

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Delayed graft function in living donor kidney transplantation: exploring risk factors and impact on short- and long-term outcomes

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Delayed graft function (DGF) is a common complication in deceased donor kidney transplantation and is associated with worse outcomes. In contrast, DGF in living donor kidney transplantation (LDKT) has received less attention, particularly in the context of recipients with varying immunological risk profiles. We aimed to evaluate the risk factors for DGF and investigate the associations between DGF and both short- and long-term outcomes in LDKT recipients. A retrospective analysis was conducted on adult LDKT patients at Severance Hospital between 2006 and 2020. Among the 1,595 recipients in the study, 149 underwent human leukocyte antigen (HLA)-incompatible LDKT (including 32 with both HLA and ABO incompatibility), and 251 underwent ABO-incompatible LDKT. A total of 99 recipients (6.2%) experienced DGF. Multivariable analysis revealed several independent risk factors for DGF, including HLA incompatibility (odds ratio [OR], 5.52; 95% confidence interval [CI], 3.32–9.18), ABO incompatibility (OR, 4.35; 95% CI, 2.79–6.78), right-sided donor kidney (OR, 3.57; 95% CI, 2.08–9.18), and pre-transplant diabetes mellitus (OR, 1.79; 95% CI, 1.15–2.78). Throughout the follow-up period, 168 patients (10.5%) experienced death-censored graft loss, and 76 patients (4.8%) died. DGF was independently associated with death-censored graft loss (hazard ratio, 2.67; 95% CI, 1.66–4.28). Furthermore, DGF was associated with an elevated risk of hospital readmission within 1-year posttransplant and worse renal function at 1 year. Overall patient survival rates were comparable between the two groups. In conclusion, although the incidence of DGF is lower in LDKT, its impact remains significant. The occurrence of DGF in LDKT highlights the importance of considering immunological risk factors.

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Korean J Transplant 2023;37 Suppl 1:S214
https://doi.org/10.4285/ATW2023.F-8049

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A case of intestinal Behcet's disease after kidney transplantation

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Behcet's disease is a multisystemic, inflammatory disease with a chronic relapsing course. Intestinal Behcet's disease is characterized by intestinal symptoms and typical colon ulcerations observed by endoscopic examination. Here, we report a case of incidental intestinal Behcet's disease occurring 3 years after kidney transplantation. The 28-year-old male visited the emergency center presenting with recurrent abdominal pain, diarrhea, weight loss and hematochezia which occurred from 2 months ago. Oral and genital ulcers or skin lesions were absent. The patient received deceased donor kidney transplantation 3 years ago due to end-stage kidney disease of unknown origin. Two years ago, approximately 10 months after transplantation, the patient presented with abdominal pain and diarrhea and was diagnosed with cytomegalovirus (CMV) enteritis despite prophylactic ganciclovir treatment. The patient was currently on maintenance immunosuppressive therapy comprised of prednisolone, advagraf, and bredinin. The patient was acute-ill looking and anorexic and the abdomen was soft, flat, and nontender on physical examination. Laboratory examination showed following results: white blood cell 8,460/microL, hemoglobin 12.9 g/dL, blood urea nitrogen 8.6 mg/dL, serum creatinine 0.9 mg/dL, and tacrolimus therapeutic drug monitoring 4.5 ng/mL. Neither CMV antigenemia nor CMV polymerase chain reaction was present. Colonofiberscopy demonstrated an ulcer at the terminal ileum, and healing scars around the ileocecal valve. Biopsy results showed chronic active inflammation with mild gland architectural distortion, mild cryptitis, and erosions, indicative of intestinal Behcet's disease and was prescribed mesalazine, colchicine, and mercaptopurine. His symptoms improved with intermittent mild flares during the follow-up period. Two years after diagnosis, follow-up colonoscopy also revealed similar ulcers compatible with intestinal Behcet's disease. The patients under immunosuppression after kidney transplantation can develop intestinal Behcet's disease. Therefore, Behcet's disease needs to be included in the differential diagnosis of abdominal pain even in immunocompromised patients.

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Korean J Transplant 2023;37 Suppl 1:S215
https://doi.org/10.4285/ATW2023.F-8057

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Cardiovascular events after kidney transplantation

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Background: End-stage renal disease patients are at a higher risk of cardiovascular diseases, and it is the leading cause of death. Kidney transplantation (KT) has the advantage of reducing the cardiovascular risk by discontinuing dialysis, although there is a risk of general anesthesia and patient deterioration due to surgical complications during postoperative care. We aimed to evaluate the cardiovascular events and the risk factors of such events after KT at a single center.
Methods: This study was conducted on patients who received KT from January 2017 to July 2022 at Seoul St. Mary's Hospital. A total of 931 patients were included. Mean age was 49.75 (standard deviation [SD], 11.6) years, 567 patients were male, 629 patients had hypertension, 291 patients had diabetes, and mean body mass index (BMI) was 23.3 (SD, 4.43). Patients who had major adverse cardiovascular events (myocardial infarction, stroke, heart failure, coronary revascularization, atrial fibrillation, cardiovascular disease death) during follow-up were investigated for risk factors. Thirty-nine patients showed cardiovascular events. Chi-square test and independent sample t-test were used for statistical analysis.
Results: There were 39 (4.2%) of 931 patients who had cardiovascular events. Eighteen patients had ischemic stroke, and 21 patients required coronary revascularization. Our study showed that age ($P<0.05$), dialysis duration ($P<0.05$) showed statistical significance with cardiovascular event. Diabetes mellitus ($P=0.464$), hypertension ($P=0.571$), and BMI ($P=0.385$) did not show statistical significance.
Conclusions: The prevalence of cardiovascular event was 4.2% at our center. Patient age at transplantation and duration of dialysis were found to be statistically significant.

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Korean J Transplant 2023;37 Suppl 1:S216
https://doi.org/10.4285/ATW2023.F-8080

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Enhancing early detection of vascular complications and bleeding after liver transplantation: role of contrast-enhanced ultrasound as an add-on test

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Background: This study aimed to explore the benefits of using contrast-enhanced ultrasound (CEUS) as an add-on test on the first day after liver transplantation (LT) to promptly identify immediate vascular complications such as hepatic arterial complications (HAC) and acute bleeding.
Methods: The retrospective study involved 913 LT patients who underwent routine ultrasound (US) examinations on the first postoperative day. Our standard procedure included Doppler US followed by CEUS using sulfur hexafluoride microbubbles. A skilled radiologist conducted Doppler US, measuring the hepatic arterial resistive index (HARI). Suspicion of HAC was defined if HARI was below 0.5 or if it was undetectable. Subsequently, CEUS was administered. Conversely, if microbubbles did not reach the hepatic artery, it indicated a high suspicion of HAC, leading to a recommendation for computed tomography (CT) angiography. Diagnostic performance was compared between Doppler US and the supplementary CEUS study, with the gold standard being follow-up CT or angiography. Additionally, microbubble extravasation into the perihepatic space was assessed postvascular evaluation to identify active bleeding. Statistical analysis involved the McNemar test for comparing diagnostic performance between Doppler US alone and combined CEUS.
Results: Among the subjects, 6.7% (62/913) exhibited suspicious HAC on Doppler US alone, while 3.9% (36/913) displayed highly suspicious HAC on combined CEUS. The false-positive rate was 2.2% for Doppler only, significantly lower than the 0.3% rate for add-on CEUS (P=0.0002). However, two cases with abnormal CEUS findings but normal Doppler US were subsequently deemed unremarkable (2/913). Regarding acute bleeding, 18 patients (18/913) showed evidence of active bleeding on CEUS, with 10 of those patients (10/18) requiring surgical hematoma removal.
Conclusions: The addition of CEUS as a supplementary test proved valuable in promptly detecting acute complications following LT. It notably reduced false positives in HAC assessments made by Doppler US, particularly those associated with decreased HARI.

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Korean J Transplant 2023;37 Suppl 1:S217
https://doi.org/10.4285/ATW2023.F-8087

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Outcome of donor recipient size mismatched lung transplantation

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Background: Donor/recipient (D/R) size matching is a key requirement in lung transplantation (LT) to achieve proper organ allocation. There are several reports about the size mismatched LT, but their results were contradicted. In this study, we review the outcome of LT according to their D/R size match.
Methods: Patients who underwent LT between January 2010 and December 2022, totaling 446, were analyzed. Patients were divided into three groups according to D/R size. The grouping was as follows: Over (n=108, 24.2%) for a >120% D/R ratio, NL (n=314, 70.4%) for a 120% to 80% D/R ratio, and Under (n=23, 5.2%) for a <80% D/R ratio. Their early and long-term outcome were analyzed.
Results: Incidence of grade 3 primary graft dysfunction (PGD) at 24 hours and 48 hours were higher in bigger sized D/R ratio (42.6% in Over vs. 35.7% in NL vs. 13.0% in Under, P=0.02 at 24 hours; 36.1% vs. 25.2% vs. 13.0%, P=0.012 at 48 hours). PGD grade 3 at 72 hours also showed higher trend incidence in bigger D/R match (31.5% vs. 20.4% vs. 13.0%, P=0.069). Intensive care unit stay was shorter trend in smaller D/R (13.64±10.98 in Over vs. 11.40±9.59 in NL vs. 8.59±4.98 in Under, P=0.058). The 5year survival was not different among groups (51.7% vs. 51.9% vs. 54.8% in Over vs. NL vs. Under, P=0.929).
Conclusions: Even bigger D/R matched LT showed late recovery during early postoperative period, their long-term result was not different in terms of D/R size ratio.

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Korean J Transplant 2023;37 Suppl 1:S218
https://doi.org/10.4285/ATW2023.F-8092

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Phase 1/2 donor antigen specific regulatory T cell-based cell therapy clinical trial to induce operational tolerance in living donor liver transplant patients

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Background: Selective immunosuppression to the recipient T cells responding to the donor graft antigen and maintain immune system necessary for homeostasis would be ideal strategy for the transplant patients. And sustain tolerogenic status to the graft despite cessation of immunosuppressant would minimize the risk of adverse life-threatening events related with the medication such as *de novo* cancer and cardiovascular disease. Our donor-specific regulatory T cell (Treg)-based therapy, successfully prove the therapeutic concept to achieve long term graft survival without any immunosuppressant in living donor liver transplant in single center, in which seven patients out of 10 have been achieved stable clinical graft function without any signs of pathological rejection over 10 years.

Methods: Based on the previous liver transplant tolerance clinical study, we have developed the good manufacturing practice manufacturing process and delivery system as well as raw materials suitable for Japanese pharmaceuticals regulation. During the manufacturing process, peripheral blood mononuclear cell (PBMC) from transplant recipient were mixed with irradiated donor PBMC in the presence of anti-human CD80 and CD86 monoclonal antibodies to induce donor antigen specific Treg based cell product. Clinical protocol of safety and efficacy to induce liver transplant tolerance were also agreed with the Japanese regulation to start clinical trial as phase 1 and 2.

Results: We have been conducting a single-arm, open-label, four transplant center clinical trial employing autologous donor antigen reactive Treg based suppressor T cells product in adult human leukocyte antigen-mismatched living donor liver transplant recipients. This trial is composed of two phases: phase 1 as safety cohort (n=3) and phase 2 (n=7) as efficacy cohort with stepwise weaning and withdrawal of immunosuppression in 18 months after transplant. Endpoints include safety and operational transplant tolerance over a year.

Conclusions: This trial, which is currently recruiting, will provide clinical evidence of safety and efficacy of our antigen specific Treg based product to induce liver transplant tolerance.

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Korean J Transplant 2023;37 Suppl 1:S219
https://doi.org/10.4285/ATW2023.F-8097

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Prediction of recipient renal function in living donor kidney transplantation using baseline characteristics and donor renal cortex volume

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Background: The accurate anticipation of posttransplant renal function in living donor kidney transplantation (LDKT) recipients based on pretransplant variables is challenging. In this study, we aimed to develop a predictive model for recipient's posttransplant renal function using baseline characteristics of the donor and recipient.
Methods: We analyzed 870 adult LDKT cases from 2010 to 2020. To measure donor's total kidney volumes, we utilized a commercial software (Oncostudio, Oncosoft Inc.). To measure cortex volume of kidney, we developed a three-dimensional U-Net structure based full automated model. Recipients best estimated glomerular filtration rate (eGFR) within 2 weeks after transplantation was the primary outcome of interest. Linear regression was explored to assess the relationship between recipient eGFR and factors, including the cortical volume of the donated kidney. Moreover, we explored multiple statistical methods to establish a reliable predictive model, with 90% of cases for training and 10% for testing.
Results: The mean cortex volume of transplanted kidneys was 115.1±21.8 mL. For external validation of our automated renal cortex segmentation model, an independent dataset from a separate institution, yielding impressive concordance metrics such as a Dice similarity coefficient of 0.97 and a Hausdorff distance 95% of 0.77 mm for cortical volumetry. The best posttransplant eGFR of recipients was 81.1±23.8 mL/min/1.73 m^2. Recipient and donor factors, such as weight, height, initial eGFR, and cortex volume of donated kidney were associated with recipients best eGFR posttransplant. Among various predictive models examined, the generalized additive model (GAM) had the best performance, evidenced by a mean absolute error of 10.53.
Conclusions: Our study underlines the utility of preoperative computed tomography-derived donor kidney cortex volume as a predictive determinant for recipient eGFR subsequent to LDKT. The GAM model exhibited feasible accuracy, enabling comprehensive eGFR prediction through integration of recipient and donor factors, inclusive of the donated kidneys cortex volume. Further real-world applications and external validations will advance this predictive model.

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Korean J Transplant 2023;37 Suppl 1:S220
https://doi.org/10.4285/ATW2023.F-8105

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Safety and feasibility of extended left lobe graft for adult-to-adult living donor liver transplantation

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Background: Living donor liver transplantation (LDLT) is a high-risk surgery for the donor. In general, donor left hepatectomy has less donor morbidity when compared to donor right hepatectomy. In LDLT where donor safety is most important, the use of left lobe is an option that must be considered. This study is performed to evaluate donor safety and recipient outcomes when using an extended left lobe (ELL) graft.
Methods: From January 2018 to August 2022, LDLT was performed on 225 patients at our center. Among them, 32 patients underwent LDLT using an ELL graft and 193 patients underwent LDLT using a modified right lobe (MRL) graft. In these two groups, donor safety was first compared, and then, the recipient outcomes were compared. To assess the donor safeties and recipient outcomes, various preoperative and operative factors were evaluated.
Results: The mean age of the ELL group was 33.5 years, and the mean age of the MRL group was 37.9 years, showing no statistical difference. Due to the volume problem of the graft, the ELL group had a male ratio of 93.8%, which was higher than that of the MRL group, which was 59.6%. The complication rate of Clavien-Dindo IIIa or more was the same in both groups, but peak total bilirubin and peak prothrombin time (PT) international normalized ratio after donor hepatectomy were both significantly higher in the MRL group. Normalization of total bilirubin and PT were also earlier in the ELL group. In terms of recipients, there was no difference between the two groups in vascular complications or biliary complications. The 1-year and 3-year survival rates were also not different between the two groups.
Conclusions: The use of ELL grafts in LDLT is not detrimental to recipient outcomes while preserving donor safety. If the volume of the graft is sufficient, the ELL graft should be considered.

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Korean J Transplant 2023;37 Suppl 1:S221
https://doi.org/10.4285/ATW2023.F-8116

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

NK cell activity as a predictor of hepatocellular carcinoma recurrence and outcome in liver transplant patients

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Background: Natural killer (NK) cells play an important role in the immune response after LT, but few studies have investigated the effect of NK cell activity on the prognosis of LT recipients. This study is performed to investigate the effect of NK cell activity as a predictor of LT outcome.
Methods: From May 2019 to April 2022, living donor liver transplantation (LDLT) was performed on 147 patients at our center. Among them, 134 patients, excluding 8 emergency LTs and 5 cases with cholangiocarcinoma, were analyzed. Before LDLT, NK cell activity test was performed using enzyme immune assay. According to the results, the group with unmeasurably low activity (<10 pg/mL) was divided into group 0 (n=56), and the rest into group 1 (n=78), and preoperative factors and outcomes were compared, respectively.
Results: There were no differences in age, sex, and cause of disease between the two groups. In group 0, Model for End-stage Liver Disease (MELD) and child score tended to be higher, and the hepatocellular carcinoma (HCC) ratio was lower. However, there was no difference in the ratio of beyond Milan among HCC patients. There was no difference between the two groups in alpha fetoprotein, protein induced by vitamin K absence or antagonist-II (PIVKA-II) and maximal tumor diameter. Recurrence was found in 20% of HCC patients, and the recurrence rate was higher in group 0. The rate of cytomegalovirus viremia after LDLT was also higher in group 0. The 3-year recurrence-free survival (RFS) was 53.5% versus 89.1% (P<0.01), respectively, showing poor RFS in group 0. The 3-year overall survival was 74.9% and 86.4%, which looked poor in group 0, but there was no statistical significance (P=0.09).
Conclusions: If the recipients NK cell activity is low, the outcome after LT may be poor. NK cell activity can be used as a predictor of outcome after LT.

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Korean J Transplant 2023;37 Suppl 1:S222
https://doi.org/10.4285/ATW2023.F-8120

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Efficacy and safety of generic once-daily prolonged release tacrolimus (TacroBell SR cap.) in *de novo* kidney transplant recipients: a multicenter, non-comparative, phase IV study

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Background: Once-daily tacrolimus administration has demonstrated improved medication compliance in compared to twice-daily dosing. However, the safety and efficacy of generic once-daily tacrolimus in *de novo* kidney transplant recipients remain underexplored.
Methods: We investigated the efficacy and safety of generic once-daily tacrolimus during the 6 months following *de novo* kidney transplantation. This prospective, multicenter, open-label, single-arm study was conducted across 10 transplant centers (NCT03749356). The primary endpoint was the composite efficacy failure rate, including biopsy-proven acute T-cell mediated rejection, graft loss, death or loss to follow-up, within 24 weeks posttransplantation. Among the 147 screened kidney transplant candidates, 141 were enrolled, and 121 successfully completed the study.
Results: The primary efficacy failure rates were 5.0% in the full-analysis set and 5.8% in the per-protocol set. During the follow-up, there were no cases of graft loss, but one patient died with a functioning graft due to acute respiratory distress syndrome. Eight patients experienced biopsy-proven acute rejection (six T-cell mediated rejections and two antibody-mediated rejections). The mean estimated glomerular filtration rate at 24 weeks was 64.7 mL/min/1.73 m^2. In the full-analysis set, adverse events and serious adverse events with a suspected relation to study drug occurred in 56.0% and 8.5% of cases, respectively. Of the 17 participants who dropped out from the study, 7 discontinued study drug due to difficulties in regulating whole-blood tacrolimus trough concentrations within the target range.
Conclusions: This study suggests that generic once-daily tacrolimus is both effective and safe for use in *de novo* kidney transplant patients.

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Korean J Transplant 2023;37 Suppl 1:S223
https://doi.org/10.4285/ATW2023.F-8121

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Three-dimensional (3D) auto-segmentation of vascular structures and hepatic sectional parenchyme of living liver donors using computed tomographic angiography: a deep learning model for automatic 3D volumetry

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Background: Precise volumetric assessment of living liver donors for liver transplantation is important for the safety of the donors and recipients. In this study we developed an automatic segmentation model for vascular structure and sectional anatomy of the liver parenchyme

Methods: Living liver donors who underwent computed tomographic angiography for preoperative evaluation during the period of May 2022 to December 2022 and underwent three-dimensional (3D) reconstruction were included to the study. For setting the ground truth, segmentation of portal vein, hepatic vein, and liver parenchyme divided by four sections and Spigelian lobe were performed by biomedical artists. Three-dimensional residual U-net model was used for the deep learning model. Ten to one-fold validation was performed and dice score was calculated.

Results: During the period, a total of 120 donors underwent 3D reconstruction of the liver anatomy. For deep learning, 109 cases were selected training while 11 cases were selected for validation. Mean dice score of right lobe (0.94±0.01), left lobe (0.91±0.02), right posterior (0.88±0.04), right anterior (0.89±0.03), left medial (0.86±0.03), left lateral (0.90±0.03), and Spigelian lobe (0.77±0.10) showed high accuracy. On the other hand, hepatic vein (0.72±0.10) and portal vein (0.62±0.12) showed lower accuracy compared to sectional anatomy of the liver parenchyme.

Conclusions: Autosegmentation model of living liver donors showed high accuracy especially for sectional anatomy. With more volume for deep learning model, automatic volumetric assessment can be achieved for liver transplantation centers.

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Korean J Transplant 2023;37 Suppl 1:S224
https://doi.org/10.4285/ATW2023.F-8134

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Outcomes of living donor liver transplantation in patients with concurrent extrahepatic malignancy

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Background: Pre-existing extrahepatic malignancy (EHM) has long been considered a relative contraindication for liver transplantation due to the risk of cancer recurrence. Therefore, minimum cancer remission times before liver transplantation have been recommended. However, we were frequently challenged with concurrent EHM in patients for whom living donor liver transplantation (LDLT) may be the only life-saving option available, in the setting of end-stage liver disease or hepatocellular carcinoma. In this study, we analyze the outcomes of LDLT in adults with concurrent EHM at the time of transplantation.
Methods: Out of 2,448 adults who underwent LDLT from May 1996 to January 2023 at our institution, we retrospectively analyzed data for 16 patients with EHM treated within 6 months of (before, during or after) LDLT.
Results: Among 16 patients, a total of 5 patients died during follow-up; only 1 of these died due to a cancer-related cause. Overall, the 1-year survival rate was 87.5%; the 3-year survival rate, 81.3%; and 5-year survival rate, 75.0%. None of the eight patients with low-risk EHM showed EHM recurrence after LDLT. EHM recurrence occurred in one patient with intermediate risk, and cancer progression was seen in one patient with high-risk EHM. Concurrent hepatocellular carcinoma (HCC) was present in six patients, and HCC recurrence occurred in two patients (33.3%). Kaplan-Meier (log-rank) analysis between patients with hematologic (n=5) and non-hematologic (n=11) EHM showed no difference in survival (P=0.891).
Conclusions: Our study shows high survival rates for LDLT in patients with concurrent EHM. The rate of EHM recurrence or progression (12.5%) was lower than the rate of HCC recurrence (33.3%). Hence, we suggest concurrent EHM should not be a contraindication to LDLT even when minimum remission times have not elapsed yet. LDLT may serve as both a life-saving option in liver failure and a bridge for patients to fully receive therapy for their concurrent EHM.

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Korean J Transplant 2023;37 Suppl 1:S225
https://doi.org/10.4285/ATW2023.F-8135

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Survey on kidney transplantation awareness among hemodialysis patients at a single center in Japan

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Background: Japan has around 350,000 hemodialysis patients, but the annual number of kidney transplantation (KTx) remains low at about 1,700. This may be due to the limited knowledge about KTx among hemodialysis patients. Hence, we conducted a simple survey with hemodialysis patients in our hospital to study awareness of KTx.
Methods: The survey was focused on 61 patients who undergo hemodialysis treatment at our hospital. The survey covered topics such as sex, age, duration of hemodialysis, primary cause of end-stage renal failure, whether they know about KTx, whether they know about deceased kidney donor transplantation among patients who has the knowledge about KTx, whether KTx was proposed at the end-stage of renal failure, and willingness to take KTx.
Results: Fifty-nine respondents (97%) were included in the survey. There were 41 males (69%) and 18 females (31%). The average age was 72.2±10.7 years, and the average duration of dialysis was 8.1±7.3 years. The primary causes of end-stage renal failure were as follows: diabetic nephropathy, 30 (51%); chronic glomerulonephritis, 9 (15%); nephrosclerosis, 6 (10%); IgA nephropathy, 2 (3%); and others, 12 (20%). Forty (68%) had knowledge about KTx, and among them, 31 of 40 (78%) had knowledge about deceased donor KTx. Eighteen patients (31%) reported that they were informed about KTx when they are diagnosed with end-stage renal disease, and 19 patients (32%) expressed a desire to undergo KTx.
Conclusions: The survey findings show that a small number of patients were offered the choice of KTx before receiving hemodialysis. Moreover, patients were not very interested in KTx because of limited knowledge. This suggests that medical providers in Japan are not giving enough information about KTx.

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Korean J Transplant 2023;37 Suppl 1:S226
https://doi.org/10.4285/ATW2023.F-8147

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Zero mortality in living donor liver transplantation for primary biliary cholangitis in patients with a Model for End-Stage Liver Disease score of <20

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Background: Although primary biliary cholangitis (PBC) is considered a good indication for living donor liver transplantation (LDLT), the postoperative results are not well known.
Methods: At Jikei University Hospital, 14 patients with PBC underwent LDLT from February 2007 to June 2022. We consider PBC with a Model for End-Stage Liver Disease (MELD) score of <20 to be an indication for LDLT. We performed a retrospective analysis of the patients clinical records.
Results: The patients median age was 53 years, and 12 of the 14 patients were female. A right graft was used in five patients, and three ABO-incompatible transplants were performed. The living donors were children in six cases, partners in four cases, and siblings in four cases. The preoperative MELD scores ranged from 11 to 19 (median, 15). The graft-to-recipient weight ratio ranged from 0.8 to 1.1 (median, 1.0). The median operative time for donors and recipients was 481 and 712 minutes, respectively. The median operative blood loss of donors and recipients was 173 and 1,800 mL, respectively. The median postoperative hospital stay of donors and recipients was 10 and 28 days, respectively. All recipients recovered satisfactorily and remained well during a median follow-up of 7.3 years. Three patients underwent a liver biopsy after LDLT because of acute cellular rejection without histological findings of PBC recurrence.
Conclusions: LDLT provides satisfactory long-term survival for patients with PBC who have a graft-to-recipient weight ratio of >0.7 and MELD score of <20 without hepatocellular damage and only portal vein hypertension.

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Korean J Transplant 2023;37 Suppl 1:S227
https://doi.org/10.4285/ATW2023.F-8149

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Long-term clinical outcomes of late conversion to once-daily tacrolimus and sirolimus combination in stable kidney transplant recipients

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Background: The use of calcineurin inhibitors (CNIs) has significantly improved graft outcomes in kidney transplantation (KT); however, nephrotoxicity resulting from their prolonged use presents a significant clinical concern that must not be overlooked. Although CNIs minimization combined with mammalian target of rapamycin (mTOR) inhibitors has been introduced to reduce nephrotoxic effects from CNIs, apprehensions regarding under-immunosuppression remain prevalent. This study aimed to evaluated the long-term clinical outcomes of late conversion to once-daily tacrolimus and sirolimus regimen in stable KT recipients.
Methods: We conducted a retrospective review of 35 patients who underwent conversion from twice-daily tacrolimus and MMF to a once-daily combination of tacrolimus and sirolimus, along with 35 non-conversion patients, at Korea University Anam Hospital from January 2009 to December 2012, covering a span of 10 years and including laboratory findings.
Results: Donors and recipients characteristics were similar between two group. There was somewhat better serum creatinine levels and estimated glomerular filtration rate over the course of a decade in the conversion group with no statistical significance. The incidence of biopsy-proven acute rejections and infections were not significantly different between two groups. The reconversion rate to the original regimen, due to various reasons such as proteinuria, oral ulcer, etc. was quite high at 34.3%.
Conclusions: Based on the long-term clinical outcomes, a once-daily tacrolimus and sirolimus combination could be considered as an attractive alternative to the conventional regimen with the expectation better renal functions, despite a high reconversion rate due to various reluctant reasons.

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Korean J Transplant 2023;37 Suppl 1:S228
https://doi.org/10.4285/ATW2023.F-8154

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Improved posttransplant mortality discrimination capability of the Gender-Equity Model for Liver Allocation

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Background: In Korea, the deceased donor liver transplantation (DDLT) is constrained by existing organ shortages. Because there had been no prior study that had compared posttransplant outcomes based on the Gender-Equity Model for Liver Allocation (GEMA) scores, we conducted this study using GEMA model to improve the current DDLT allocation system.
Methods: A single-center cohort of liver transplant recipients data was merged between June 2006 and December 2021. In the GEMA model, similar to previous studies, the Model for End-Stage Liver Disease (MELD) formula was refitted and reweighted by substituting creatinine with the Royal Free Hospital glomerular filtration rate. Based on the patients GEMA points, they were stratified by four categories: 1–10, 11–20, 21–30, and 31–40. The discrimination of outcomes was compared to outcomes of MELD. The primary endpoint was focused on the discrimination of patient survival based on GEMA and GEMA-Na.
Results: The median age was 53 years. Among 1,385 individuals, 427 patients (30.8%) were female. Four hundred thirty-two (31.2%) patients underwent DDLT and 655 patients (47.3%) underwent liver transplantation due to hepatocellular carcinoma. Between lower MELD scores, there were subtle differences of survival observed whereas the GEMA model exhibited significant survival disparities within its respective point groups. For the 1-year survival group, the Harrell's concordance statistic was 0.709 for GEMA, surpassing the 0.697 for MELD (P<0.001). In the 5-year survival group, C-index was 0.642 for GEMA, compared to 0.631 for MELD (P<0.001). These findings suggest that the GEMA model showed improved mortality discrimination capability compared to MELD. Furthermore, GEMA-Na also showed enhanced discrimination in contrast to MELD-Na.
Conclusions: The GEMA scoring system demonstrates a better capacity for discriminating post-liver transplant patient outcomes than MELD.

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Korean J Transplant 2023;37 Suppl 1:S229
https://doi.org/10.4285/ATW2023.F-8170

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Preemptive versus prophylactic therapy using valganciclovir or ganciclovir in renal transplant recipients for the prevention of cytomegalovirus infection: a systematic review and meta-analysis

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Background: Kidney transplant recipients are at risk for developing cytomegalovirus (CMV) disease and subsequently, allograft rejection and graft loss. The current practice of prophylaxis with antiviral therapy in the early posttransplant period for high risk patients is costly. Preemptive therapy involves a protocol of routine testing for CMV viral load, and treatment is initiated for positive patients. It is unknown if preemptive therapy is an effective strategy to prevent CMV disease. This study aims to assess the efficacy of preemptive versus prophylactic therapy with valganciclovir or ganciclovir in preventing CMV disease in kidney transplant recipients.
Methods: A comprehensive search of PubMed/Medline, Cochrane, and Google scholar was performed to identify clinical trials on the efficacy of preemptive versus prophylactic valganciclovir or ganciclovir in preventing CMV disease. The primary outcome is development of CMV infection. Secondary outcomes include acute allograft rejection, allograft loss, and mortality.
Results: The study included five randomized control trials having a total of 855 kidney transplant recipients. The primary outcome showed that CMV infection was 2.27 times more likely to develop in patients who were given preemptive therapy than those given prophylactic therapy (RR, 2.27; 95% confidence interval [CI], 1.86–2.76; P<0.00001). Secondary outcomes showed that the risk of acute allograft rejection was 1.13 times more likely for preemptive therapy (RR, 1.13; 95% CI, 0.87–1.48; P=0.35). The risk for allograft loss was 1.44 times more likely for preemptive therapy (RR, 1.44; 95% CI, 0.85–2.45; P=0.18), and the risk for mortality was 1.4 times more likely for preemptive therapy (RR, 1.4; 95% CI, 0.54–3.63; P=0.49).
Conclusions: Among kidney transplant recipients, preemptive therapy with valganciclovir or ganciclovir is less effective than prophylactic therapy in the prevention of CMV disease. The incidences of acute allograft rejection, allograft loss, and mortality are more frequent in the preemptive group, but these differences are not significant.

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Korean J Transplant 2023;37 Suppl 1:S230
https://doi.org/10.4285/ATW2023.F-8174

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The impact of sarcopenic obesity on survival outcomes in kidney transplant recipients: a retrospective study

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Background: Chronic kidney disease often results in sarcopenic obesity, a condition characterized by decreased skeletal muscle mass and increased body fat, influencing outcomes in kidney transplant recipients. Existing research in this area is limited and conflicting.
Methods: In our retrospective study, we analyzed 152 kidney transplant recipients (2015–2020) using pretransplant computed tomography scans taken within 3 months before the operation at the L3 vertebral level to quantify muscle and adipose tissue. We defined sarcopenia as the lowest tertile of sex-specific muscle mass and obesity as the upper half of adipose tissue mass. Recipients were categorized into: group 1 sarcopenic obesity (n=15), group 2 sarcopenic non-obesity (n=36), group 3 non-sarcopenic obesity (n=60), and group 4 non-sarcopenic non-obesity (n=41).
Results: Groups 1 and 2 (the sarcopenia groups, n=51) showed higher instances of graft failure, patient death, and infection-related admission compared to groups 3 and 4 (the non-sarcopenia groups, n=101), although these differences were not statistically significant (P=0.58, P=0.21, and P=0.28, respectively). Nevertheless, when factoring in obesity, the group 1 (n=15) demonstrated significantly poorer patient survival outcomes compared to the group 2 (n=36, P=0.008) and the group 4 (n=41, P=0.014). Within group 1, 3 out of 15 patients (20%) died due to infection, a rate significantly higher than in groups 2, 3, and 4, where infection-related deaths were 0%, 3.3%, and 0%, respectively. Sarcopenia (hazard ratio, 1.69; 95% confidence interval, 1.02–2.79) and age (hazard ratio, 1.03; 95% confidence interval, 1.008–1.05) were identified as significant predictors of infection-related admission on multivariable analyses.
Conclusions: Our study underscores the marked impact of sarcopenic obesity on posttransplant survival, emphasizing the importance of detailed pretransplant assessments. With sarcopenia as a key predictor of infection-related admission, exploring interventions such as exercise or nutritional optimization could be advantageous in future research.

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Korean J Transplant 2023;37 Suppl 1:S231
https://doi.org/10.4285/ATW2023.F-8221

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Biliary stricture of duct-to-duct anastomosis in living donor liver transplantation for hepatocellular carcinoma previously treated with external beam radiotherapy

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Background: External beam radiotherapy (EBRT) has been proven to provide acceptable oncologic outcomes in selected patients with hepatocellular carcinoma (HCC) followed by adult living donor liver transplantation (LDLT). The study aims to evaluate the biliary stricture (BS) after LDLT in patients with HCC previously treated with EBRT.
Methods: We retrospectively enrolled 50 patients with HCC treated with EBRT, who underwent duct-to-duct anastomosis during LDLT using a single right graft between January 2019 and December 2020. The perihilar EBRT was defined as RT including a 10mm expansion area surrounding the right, left, and common hepatic duct. We identified the risk factors for BS by analyzing the LDLT and EBRT factors.
Results: During a median follow-up period of 23.2 months (range, 6.3–36.2 months), a total of 17 patients (34%) presented BS after LDLT for HCC previously treated with EBRT. In a comparative analysis between BS and no BS groups, the patients with perihilar EBRT in the BS group were significantly more than those in the no BS group (47.1% vs. 15.2%, P=0.021). In a univariate analysis of risk factors for BS, warm ischemic time (odd ratio [OR), 1.06; 95% confidence interval [CI], 1.00–1.14; P=0.08] and perihilar EBRT (OR, 4.98; 95% CI, 1.33–20.47; P=0.019) were significantly associated with BS. In a multivariate analysis, perihilar EBRT was identified as the only significant risk factor for BS (OR, 4.37; 95% CI, 1.13–18.4; P=0.036).
Conclusions: Perihilar EBRT for HCC before LDLT can lead to BS of duct-to-duct anastomosis. Hepaticojejunostomy may be an option for the prevention of BS after LDLT for patients with HCC previously treated with the perihilar EBRT.

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Korean J Transplant 2023;37 Suppl 1:S232
https://doi.org/10.4285/ATW2023.F-8252

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Ginsenoside Rg3 attenuates ischemia reperfusion injury via adenosine monophosphate-activated protein kinase-mediated autophagy flux

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Background: Ginsenoside Rg3 (Rg3) comes is extracted from the heat processing of protopanaxadiol ginsenosides, such as Rb1, Rb2, Rc and Rd from red ginseng. Rg3 has been reported that it attenuates various organ injury through adenosine monophosphate-activated protein kinase (AMPK)-mediate autophagy flux. We evaluate whether Rg3 regulate autophagy flux through the AMPK pathway in ischemia reperfusion (IR)-induced kidney injury.
Methods: C57Bl/6 mice were divided into the following groups: sham-operated, Rg3 sham, control IR mice, and Rg3 treated IR mice. Kidneys and blood were collected harvested 24 hours after operation of mice (sham and IR operation). Renal function, kidney histology, and the protein expression of autophagy signals were evaluated. We evaluated whether Rg3 lower renal damage in IR mice model through renal function, tissue histology and autophagy flux expression.
Results: The levels of blood urea nitrogen (BUN) and serum creatinine were increased in control IR mice, compared to sham mice. The Rg3 treatment decreased the BUN and serum creatinine in IR mice. In addition, Rg3 treatment decreased the renal injury score including the renal tubular cell detachment and necrosis in IR mice. treated IR mice kidney showed better renal cell survival, renal function, and pathological damage than those of IR mice kidneys. In addition, Rg3 treated IR mice kidney showed significantly less oxidative stress and autophagy impairment; greater amounts of microtubule-associated protein 1A/1B-light chain 3 (LC3)-II, Beclin-1; lower amounts of p62; and higher levels of renal Rab7 and ATP6E, compared to than IR mice kidney. Rg3 treatment. They also activates showed more AMPK activation, which resulted in the inhibition of phosphorylation of the mammalian target of rapamycin.
Conclusions: We report that Rg3 has renoprotection against renal IR injury via AMPK mediated autophagy flux.

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Korean J Transplant 2023;37 Suppl 1:S233
https://doi.org/10.4285/ATW2023.F-8267

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

First experience of liver transplantation after liver trauma: a case report

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The liver is the most damaged organ in abdominal trauma. In most cases, conservative treatment is selected, but surgery may be required in abdominal trauma with severe liver damage, especially uncontrolled bleeding. Despite the damage control approach to achieve hemodynamic stability, many patients could be dead because of acute hepatic failure which lead to multiple organ failure. In this situation, liver transplantation can be as the lifesaving last resource. With this possibility, we report a case of patient who received liver transplantation after liver trauma. Thirty-six-year-old male was injured by a factory machine, and thoracic and abdominal blunt trauma were caused. Angiographic embolization was performed to control a severe hepatic hemorrhage. But it caused massive ischemic damage of liver, soon hepatic failure was appeared. The patient was transferred to our center, deceased donor liver transplantation with hepaticojejunostomy was performed. Because of thoracic blunt trauma, hemothorax was controlled with surgery. And also thoracic trauma caused huge subcutaneous hemorrhage of chest wall, fat tissue defect. This defect was controlled with vacuum dressing, and skin graft was applied by patients thigh skin. But unfortunately, in process of recovery, generalized tonic seizure was occurred, and brain computed tomography scan showed hydrocephalus. So EVD was performed, and after liver function was recovered, VP shunt was followed. This process of recovery was about 3 months. And after that, there was crisis of death caused by pneumonia, but fortunately, the patient was overcome. And also, stabilized liver function was worsened by acute rejection, but it was controlled by high dose steroid therapy. The patient was bedridden for a long-long time, and is still in our center. But, he can even joke because his condition has recovered as well, and nowadays, the main treatment is focused on rehabilitation.

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Korean J Transplant 2023;37 Suppl 1:S234
https://doi.org/10.4285/ATW2023.F-8273

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

PGC1-alpha plays a role in hypothermic renal protection of renal fibrosis after acute kidney injury

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Background: PGC-1 is known to protect against renal injury. It has been known that hypothermia attenuates against the renal injury induced by ischemia reperfusion. Hypothermia induce PGC-1 in some organ injury models. We evaluated the role of PGC-1 in hypothermia protection against renal ischemia-reperfusion injury (IRI).
Methods: We prepared a fibrosis model by inducing IRI. C57BL/6 mice were divided into the following groups: sham mice and IRI mice (37C vs. 32C). The kidneys were harvested 20 minutes after the induction of renal ischemia and on day 1, day 3, day 7, and after IRI. Fibrosis markers and the renal injury score were evaluated.
Results: The blood urea nitrogen levels, and serum creatinine levels, and the histologic renal injury scores were significantly lower in the 32C IRI groups than in the 37C IRI groups. The protein levels of fibrosis markers were significantly decreased, while the BMP7 and PGC-1 level was significantly increased in the 32C IRI mice group. Hypothermia increased the PGC-1 both, *in vivo* and *in vitro*. Knock down of PGC-1 expression increased *in vitro* renal fibrosis.
Conclusions: Hypothermia attenuates renal fibrosis in renal IRI mice kidneys. PGC-1 may play a role in hypothermic protection in renal fibrosis following IRI.

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Korean J Transplant 2023;37 Suppl 1:S235
https://doi.org/10.4285/ATW2023.F-8281

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Hepatic congestion-linked intrahepatic biliary strictures in right liver grafts

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Background: Graft hepatic congestion (GHC) occurring during living donor liver transplantation (LDLT) can increase pressure and impede blood supply to the bile ducts, potentially leading to intrahepatic biliary strictures (IHBS). However, there is a lack of research on the association between these two factors.
Methods: This retrospective cohort study examined patients who underwent LDLT from January 2011 to December 2018. The analysis utilized medical records from a single institution. Out of 721 liver transplant patients, 623 were selected, excluding cases with left grafts, early postoperative mortality within 1 week, or multiple bile duct anastomoses. Posttransplant graft status was assessed through routine computed tomography scans on the 7th day. Biliary stricture, indicated by abnormal liver function tests without rejection evidence, was confirmed via cholangiography. The study investigated the potential relationship between GHC and IHBS development, along with its impact on patient survival, employing multivariable proportional odds logistic regression and Coxs proportional hazard analysis.
Results: GHC was observed in 235 patients (37.7%), primarily in right anterior section (29.4%), right posterior section (2.1%), and right both anterior/posterior sections (6.3%). Biliary strictures occurred in 167 patients (26.8%), with anastomotic strictures (15.1%) and IHBS (11.7%). IHBS cases were found in right anterior (5.3%), right posterior (1.0%), and both right anterior/posterior branches (5.5%). A statistically significant relationship was observed between the presence of GHC and IHBS, as well as between the occurrence locations of these two factors in the graft (P<0.001 and P=0.002, respectively). Furthermore, significant difference in patient survival based on IHBS location; lowest 10-year survival (up to 60%) when IHBS in both right anterior/posterior branches (P=0.05).
Conclusions: This study revealed an association between GHC and subsequent development of IHBS, indicating that prevention of graft congestion during LDLT may reduce the incidence of IHBS.

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Korean J Transplant 2023;37 Suppl 1:S236
https://doi.org/10.4285/ATW2023.F-8315

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Aging-related renal fibrosis was alleviated via conserving mitochondrial function and autophagy in NLRP3 KO mice

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Background: Nod-like receptor family, pyrin domain containing-3 (NLRP3) activation in kidney diseases contributes to aggravating disease progression and fibrosis. However, the role of NLRP3 in renal aging is not clear. This study was designed to identify whether the NLRP3 KO mice could be protected from renal aging.
Methods: NLRP3 KO and counterpart wild-type (WT) mice were used at different ages (3 months, 12 months, and 24 months). Plasma, urine, and kidneys were collected.
Results: Plasma creatinine and blood urea nitrogen (BUN) increased with aging, while BUN was significantly decreased in NLRP3 KO old mice (24 months) compared with WT old mice. NLRP3 ablation contributed to decreasing tubular vacuolization, tubulointerstitial fibrosis, and atypical autophagosomes with aging. In line with it, renal fibrosis markers, such as connective tissue growth factor, and fibronectin were alleviated in RT-PCR tests. Immunoblot results showed that autophagy with mitochondrial biogenesis increased in old NLRP3 KO mice. In addition, phosphorylated AMP-activated protein kinase and peroxisome proliferator-activated receptor gamma coactivator 1 were increased in old NLRP3 KO mice. Transcriptional expression data using kidney RNA bulk sequencing showed augmentation of autophagy and mitochondrial biogenesis in old NLRP3 KO mice.
Conclusions: NLRP3 absence prevented aging-related renal fibrosis via maintaining renal mitochondrial biogenesis and autophagy.

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Korean J Transplant 2023;37 Suppl 1:S237
https://doi.org/10.4285/ATW2023.F-8317

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Manpower, task performance and analysis of organ transplantation coordinators in Korea

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Background: Since organ transplantation began in Korea, the number and level of transplants have been developing day by day. Accordingly, the task performance that organ transplant coordinators must handle have increased to coordinate complex organ donation and transplantation processes, and as direct nursing tasks such as brain-dead patient evaluation and family counseling and administrative tasks have become more diverse due to changes in laws and regulations, the professionalism and difficulty of the work has increased. The demand for coordinators with expertise in the field is increasing. However, due to the lack of a systematic and standardized curriculum to strengthen the capabilities of organ transplant coordinators, work has become difficult in clinical practice, and turnover rates have recently been increasing. Accordingly, in order to strengthen efficient work coordination ability and expertise, an attempt was made to analyze the human resources status and work of organ transplant coordinators currently working in the brain-dead care and organ transplant environment in Korea.
Methods: This study is a descriptive research study to determine the human resources status of organ transplant coordinators and the importance, difficulty, and frequency of tasks. It was developed using the Developing A Curriculum (DACUM) method to analyze the human resources status and job duties of organ transplant coordinators. Using a questionnaire, all organ transplant coordinators were surveyed as a population and those who responded to the online survey were analyzed to analyze the coordinator's manpower status, importance and difficulty of the job, and frequency of performance.
Results: A total of 51 people participated in the survey conducted from July 7 to August 4, with 5.9% (3 people) being male and 94.1% (48 people) being female. The average age was 40.45 years (range, 28–59 years), and most people had graduate school or higher (49.0%), and the working institutions were HOPO (74.5%), transplant medical institution (17.6%), and Korea Organ Donation Center (7.8%). The average age was 40.45 years (range, 28–59 years), and most people had graduate school or higher (49.0%), and the working institutions were HOPO (74.5%), transplant medical institution (17.6%), and Korea Organ Donation Center (7.8%). The average working experience of coordinators was 94.20 months, approximately 7 years and 10 months (range, 3–291 months), and 90.2% said they worked exclusively as coordinators. Regarding the job importance of recipient management, "consultation with transplant doctors when selecting brain death transplant recipients" scored 3.96 points and "discharge education and information provision" scored 3.93 points. In donor management, "family counseling of the presumed brain death" and "confirmation of the consent of the brain death donor family" scored 4 points, and "confirmation of medical condition and information of the presumed brain death" and "physical assessment of the presumed brain death" scored 3.97 points, the next highest importance score. Regarding the job difficulty of recipient management, the difficulty score was high with 3.20 points for "evaluation of the recipient's medical condition" and "adjustment of surgery preparation for brain death transplant recipients," and 3.07 points for "adjustment of pretransplant examination progress" and "consultation with transplant doctors when selecting brain death transplant recipients." In donor management, "brainer transfer" scored 3.37 points, and "family counseling of the presumed brain death" and "coordination of brain death hospitals and transportation-related tasks" scored 3.34 points.
Conclusions: The results of this study will serve as basic data for manualization of work and basic data for the standard curriculum to help strengthen the coordinator's expertise to prevent manpower exhaustion.

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Korean J Transplant 2023;37 Suppl 1:S238
https://doi.org/10.4285/ATW2023.F-8320

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Laparoscopic drainage basin hepatectomy based on cone unit

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Background: Laparoscopic anatomical hepatectomy is mainly for liver malignant tumors, most hepatocellular carcinoma (HCC) has the basis of cirrhosis, does not allow large-scale hepatectomy, with the deepening of the understanding of liver anatomy and the application of Laennec capsule, for patients with small HCC and severe cirrhosis, according to the precise basin of liver blood supply, the liver resection reduces the volume of hepatectomy and achieves the purpose of anatomical hepatectomy.
Methods: This study explores the application of single or combined cone unit resection in drainage basin hepatectomy. In this study, 12 patients with cirrhosis underlying liver cancer underwent cone unit-based resection in the watershed. After enhanced computed tomography or magnetic resonance imaging, three-dimensional reconstruction constructs the Glisson pedicle composition of the area where the tumor is located, each small pedicle blood supply area acts as a cone unit, two methods determine the cone unit resection range, one liver gate Laennec membrane dissection is applied, one or several cone unit blood supply pedicle is isolated and ligated, ICG reverse staining determines one or several cone unit ranges for resection. Another method: ultrasound localization of cone unit Glisson's pedicle and puncture portal injection of ICG, anatomical excision by puncture one or several cone unit blood supply pedicles according to preoperative planning.
Results: In all 12 patients with small HCC based on cirrhosis, eight cases were reverse stained and four cases were orthostained. The median duration of surgery was 89±15 minutes and the average estimated blood loss was 103 mL. All 12 recovered successfully. There was no liver failure for 6.83 days. Follow-up results showed that the mean disease-free survival (DFS) was 24.7 months and overall survival (OS) was 38.9 months.
Conclusions: Defined liver resection based on cone unit watershed is a safe and effective surgical method for small HCCs with severe cirrhosis, which reduces the incidence of postoperative liver failure and reduces bleeding, thereby increasing DFS and OS in patients.

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Korean J Transplant 2023;37 Suppl 1:S239
https://doi.org/10.4285/ATW2023.F-8339

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Protective effect of combination therapy with ischemic preconditioning and rapamycin in fibrotic rat livers

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Background: Ischemic preconditioning has been shown to reduce hepatic injury in patients. Our objective was to investigate the effect of combination of ischemic preconditioning with rapamycin on experimentally induced chronic liver injury (liver fibrosis) in rats.
Methods: Chronic liver injury (liver fibrosis) was induced in Wistar rats by oral administration of carbon tetrachloride (CCl4) for 7 weeks, an animal model with persistent severe hepatic fibrosis. Rat were randomized to five major groups that were treated as follows: the normal control group, the sham operated group, the I/R group, ischemic preconditioning group, and ischemic preconditioning plus rapamycin group.
Results: Combination therapy with remote ischemic conditioning and rapamycin resulted in significant protection against I/R with less attenuation of hepatic damage and lower LFT levels. The number of infiltrating macrophages in the liver and cytokines in peripheral blood were diminished in this group. The preconditioning I/R showed a decrease in liver cell apoptosis with positive results of EPK, P38, JUN, BCL2, BAX level.
Conclusions: Ischemic preconditioning and rapamycin therapy has a significant therapeutic potential in ischemic hepatic injury.

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Korean J Transplant 2023;37 Suppl 1:S240
https://doi.org/10.4285/ATW2023.F-8352

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Bone marrow-derived mesenchymal stem cells reactive oxygen species-responsively secreting hepatocyte growth factor for effective treatment of ischemia-reperfusion injury in liver transplantation

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Background: Ischemia-reperfusion injury (IRI) in liver transplantation is a key factor, impairing the clinical efficacy of liver transplantation. After liver reperfusion, reactive oxygen species (ROS) generated from stressed hepatocytes would aggravate liver damage. How to attenuate IRI and improve liver regeneration remains a key problem.
Methods: A ROS-responsive charge-reversal polymer B-PDEAEA has been synthesized and utilized for condensing plasmid DNA to obtain polyplexes with various N/P ratios. Inspired by the sharply increased ROS in hepatic IRI and the tendency of mesenchymal stem cells (MSCs) to migrate to injured sites, it has been put forward that construction of bone marrow-derived mesenchymal stem cells (BMSCs) ROS-responsively secreting hepatocyte growth factor (HGF-BMSCs) could realize efficient and IRI-specific HGF releasing for effective treatment of IRI in liver transplantation. Rat hepatic IRI models has been established to evaluate the efficiency of HGF-BMSCs to protect liver from IRI.
Results: The polymer B-PDEAEA showed limited cytotoxicity to both hepatocytes and stem cells. N/P ratio as 30 was identified as the optimal for gene transfection in MSCs, and the polyplexes exhibited excellent ROS responsiveness and high gene transfection efficiency. HGF-BMSCs have been constructed and could release HGF with the response to ROS. HGF-BMSCs could release over 60,000 pg HGF per 10,000 cells with low stimulation of H_2O_2, suggesting the ROS-responsiveness. CM-DiI was used to track stem cells and biodistribution of stem cells revealed a accumulation of stem cells in the injured liver. Furthermore, both *in vitro* and *in vivo* experiments showed HGF-BMSCs could protect hepatocytes from IRI, with deceasing of inflammation.
Conclusions: Based on stem cell therapy and nanotechnology, a novel liver transplantation IRI protection system is constructed and promising to be established and to realize targeted and efficient gene/protein therapy, thus providing a theoretical and experimental basis for translational research on the repair and regeneration of transplanted liver.

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Korean J Transplant 2023;37 Suppl 1:S241
https://doi.org/10.4285/ATW2023.F-8353

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Flowcytometric xeno-crossmatching: assessment of pig cells (WT, QKO) compatibility with human/non-human primate sera and human leukocyte antigen antibody profiling

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Background: Xenotransplantation offers a promising solution to the critical shortage of human donor organs. Genetically modified pigs have emerged as a potential source of organs for transplantation. Swine leukocyte antigen (SLA), the homolog of human leukocyte antigen (HLA), may induce cross-reactivity in HLA-sensitized patients. In this study, we conducted flow cytometric crossmatch experiments using both human and non-human primate (NHP) sera in combination with porcine peripheral blood mononuclear cells (PBMCs).

Methods: Donor PBMCs were isolated from heparinized whole blood collected from pigs (WT and QKO; GGTA1, CMAH, iGb3s, A3galT2 quadruple genes knock-out) by density gradient centrifugation using Ficoll solution. Human sera were obtained from patients who underwent HLA antibody testing using single-antigen Luminex bead assay. NHP sera were also collected. For all tubes, 2.5 $\times 10^5$ PBMC and 50 mL serum were incubated with fluorochrome-conjugated antihuman immunoglobulin G (IgG) and immunoglobulin M (IgM) antibodies. Acquisition and analysis of flow crossmatch results were performed on a Cytek Northern lights spectral flow cytometer. Median fluorescent index (MFI) values were compared across different sera to quantify binding antibody levels.

Results: Analysis using Cytek spectrometry revealed no obvious variation in autofluorescence between WT and QKO pig cells. Notably, both human and NHP serum samples exhibited elevated levels of binding antibodies (IgG/IgM) towards WT pig cells compared to QKO pig cells. Among sensitized patients (positive for anti-HLA antibodies), binding antibody levels were higher for QKO pig cells compared to sera lacking anti-HLA antibodies. Interestingly, human serum samples displayed higher MFI values for IgG than for IgM, whereas NHP serum samples exhibited higher MFI values for IgG compared to IgM. Serum dilution associated with decreased MFI levels in flowcytometric xeno-crossmatching assessments.

Conclusions: Our findings highlight the need for continued research to develop assays capable of identifying antibody specificities (HLA, non-HLA, SLA) and additional antigenic targets.

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Korean J Transplant 2023;37 Suppl 1:S242
https://doi.org/10.4285/ATW2023.F-8356

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Enhancing liver transplantation through utilization of donation after cardiac death donors: insights from a high-utilization center

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Background: As organ scarcity persists, donors after circulatory death (DCD) present an alluring avenue to augment the donor pool, potentially offering transplantation possibilities for patients hitherto excluded. Yet, DCD donors have been historically regarded as a less optimal choice compared to brain-dead donors, spotlighting a critical facet in the decision-making process in liver transplantation.
Methods: Retrospective analysis of prospectively collected data of patients who underwent DCD liver transplantation at the Miami Transplant Institute from 2019 to 2022. Variables included clinical and demographic features, surgical indicators, and posttransplant outcomes. Statistical analysis involved a range of tests: Student t-test for continuous variables like patient age and cold ischemia time, and chi-square test for categorical variables like donor age and graft survival. Statistical significance was set at a P-value of <0.05.
Results: Ninety-three patients, the study cohort comprised predominantly males (83.9%), with a median age of 59 years (range, 22–77 years). The median Model for End-Stage Liver Disease (MELD) score stood at 18 (interquartile range [IQR], 14–52). Technically, total portal arterialization was utilized universally (100%). Bile duct anastomosis employed an interrupted approach in 34 patients (36.6%). The median agonal phase spanned 19 minutes (IQR, 15–24 minutes). Median cold ischemic time clocked in at 314 minutes (IQR, 270.6–367.5 minutes), while median total warm ischemic time was 49 minutes (IQR, 43–55 minutes). Follow-up extended to a median of 15.4 months. The apex AST peaked at 3,514 (IQR, 2,084.5–5,100.8), and peak ALT stood at 1,732 (IQR, 890–2,701). Median intensive care unit stay spanned 4 days (IQR, 3–8), with graft rejection experienced by 10 patients (10.7%). The study reported a commendable 1-year patient survival rate of 92.47% and a 1-year graft survival rate of 97%.
Conclusions: DCD liver transplantation offers a valuable opportunity to expand the pool of organ donors and provide life-saving transplantation for patients with end-stage liver disease.

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Korean J Transplant 2023;37 Suppl 1:S243
https://doi.org/10.4285/ATW2023.F-8370

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Advancing patient care through robotic-assisted donor nephrectomy for transplants

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Background: Kidney transplantation significantly improves survival in end-stage renal disease patients. Living donation enhances allograft survival and recipient quality of life, but traditional open or laparoscopic donor recovery poses barriers. We present an 86-case series of robotic-assisted donor nephrectomies.
Methods: Prospective data from robotic-assisted left/right donor nephrectomies at the Miami Transplant Institute (October 2022–August 2023) were analyzed. Preoperative, intraoperative, and postoperative data included patient demographics, surgical metrics, and pathology findings. Statistical analysis used Student t-test for continuous variables, chi-square for categorical ones ($P<0.05$).
Results: Among 86 cases, 44.2% were male and median age was 38 years. Median body mass index was 24.79 kg/m^2 (interquartile range, 22.7–29.33 kg/m^2). To relatives, 63.9% was donated. Kidney anatomy: single artery/vein/ureter in 73%. Faced anatomical issues, 26.7% experienced them. Pfannenstiel incision was common. Median robotic console time was 45 minutes. Graft artery, vein, and ureter sizes were 4 cm (3.75–4), 5 cm (45.75), 15 cm, respectively. All used robotic staplers. Foley catheter removed in OR, <24-hour stay. Procurement damage in 1.4%. Postoperative readmissions was 4 (4.6%); complications, 13 (15.1%); no surgical reinterventions. No conversions to laparoscopic/open. Immediate graft function in 72 cases; 2.3% had delayed graft function, all transplanted robotically.
Conclusions: Robotic-assisted donor nephrectomy is safe with minimal complications and excellent graft function. It is a preferred approach in centers with robotic capabilities, advancing living donor care and enhancing treatment quality.

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Korean J Transplant 2023;37 Suppl 1:S244
https://doi.org/10.4285/ATW2023.F-8380

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Proteomics analysis of tumor-infiltrated T cell reveals CD127+ and KLRG1+ memory CD8+ T cells control immunotherapy efficacy in hepatocellular carcinoma

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Background: Low reactivity and short duration of tumor-infiltrated T cells limit hepatocellular carcinoma (HCC) immunotherapy efficacy. The proliferative ability of T cells maybe accounts for these deficiencies. This study firstly aimed to define the key factor regulating TILs proliferation in HCC microenvironment. By performing tissue-infiltrated T cell proteomics and fraction proteomics, we analyzed the differential proteins of T cells among HCC, liver fibrosis and hemangioma (as control) groups and the differential regulatory TFs of T cells between HCC and volunteer healthy (as control) groups.
Methods: Using cyTOF and flow cytometry technologies and constructing CD8+ T-specific BMI1 knockout mice, we verified BMI1 controls $CD127^{+}KLRG1^{+}$ memory cells differentiation which implicates better prognosis in HCC. Through performing RNA-seq and MeRIP-seq, we verified BMI1 regulating TCF1 expression independent on its classical function. Combined TSA IHC analysis, hydrodynamic mice HCC model and liver-specific nanoparticle packaged BMI1 shRNA, we demonstrated HCC BMI1 expression affects infiltrated T proliferation by affecting BMI1 expression.
Results: BMI1 inhibition promotes effector T cell differentiation, while BMI1 upregulation induces memory T differentiation. Moreover, destruction of BMI1 expression feedback between tumor cells and T cells promotes HCC progression and T cells dysfunction. Liver-specific BMI1 knockdown is helpful to attenuate T cells dysfunction and slow HCC progression.
Conclusions: Our group firstly explores the proteomics of HCC-infiltrated T cells and clarifies that BMI1 controls CD127+KLRG1+ memory CD8+ T cell differentiation is the cornerstone for immunotherapy efficacy in HCC.

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Korean J Transplant 2023;37 Suppl 1:S245
https://doi.org/10.4285/ATW2023.F-8383

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Advancing kidney transplants: future prospects of robotic graft implantation

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Background: Kidney transplantation significantly enhances survival for end-stage renal disease patients. Robotic surgery has evolved, yet complex procedures require technical standardization. Graft implantation demands expertise and reduced warm ischemia time for optimal function. We present a series of 27 cases featuring robotic-assisted kidney allograft implantation.
Methods: Prospectively gathered data of patients who underwent robotic-assisted left donor nephrectomies at Jackson Memorial Hospital, University of Miami, Miami Transplant Institute, from April 2022 to July 2023 during the Transplant Robotic Programs second phase. Preoperative, intraoperative, and postoperative variables were analyzed. Continuous variables underwent Student t-test analysis, categorical variables were chi-square tested, and $P<0.05$ indicated significance.
Results: Included were 27 patients; 20 (74%) were male, median age 50 years (interquartile range [IQR], 32.5 58.5 years). Living donor grafts comprised 25 (92.5%). Pfannenstiel incision was used in 22 (81.4%) cases for graft insertion. Median warm ischemia time was 51 minutes (IQR, 39.25–57 minutes). Median vein anastomosis time was 16 minutes (IQR, 12–19 minutes); artery anastomosis time was 14 minutes (IQR, 11–18 minutes). Median intraoperative robotic console time was 212 minutes (IQR, 178–364 minutes). Foley catheter removal took 7 days (IQR, 6–7 days). Median stay was 3 days (IQR, 3–4.5 days). Graft function was immediate in 25 cases (92.6%), delayed in 2 (7.4%). There were one postoperative readmission (3.7%), six complications (22%), and two reinterventions (7.4%) due to urinary leaks. Conversion to open surgery occurred in one patient (3.7%).
Conclusions: Robotic-assisted kidney allograft implantation is a safe procedure with minor complications, recommending its application where robotic surgery is accessible.

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Korean J Transplant 2023;37 Suppl 1:S246
https://doi.org/10.4285/ATW2023.F-8390

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Outcomes of kidney transplantation from donors with acute kidney injury: a nationwide registry study in Korea

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Background: Because organ shortage is an important issue in kidney transplantation (KT), the use of kidneys with risk factors has increased to meet the demands of the waiting list. Most studies support to transplant kidneys from deceased donors (DDs) with acute kidney injury (AKI), but few of those have focused on Asian population. Thus, we investigated to evaluate outcomes after KTs from DDs with AKI compared to matched KTs from DDs without AKI using a nationwide cohort in Korea.
Methods: We analyzed the data of 6,415 adult patients who underwent deceased donor kidney transplantation (DDKT) between 2008 and 2018 using the Korean Network for Organ Sharing (KONOS) data. KTs from AKI DDs (defined by Acute Kidney Injury Network criteria; AKI group, n=3,243) and non-AKI DDs (non-AKI group, n=3,172) were enrolled using an inverse probability of treatment weighting. The primary outcome was a composite of all-cause mortality or graft failure.
Results: The AKI group was associated with worse all-cause death/graft failure as well as lower survival rate compared with the non-AKI group (inverse probability weighted hazard ratio [IPW-HR], 1.348; 95% confidence interval [CI], 1.168–1.556; P<0.001 vs. IPW-HR, 1.699; 95% CI, 1.346–2.013; P<0.001, respectively). However, comparable risk was noted to the subgroup with kidney donor risk index (KDPI) <80% (IPW-HR, 1.172; 95% CI, 0.946–1.452; P=0.147) and decreasing-creatinine trend (defined the difference between peak creatinine and final creatinine as lower than −0.3 mg/dL) (IPW-HR, 1.020; 95% CI, 0.798–1.302; P=0.878).
Conclusions: Although KTs from AKI donors showed worse all-cause death/graft failure than KTs from non-AKI donors, outcomes of KT from AKI donor with KDPI <80% or decreasing-creatinine trend showed comparable with KT from non-AKI donors. This suggests that kidneys from AKI donors as a good option for patients with end-stage kidney disease in countries with prolonged waiting times for DDKT.

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Korean J Transplant 2023;37 Suppl 1:S247
https://doi.org/10.4285/ATW2023.F-8402

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

An abscess formation on the transplanted graft and its successfully treatment in kidney transplantation recipient with *de novo* atypical hemolytic uremic syndrome treated with eculizumab: a case report

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Atypical hemolytic uremic syndrome (aHUS) can lead to irreversible graft failure in kidney transplantation (KT), and eculizumab has been considered as a kidney graft rescue therapy. However, due to eculizumabs inhibition of complement effector mechanisms, the risks of infections after its use are major challenges in clinical practice. In here, we present a case of an abscess formation on the transplanted graft and its successfully treatment in a KT recipient with *de novo* aHUS treated with eculizumab. A 61-year-old female with chronic kidney disease due to diabetes mellitus and hypertension nephropathy had a deceased donor KT. After 4 months, she was readmitted and clinically diagnosed with *de novo* aHUS. Eculizumab was administered for her treatment concurrently with plasmapheresis. Although her serum creatinine (sCr) normalized after two months of eculizumab treatment, she consistently experienced infections such as recurrent urinary tract infection, pneumonia, herpes zoster, and infected colitis. Over the course of 2 years, she experienced cycles of hospitalization and discharge while receiving ongoing antibiotic treatment for infections. Two years after eculizumab treatment, her general condition deteriorated, leading her to visit the outpatient clinic. Her laboratory results indicated a significant infection with sCr 2.14 mg/dL, white blood cells of 31,230/L and non-enhanced abdominopelvic computer tomography revealed a 6.1-cm abscess formation on the transplanted kidney. Consequently, we promptly inserted percutaneous catheter for drainage on her kidney abscess and initiated antibiotic treatment. Aerobic cultures from her abscess and her urine showed ESBL-producing *Escherichia coli*. After 2 weeks of treatment, her sCr was dramatically decreased to around 1.0 mg/dL in the early stages. Based on our experience, it is important to closely monitor the risk of infections in immunocompromised patients treated with eculizumab. Furthermore, proactive, prompt and appropriate treatments for infections are essential.

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Korean J Transplant 2023;37 Suppl 1:S248
https://doi.org/10.4285/ATW2023.F-8403

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Evaluation for the anatomical correctness of fusion image of three-dimensional hilar structure including portal vein, hepatic artery and bile duct

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Background: Understanding of the hilar anatomy is essential for donor surgeons and three-dimensional (3D) image can enhance the understanding. As we started to perform fusion image of vascular structures from computed tomography and bile duct from magnetic resonance cholangiopancreatography, we evaluated the anatomical correctness of these images compared to actual anatomy based on surgical videos.
Methods: Donors who underwent 3D image fusion during the period of March 2023 to July 2023 were evaluated for the anatomical correctness. Three-dimensional modeling and fusion procedure was performed using Mimics medical and 3-matic software. The anatomical correctness was evaluated based on the anatomical relationship between right hepatic artery and common hepatic duct. Based on the fusion image, right hepatic artery was categorized to be posterior, mixed with, or anterior to the common hepatic duct. After reviewing the surgical videos, the actual relationship was evaluated.
Results: During the period, 58 living donor liver transplantations were performed and 47 cases were eligible for the study. Fusion images indicated: 34 cases (group 1) with the right hepatic artery posterior to the bile duct; 6 cases (group 3) anterior to the bile duct; and 7 cases (group 2) exhibiting mixed positions. Among these cases, 5 cases showed right hepatic artery anterior to the bile duct. While there was no case of hepatic artery anterior to the bile duct in donors in group 1, there was one donor (14.3%) and four donors (66.7%) who had hepatic artery anterior to the bile duct in group 2 and 3, respectively. There was a statistically significant tendency of right hepatic artery to be anterior to the bile duct.
Conclusions: Fusion image of hilar structure showed reasonable correctness when evaluated by the relationship of right hepatic artery and bile duct. However, due to the inevitable error during fusion, the correctness is not 100% which needs further improvement.

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Korean J Transplant 2023;37 Suppl 1:S249
https://doi.org/10.4285/ATW2023.F-8404

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Analysis of status and waiting period of simultaneous transplant (heart-kidney) recipients in single center

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Background: Simultaneous heart-kidney transplantation is not only a lifesaving method for end-stage heart and kidney failure patients, but also a treatment method that improves the quality of life. Since Korea's first successful simultaneous heart-kidney transplant in 2005, a total of 45 cases have been performed in Korea to date, of which our hospital has performed 15 simultaneous heart-kidney transplants. The purpose of this study is to determine the status of simultaneous heart-kidney transplant recipients performed at our hospital and provide basic data to patients and medical staff waiting for heart-kidney transplantation.

Methods: In this study, we were retrospectively investigated the general characteristics, emergency level and waiting period at the time of transplant, whether renal replacement therapy was performed, survival after heart-kidney transplant recipients through Korean Network for Organ Sharing (KONOS) statistical annual report and medical records.

Results: Simultaneous heart-kidney transplantation was first performed at our hospital on March 31, 2005, and a total of 15 cases were performed as of January 2023. The gender of transplant recipients was 13 male (86.7%), two female (13.3%) and the blood types were A type (four), AB type (two), B type (two), O type (seven). The average age at the time of transplantation was 52 years (range, 30–65 years) for male and 38.5 years for female (range, 33–44 years). At the time of transplantation, the final heart emergency level was S0 (six), S1 (six), S2 (two) and S3 (one). After the emergency level was raised, the waiting period was heart S0 (16 days), S1 (104 days), S2 (230 days) and S3 (192 days). Before transplantation, only two patients were in predialysis condition with Modification of Diet in Renal Disease of less than 30, and 13 patients were on dialysis using hemodialysis or continuous renal replacement therapy. Two transplant recipients with S0 died during hospitalization due to postoperative bleeding and sepsis. One patient died of septic shock at 8 years 8 months, another died of unknown cause at 10 months, and the other 10 patients are alive without dialysis and within normal heart and renal function ranges.

Conclusions: Since the establishment in of KONOS, the number of domestic heart and kidney transplants and the survival rate have been improved based on accumulated experience. As the waiting period becomes longer, it is more important to provide educational information to maintain optimal health through rehabilitation during the waiting period. It can be used for basic data for transplant waiting management and education. It is considered that it is necessary to supplement the Status scoring system standards comparing additional studies and advanced systems.

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Korean J Transplant 2023;37 Suppl 1:S250
https://doi.org/10.4285/ATW2023.F-8408

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Genetic screening of associated cardiac disease in a single center heart transplant cohort

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Background: This study aimed to characterize the genetic basis of heart failure in a single-center cohort of cardiac transplanted patients regardless of underlying etiology.
Methods: This retrospective study included a total of 126 adult patients who received heart transplantation in a single tertiary center from June 2014 to June 2023. The method of genetic screening was next-generation sequencing or whole exome sequencing. From November 2021, all the recipients underwent genetic screening regardless of underlying etiology, including ischemia and valvular heart disease. American College of Medical Genetics and Genomics (ACMG) criteria was used for classification of mutation.
Results: Total 71 genetic screening were done among 126 patients (56.3%). After refining the classification, we identified a pathogenic or likely pathogenic variant (PV/LPV) in 24 patients (33.8% of the tested and 19% of total cohort). Twenty-eight cases were classified as variant of unknown significance (VUS). In reference to the cause of cardiac failure in the 24 carriers of pathogenic variants, 15 were of dilated cardiomyopathy (DCM), 7 hypertrophic (HCM) and 1 restrictive cardiomyopathy. Even in the ischemic cases (n=19), 1 PV and 10 VUS were noted.
Conclusions: The genetic screening of a cardiac transplanted cohort identified a definite or very likely genetic cause in approximately 19% of recipients. Mutations detected in etiology other than the well-known genetic cardiomyopathy, such as DCM or HCM, could suggest possible genetic susceptibility to acquired cardiac diseases.

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Korean J Transplant 2023;37 Suppl 1:S251
https://doi.org/10.4285/ATW2023.F-8421

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Development of exercise program for kidney transplant patients

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Exercise is essential for health management to maintain the transplant condition and prevent complications after organ transplantation, and it has been confirmed that in addition to improving health and physical strength, it also has psychological effects in strengthening stress tolerance and improving self-confidence. However, as a result of a survey of transplant recipients, 82% of respondents responded that they limit exercise because they think it will be harmful to the transplanted organ, and the transplant medical staff are also unable to actively encourage exercise due to a lack of resources. Therefore, this study was attempted to develop an exercise program according to the posttransplant period in order to increase the efficiency of exercise management for patients after renal transplantation. An expert group was organized to develop the exercise program, consisting of two transplant surgeons, two coordinators, one nurse practitioner, one physical education expert. After reviewing the literature, surveying patients, and meeting with experts, the exercise program was developed and its validity verified. Finally, a video and leaflet of a gymnastics exercise. The exercise program developed in this study was designed so that patients could easily access and understand it. Therefore, it is expected that it can be used as good educational material for patients to manage themselves after transplantation, and ultimately, it is expected to contribute to improving the health of transplant patients.

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Korean J Transplant 2023;37 Suppl 1:S252
https://doi.org/10.4285/ATW2023.F-8434

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Combined impact of expanded criteria donor and cold ischemic time on delayed graft function in deceased donor kidney transplantation

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Background: The most significant complication is delayed graft function (DGF) on deceased donor kidney transplantation (DDKT). Multiple factors belonging to donor, recipient, and transplant procedures have an effect on the development of DGF. We aim to evaluate the combined impact of Extended Criteria Donor (ECD) and cold ischemic time (CIT) of DGF and its effects on the graft function and survival in our country.
Methods: Between January 2008 and October 2020, a total 99 recipients who underwent DDKT were retrospectively reviewed. We classified recipients into two groups; DGF(–) vs. DGF(+). Each group was subdivided according to Korean Network for Organ Sharing (KONOS) ECD criteria. The risk factors of DGF associated with donor and recipient were analyzed. The effects of DGF were examined on the graft function and survival.
Results: We included 99 DDKT cases. Among 99 DDKT, 35 cases were included in DGF(+), and the other 64 cases were in DGF(–). The serum creatinine level before donor nephrectomy of the DGF(+) group was significantly higher (1.7±1.1 mg/dL) than that of the DGF(–) group (1.0±0.5 mg/dL, P<0.0001). CIT of the DGF(+) group was 333.2±95.5 minutes, compared to 289.4±62.3 minutes of the DGF(–) group (P=0.018). In the DGF(+) group, the ECD group showed shorter CIT than SCD groups statistically (301.2±92.5 minutes vs. 371.1±87.0 minutes, P=0.029). There was no significant difference in graft function and survival between DGF(+) and DGF(–) group.
Conclusions: In this study, graft function and survival after DGF(+) DDKT were similar to that of DGF(–) DDKT. However, to reduce DGF, efforts are needed to reduce CIT in DDKT using ECD than when underwent DDKT using SCD.

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Korean J Transplant 2023;37 Suppl 1:S253
https://doi.org/10.4285/ATW2023.F-8441

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Surgical tips of duct-to-duct bile duct anastomosis in unusual situations in living donor liver transplantation

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Background: In living donor liver transplantation using the right graft, the bile duct is typically connected in an end-to-end duct-to-duct anastomosis between the grafts right bile duct (gRBD) and the recipients common hepatic duct (rCHD). However, in some cases, the recipients cystic duct (rCD) is inevitably used for the anastomosis due to angulation problem or size discrepancy. Additionally, two separate bile duct openings with far distance in the graft also difficult to perform duct-to-duct anastomosis. In this video, we aim to introduce a surgical technique that overcomes these challenges.
Methods: In the first case, there was an acute angle problem expected when rCHD is used for duct-to-duct anastomosis. Therefore, the gRBD was anastomosed with rCD and the rCHD was ligated. In the second case, the gRBD was exposed in two parts. The right anterior bile duct was connected to the recipients left bile duct opening using an interrupted technique, while the right posterior bile duct was connected to the recipients right bile duct opening in a mixed manner (continuous posterior wall and interrupted anterior wall). This was done without stent insertion and secured with 6-0 Maxon sutures.
Results: With this surgical technique, we were able to safely anastomose the gRBD with the relatively smaller rCD without any angulation or leakage.
Conclusions: When duct-to-duct anastomosis is challenging due to acute angle or size discrepancy, various modified techniques can be favorable alternatives to overcome these issues.

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Korean J Transplant 2023;37 Suppl 1:S254
https://doi.org/10.4285/ATW2023.F-8478

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The association of early postoperative complications after ABO-incompatible liver transplantation and intraoperative red blood cell transfusion

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Background: ABO-incompatible liver transplantation (ABO-i LT) is being increasingly used for end-stage liver disease patients with limited donor options. Advances in preoperative techniques like plasma exchange, along with improved postoperative immunosuppression, have enhanced outcomes. However, higher intraoperative transfusion during ABO-i LT can increase complications including acute kidney injury more, compared to ABO-compatible transplant. Our study aims to assess early postoperative complications within a year according to the intraoperative transfusion volume in ABO-i LT.
Methods: We reviewed electronic medical records of adult patients undergoing ABO-i LT at Seoul National University Hospital between July 2013 and June 2018, excluding patients with prior transplants. Demographics variables, comorbidities, preoperative factors, surgical details, and postoperative outcomes were collected. The primary outcome was early postoperative immunologic complication (biliary complications and acute cellular rejection within a year), according to intraoperative red blood cell (RBC) transfusion.
Results: During the period, 75 patients received ABO-i LT and there was no case of re-transplantation. Among 75 patients, 47 received ≤4 units and 28 received >4 units of packed RBCs during surgery. Baseline characteristics were similar, except for some transplant-related factors such as cause of transplant, Model for End-stage Liver Disease or Child-Pugh score. RBC transfusion more than 4 units was associated with longer cold ischemic time, higher estimated blood loss, and lower preoperative and intraoperative hemoglobin levels. Regarding early postoperative complications, the incidence of acute cellular rejection risk was significantly higher in RBC ≤4 units group (14 [29.8%] vs. 2 [7.1%], P=0.021). Biliary complications trended higher in the >4 units group, though statistically insignificant. Other outcomes are shown in Table. However, univariate and multivariate logistic analysis showed that the volume of transfusion was not associated with the increased risk of biliary complications.
Conclusions: Intraoperative RBC transfusion (>4 units) was not associated with early biliary complications after ABO-i LT, but it significantly associated with higher acute cellular rejection.

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Korean J Transplant 2023;37 Suppl 1:S255
https://doi.org/10.4285/ATW2023.F-8486

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical impact of early blood transfusion after kidney transplantation

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Background: Pretransplant blood transfusion is well-known cause of allosensitization. However, the effects of blood transfusion after kidney transplantation on graft outcomes remain controversial.
Methods: We analyzed 785 patients who underwent human leukocyte antigen- and ABO-compatible kidney transplantation between 2014 and 2020. Patients were grouped based on receiving red blood cell transfusion within the first 30 days after transplantation.
Results: Overall, 18.9% of patients received red blood cell transfusion within 1 month after transplantation. The median number of packed red cells among transfused recipients was 2 (interquartile range, 1.0–3.0) and the median time to first transfusion was 5.0 days (interquartile range, 2.0–12.0 days). Transfusion group patients were more often women, more often received a deceased donor transplant, and had a longer dialysis vintage compared to no transfusion group patients. During a median follow-up of 53 months, 30 patients (3.8%) died and 39 patients (5.0%) experienced death-censored graft loss. Multivariable analysis confirmed that blood transfusion was independently associated with higher all-cause mortality (hazard ratio, 3.030; 95% confidence interval [CI], 1.438–6.384; P=0.004). Transfusion was also significantly associated with an increased risk of death-censored graft loss (hazard ratio, 2.178; 95% CI, 1.059–4.477; P=0.034). Cumulative probabilities for antibody-mediated rejection was significantly higher in the transfusion group than in the no transfusion group (P=0.012), whereas cumulative probabilities for T cell-mediated rejection between two groups were not significantly different (P=0.694).
Conclusions: Transfusion within 1 month after kidney transplantation is associated with increased risk of all-cause mortality, death-censored graft loss, and antibody-mediated rejection.

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Korean J Transplant 2023;37 Suppl 1:S256
https://doi.org/10.4285/ATW2023.F-8500

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Beneficial effects of transgenic expression of human CD200 on top of quadruple-knockout/double knockin (CD46/thrombomodulin) pigs on kidney xenograft survival in nonhuman primates

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Background: CD200 suppresses xenogeneic immune responses of macrophages similarly as CD47. Moreover, CD200 can suppress other immune cells, such as T cells. Previous studies demonstrated that overexpression of hCD200 in pig endothelial cells successfully suppressed vascular xenograft rejection to greater extent than that of human CD47 in humanized mice. This study aimed to explore beneficial effects of hCD200-TG pigs on pig to nonhuman primate kidney xenotransplantation.
Methods: The first group included triple knockout (KO; GGTA1, B4galNT2, CMAH) or quadruple KO (triple+iGb3S) pigs (TKO+QKO, n=5); the second group included a triple KO/double knockin (DKI; human CD46, human thrombomodulin) pig (TKO/DKI, n=1); the third group included a QKO/DKI/hCD200-TG pig (QKO/DKI/CD200, n=1). The cynomolgus monkeys in three groups received pig kidney xenografts under the same immunosuppressive regimen that consisted of thymoglobulin, rituximab, anti-CD154, sirolimus, and corticosteroid.
Results: The survival time of kidney xenografts were 36, 49, 77, 79, and 114 days for the TKO+QKO group, 136 days for the TKO/DKI group, and 139 days for the QKO/DKI/CD200 group, respectively. Spot urine protein/creatinine ratio had been kept low through the entire observation period in the QKO/DKI/CD200 group, whereas transient or persistent heavy proteinuria occurred in the other groups. Titers of donor-specific antibodies (DSA) in the TKO+QKO group increased during the first month, whereas rise of the DSA titers in the TKO/DKI group and QKO/DKI/CD200 group was delayed. Tumor necrosis factor-alpha levels in the TKO+QKO group markedly increased during the first week after xenotransplantation, while there was only mild increase in the TKO/DKI and QKO/DKI/CD200 groups.
Conclusions: The hCD200-TG on top of QKO/DKI (CD46/TBM) pigs successfully suppressed proteinuria and delayed DSA development in pig-to-nonhuman primate kidney xenotransplantation, leading a good kidney xenograft survival compared to TKO or QKO pigs. These results suggest CD200 as a promising new target molecule to optimize genetically-modified pigs for kidney xenotransplantation.

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Korean J Transplant 2023;37 Suppl 1:S257
https://doi.org/10.4285/ATW2023.F-8524

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Predicting index for outcomes after deceased donor liver transplant after 1-year posttransplantation

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Background: The Donor Rejected Organ Pre-transplantation (DROP) score, and the donor risk index (DRI) have been proposed for predicting graft and overall survival. These scores are calculated based on transplant-related variables. The kidney donor profile index (KDPI), which is calculated from donor variables, is suggested for predicting prognosis after kidney transplantation. Our study aims to compare the predicted graft survival and overall survival after deceased donor liver transplantation (DDLT).
Methods: This study analyzed data from transplant recipients who underwent DDLT at Samsung Medical Center between January 1, 2000, and December 31, 2020. Retransplantation, pediatric DDLT, dead patients within 1 year posttransplant, or follow-up loss patients were excluded. The group of recipients was stratified into three sub-classes according to the KDPI.
Results: A total of 231 DDLT cases were included. The numbers of KDPI grade 1, 2, and 3 were 163 (70.5%), 52 (22.5%), and 16 (6.9%). The proportion of esophageal varix bleeding in the KDPI grade I was less than in the KDPI grade II and III. KDPI was correlated with DROP (P=0.018), but was not correlated with the DRI. Graft failure and death occurred in 20 patients (8.7%) and 41 patients (17.7%). Time to graft failure increased with increasing KDPI (P<0.001). The overall survival rate was significantly higher only in the low KDPI group than in the high KDPI group (P=0.029). The other index scores were not showed significant results in overall survival rates: DROP (P=0.517), and DRI (P=0.842). In graft survival rates, all three index scores were not significant with DROP and DRI except KDPI (P=0.029).
Conclusions: Our study suggests that KDPI also is a useful index in predicting DDLT outcomes after 1-year posttransplant.

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Korean J Transplant 2023;37 Suppl 1:S258
https://doi.org/10.4285/ATW2023.F-8551

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Duodenal perforation and multiple pseudocyst complicated with hypertriglyceridemia-induced acute necrotizing pancreatitis in kidney transplant patient

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Duodenal perforation in acute pancreatitis is a very rare complication in kidney transplant recipients and is associated with higher morbidity and mortality rates. The diagnosis is often difficult because of the absence of typical symptoms and laboratory findings. A 35-year-old female, with history of living related ABO compatible kidney transplantation in April 2015, presented with nausea, vomiting, and acute pain in epigastric area at 2 days ago. She was treated with hypertriglyceridemia-induced acute pancreatitis at 1 months ago. The laboratory findings revealed the serum creatinine of 0.87 mg/dL, serum amylase of 23 U/L, lipase of 10 U/L, total bilirubin of 1.5 mg/dL, C-reactive protein of 7.68 mg/dL, and tacrolimus level of 3.7 ng/mL. The abdominal computed tomography scan showed a perforation of duodenal first portion with panperitonitis findings with intraperitoneal free gas with thickening of lining peritoneum and a large pseudocyst at peripancreatic space, mesenteric root and both retroperitoneal space. The patient was treated with bowel rest, intravenous fluid replacement, reduced immunosuppressive agents, percutaneous drainages and antibiotics in intensive care unit. Her symptoms were gradually aggravated, and she was died at 2 months later.

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Korean J Transplant 2023;37 Suppl 1:S259
https://doi.org/10.4285/ATW2023.F-8570

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Single-cell RNA sequencing analysis of immune cell population dynamics from peripheral blood in pig-to-non-human primate islet xenotransplantation treated with clinically applicable immunosuppressants

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Background: Over the course of the last two decades, our research has been dedicated to exploring the potential of porcine islet xenotransplantation as a therapeutic option for patients with type 1 diabetes. At present, pancreatic islet xenotransplantation is on the brink of entering phase 1 clinical trials in Korea. The successful implementation of these trials relies heavily on the establishment of an effective immunosuppression protocol capable of accommodating various genetically modified pigs or islets in clinical settings. During our preclinical investigations, we have evaluated the use of belimumab as an immunosuppressive agent, with a specific focus on inhibiting B cell activation.
Methods: In this study, porcine islets were transplanted into rhesus monkeys (*Macaca mulatta*, n=4) with an immunosuppressant regimen. Immunosuppression was induced with anti-thymocyte globulin, adalimumab, anakinra, tocilizumab, and tacrolimus. The maintenance regimen consisted of abatacept, belimumab, and tofacitinib. Blood samples were collected from the monkeys before and after the regimen. To gain a comprehensive understanding of the dynamic behavior of circulating immune cells, we have employed the single-cell transcriptome analysis method. Currently, we are actively analyzing the data gathered from this study.
Results: Following administration of belimumab, a notable reduction was observed in the proportions of atypical memory B cells and naive B cells in the blood, while the decrease in naive B cells did not achieve statistical significance. The proportions of switched memory B cells and short-lived plasma cells remained unaffected by the belimumab. These findings are consistent with earlier investigations utilizing belimumab or BAFFR inhibitors in human.
Conclusions: Our findings demonstrate that the effect of belimumab is conserved between humans and rhesus monkeys, providing further support for the use of belimumab as a immunosuppressant for xenotransplantation. However, this result is demonstrating only the ratio of B cell subsets, and further analysis of the qualitative modification in each subset is needed.

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Korean J Transplant 2023;37 Suppl 1:S260
https://doi.org/10.4285/ATW2023.F-8572

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The impact of alcohol relapse after liver transplantation in patients with alcoholic liver disease

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Background: According to the National Institute of Organ Tissue Blood Management Institute, while liver transplants due to viral liver diseases are decreasing, those due to alcoholic liver disease are on the rise. Additionally, the issue of posttransplant alcohol relapse in patients who have undergone liver transplantation for alcoholic liver disease has become a concern. This study aims to investigate the rate of alcohol relapse and its impact on post-transplant outcomes.
Methods: We analyzed medical records of 238 patients out of 271 who underwent liver transplantation for alcoholic liver disease at Samsung Medical Center from June 2016 to January 2023, who followed-up at least 6 months posttransplantation.
Results: Among the 238 participants, 92 (38.7%) had deceased donor liver transplantation (DDLT) and 146 (61.3%) had living donor liver transplantation (LDLT). The median preoperative Model for End-stage Liver Disease score was 25 (range, 6–40), with 37 for DDLT and 17.8 for LDLT. The median age was 53 years (range, 27–69 years), with 162 males (68.1%) and 76 females (31.9%). The relapse rate in DDLT patients was significantly higher at 44.6% compared to 21.9% in LDLT patients (P<0.001). There was no significant difference in relapse rates based on the relationship between donor and recipient in LDLT, and post-transplant alcohol relapse did not affect patient survival (P=0.177). Interestingly, in patients with alcohol relapse, adherence to immunosuppressive medication significantly influenced survival rates (P=0.011). The higher the adherence to immunosuppressive medication, the higher the survival rate compared to those with poor medication adherence (P=0.021).
Conclusions: This study shows that although the rate of alcohol relapse after liver transplantation is high in patients with alcoholic liver disease, it does not adversely affect the survival rate in patients who take immunosuppressant well. Therefore, it is necessary not only to develop an educational program to reduce alcohol relapse but also to provide ongoing education on adherence to immunosuppressive medication.

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Korean J Transplant 2023;37 Suppl 1:S261
https://doi.org/10.4285/ATW2023.F-8576

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Long-term mortality of living liver donors: a systematic review and meta-analysis

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Background: Although the outcome of living donor liver transplantation (LDLT) recipients has been developed, concerns remain about donor safety and moral issues. The safety of the living donor is the top priority when performing a living liver transplant. Several studies reported donor complications and mortality rate, but the results were short-term, mostly related the operation. Due to the short history of living liver transplantation, studies of the long-term survival of donors after living donor are lacking. At this point, the justification for living liver transplantation will be established only when there is a long-term result from donors after organ donation. This is a meta-analysis of long-term survival of LDLT donors.
Methods: We searched PubMed, Embase, and the Cochrane Library database for studies comparing living liver transplantation donor with control group published between the date of database creation and June 2021. Statistical analysis was performed using Revman 5.3. We included all data from recent studies and assessed methodological quality using the risk of bias from the Non-Randomized Study of Intervention (ROBINS-I) assessment tool.
Results: Three studies met the eligibility criteria. In the included clinical study, 24,371 patients received living donor surgery. In this paper, we compiled all the data on donors reported deaths from subsequent published papers on cause of death, including short-lived deaths that may be related to surgery performed within 90 days of donors. In a worldwide survey long-term deaths were reported, with suicide being the most common cause of death.
Conclusions: This meta-analysis suggests that liver donation is safe and feasible for LDLT compared to non-donation people. It is also worth mentioning that regular psychological evaluations of donors by a psychologist before and after donation were mandated. To maintain the LDLT program, careful selection and surgical technique of living liver donors are important for the safety of living liver donors.

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Korean J Transplant 2023;37 Suppl 1:S262
https://doi.org/10.4285/ATW2023.F-8590

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The application of immunosuppressants education video and instant messaging software to improve compliance in transplant recipients

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Background: Compliance after transplantation is very important to prevent acute rejection, maintain graft function, and achieve a good long-term outcome. There are many types of immunosuppressant agents, such as calcineurin inhibitors, corticosteroids, purine synthesis inhibitors, and target rapamycin inhibitors. The time it takes varies for each medicine. During the hospitalization subsequent to the operation, the nurses dispatch the prescriptions, ensuring that there are no complications. However, after discharge and returning home, the medication must be taken on time by the recipients. The purpose of this poster is to reveal the application and effect of education videos and instant messaging software to improve compliance after transplantation.
Methods: The education video was made by a pharmacist and pharmacy students. Medicine-use education and video viewing were done before transplant, after transplant before discharge, and during the first outpatient follow-up after discharge. In addition, pharmacists and recipients use in stand messaging software to communicate directly. Questionnaires were used to evaluate patients knowledge of immunosuppressant agents and the correctness of the immunosuppressant-use.
Results: From January 2023 to August 2023, nine patients received longitudinal medication education and follow-up. All recipients expressed a high level of satisfaction with the questionnaires. There were no problems with immunosuppressants use. All recipients did not experience acute rejection during 3-month posttransplant period.
Conclusions: Strengthening health education and making good use of instant messaging software can improve compliance of medication.

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Korean J Transplant 2023;37 Suppl 1:S263
https://doi.org/10.4285/ATW2023.F-8619

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Pretransplant immunologic risk assessment in high baseline ABO antibody titers and donor-specific anti-human leukocyte antigen antibodies in ABO incompatible kidney transplantation

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Background: Twenty patients were evaluated for donor specific anti-human leukocyte antigen (HLA) sensitization before they received ABO incompatible kidney transplantation in our center from 2021 to 2022. Each recipient was evaluated by complement dependent cytotoxicity crossmatch, flow crossmatch and single antigen bead assay (SAB). Titers of anti-A and/or Anti-B are monitored on daily basis with target levels being <1:8 on the day of transplant.
Methods: Blood grouping and irregular antibody screening test of all patient and donor samples was performed on fully automated immunohematology analyzer (Ortho Vision Swift Analyzer). For ABO antibody titers the gel IAT method was used. Serially diluted sample used in Ortho Gel Card having anti-human globulin C3d combined in it. After incubation at 37 °C for 15 minutes, the gel cards were centrifuged and titers were determined as the highest dilution showing 1+ agglutination. SAB was performed on Luminex platform with Immucor Lifecodes single antigen assays.
Results: High baseline ABO antibody titers (>1,000) and anti-A, anti-B both (>1,000) titers in AB positive donors with O positive recipient were not associated with antibody-mediated rejection or graft loss in our study, 3 patients (15%) expired due to COVID-19 pandemic infection, the remaining 17 patients (85%) survival and graft survival is good. Cell base cross match were negative in all recipients. Donor-specific HLA antibodies (DSA) positivity in two recipients one with class I with <1,000 MFI, present serum creatinine is 1.1 mg/dL and in second had ABMR with class II SAB positivity and >5,000 MFI present serum creatinine is 1.98 mg/dL.
Conclusions: SAB positivity with DSA mean fluorescent intensity >5,000 and high baseline titers of ABO antibody is a high risk for ABMR. Desensitization using rituximab, tacrolimus and MMF along with plasmapheresis results in successful outcome even in the presence of anti HLA and ABO sensitization.

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Korean J Transplant 2023;37 Suppl 1:S264
https://doi.org/10.4285/ATW2023.F-8632

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Identifying risk factors for futile deceased donor liver transplantation: a retrospective multi-institutional study

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Background: Since end-stage liver disease patients do not often have potential living donors, a deceased donor liver transplantation (DDLT) could be an exclusive option in many patients. However, the number of liver grafts from deceased donors is decreasing for various reasons, so a few patients on the edge of a precipice could receive DDLT. This study aimed to identify risk factors for futile liver transplantation and to optimize the distribution of scarce liver grafts.
Methods: Consecutive patients who underwent DDLT between 2010 and 2022 were enrolled in this study. Futile transplantation was defined as death from any cause within 30 days of transplantation. Patients were divided into futile and non-futile groups, and risk factors for futile transplantation were identified by comparing clinical characteristics and operative outcomes between the groups.
Results: The study cohort comprised 22 patients (11.9%) in the futile group and 163 (88.1%) in the non-futile group. Model for End-Stage Liver Disease (MELD) score was significantly higher in the futile group compared to the non-futile group (median [range]: 40 [16–40] vs. 27 [6-40], P<0.001). Before the transplantation, more patients in the futile group required mechanical ventilation, renal replacement therapy, and vasopressor than the non-futile group (15 [68.1%] vs. 12 [7.3%], P=0.013; 10 [45.4%] vs. 25 [15.3%], P=0.005; and 9 [40.9%] vs. 15 [9.2%]; P=0.002, respectively). Cold ischemic time was longer in the futile group than in the non-futile group (median [range]: 337 [196–780] vs. 281 [140–728], P=0.047). In multivariable analysis, MELD score of 40 and cold ischemic time (>300 minutes) were independent risk factors for futility (odds ratio: 10.81 [3.32–35.16], P<0.001 and 3.87 [1.14–13.14], P=0.030, respectively).
Conclusions: A MELD score of 40 and prolonged cold ischemic time were the most critical risk factors for futility after DDLT. We should reduce cold ischemic time, especially for patients with multiorgan failure.

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Korean J Transplant 2023;37 Suppl 1:S265
https://doi.org/10.4285/ATW2023.F-8647

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Characterization of innate immune cell subtypes in kidney transplant recipients with BK virus infection through single-cell transcriptomic profiling of peripheral blood

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Background: This study analyzed blood cell types in BK virus (BKV) infection among immunosuppressed kidney transplant recipients. It aimed to understand the single-cell transcriptional patterns of these subtypes in relation to BKV infection and its associated nephropathy, which poses a risk of graft loss.
Methods: We obtained peripheral blood mononuclear cells (PBMCs) from six kidney transplant recipients: one with stable graft function, two with detectable BKV (BK viremia), and three with BKV-associated nephropathy (BK nephropathy). Using the 10x Genomics Chromium Platform, we created single-cell libraries for each PBMC sample. Data were analyzed with the Cell-Ranger Pipeline and further explored using R programming and Seurat for downstream analysis.
Results: We conducted analysis on 5,473 stable, 9,068 BK viremia, and 17,238 BK nephropathy cells, unveiling 7,223 DEGs across 16 cell clusters. In BK nephropathy, gamma delta T cells stood out with 30.4% overexpression, emerging as the most distinct subtype among the 16 groups, compared with BK viremia and stable groups. Contrasting stable and BK viremia, FCGR3A monocytes overexpressed by 21.3% in stable group, featuring key genes like LYZ, FTL, CTSS, IFI30, FTH1. In gamma delta T cells, BK nephropathy exhibited elevated expression of genes including HIST1H4C, IL32, TMSB4X, CALM3, HMGB2 (log-2FC diff=1.9–2.3). Similarly, within FCGR3A monocytes, stable group displayed elevated expression relative to BK nephropathy for genes like IFITM3, BCL2A1, CTSL, PHACTR1, WARS (log2FC diff=1.1–1.6). These findings emphasize gene expression disparities in BK viremia, nephropathy, and stable groups.
Conclusions: Reactivated BK virus can impact nephropathy progression through specific genomic interactions. Gamma delta T cells, with typically low expression in transplant recipients, elude conventional methods but are detected via single-cell RNA analysis. Similarly, FCGR3A monocytes show diverse gene overexpression among BK nephropathy, BK viremia, and stable groups. These markers could enhance post-kidney transplant patient management.

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Korean J Transplant 2023;37 Suppl 1:S266
https://doi.org/10.4285/ATW2023.F-8665

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Bioimpedance analysis as a screening tool in heart-transplanted patients

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Background: Meticulous management is crucial after heart transplantation. We evaluated the role of non-invasive bioimpedance analysis (BIA) as a screening tool for post-heart transplantation events.
Methods: From December 2019 to July 2022, patients who underwent heart transplantation and performed BIA after 1 month were retrospectively enrolled. Extracellular water ratio (ECWr=extracellular water ratio 10) and standard deviation (SD) were evaluated by the BIA. Primary outcome was a composite of treated rejection, heart failure events, and acute renal failure. Patients were grouped according to the presence of the primary outcome (event+group vs. event group). The relationship of ECWr, SD, NT-proBNP, and the primary outcome was evaluated.
Results: A total of 50 heart transplant patients were enrolled. Of these, 18 were classified as event+group and 32 as event group. Simultaneous measurement of ECWr and NT-proBNP were modestly but significantly correlated (r=0.477, P<0.001). The best cutoff value according to the receiver operating characteristic (ROC) curve was 3,909.7 (area under the ROC curve [AUC], 0.788; P=0.001) for ECWr, 38.7 (AUC, 0.686; P=0.031) for SD, and 559.5 (AUC, 0.717; P=0.012) for NT-proBNP. Event+group showed significantly higher ECWr (3,887.4±75.5 vs. 3,980.3±117.2, P=0.001), SD (45.2±24.6 vs. 68.6±49.2, P=0.029), and NT-proBNP (340.1±323.1 vs. 701.3±655.4, P=0.012). Combination of ECWr and SD (ECWr-SD score, 0: ECWr <3,909.7 and SD<38.7; 1: either one satisfied ECWr 3,909.7 or SD=38.7; 2: both ECWr 3,909.7 and SD=38.7) showed highest value (AUC, 0.863; P<0.001,). In multivariate analysis, high ECWr-SD score (HR, 12.391; P<0.001), high NT-proBNP (HR, 4.938; P=0.031) were independent predictors for the primary outcome. Kaplan-Meier survival curve showed well discrimination of event according to the ECWr-SD score (P<0.001).
Conclusions: Increased ECWr with SD by BIA was significantly associated with posttransplantation events. Optimal cut-off value needs to be further validated in the future prospective trials with varied patient population.

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Korean J Transplant 2023;37 Suppl 1:S267
https://doi.org/10.4285/ATW2023.F-8701

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Bispecific anti-CD40LXCD28 antibody prevents mouse xenogeneic graft-versus-host disease

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Background: Graft-versus-host disease (GVHD) is a systemic complication of transplantation, primarily arising from the activation of donor CD4+ T cells that recognize recipient cells as foreign. The secondary signals required for CD4+ T cell activation mainly rely on two co-stimulatory molecules, CD40L and CD28. Blocking either of these two signals can induce immunological tolerance to suppress the occurrence of GVHD. In this study, we developed an anti-CD40LXCD28 bispecific antibody (bsAb) and tested its efficacy in the prevention of GVHD.
Methods: In an *in vitro* setting, we studied the affinity of anti-CD40LXCD28 bsAb to CD40L and CD28 and its efficacy in blocking CD40L-CD40 and CD28-CD80 interactions, as well as in inhibiting the activation of human T cells. Xenogeneic GVHD was induced in NSG mice (n=5/group) by injecting human peripheral blood mononuclear cells (PBMCs; 1.0 107 cells/injection) bi-daily for three weeks. Anti-CD40LXCD28 bsAb or a combination of control anti-CD40L and anti-CD28 bsAbs (2 mg/kg) were injected following the same schedule. The body weight and GVHD scores of recipient mice were monitored for 8 weeks, and their changes were analyzed by two-way analysis of variance with Tukey's multiple-comparison test.
Results: When left untreated, three of five PBMC-injected mice died during the monitoring period. In the mouse group treated with the combination of control bsAbs, significant body weight loss and elevated GVHD scores were observed compared to control PBMC-uninjected mice ($P<0.05$ and $P<0.0001$, respectively). In contrast, mice treated with the anti-CD40LXCD28 bsAb had no statistically significant changes in both body weight and GVHD scores compared to PBMC-uninjected controls, and demonstrated significantly reduced body weight loss and GVHD scores compared to the control bsAbs combination-treated mouse group ($P=0.0001$ both).
Conclusions: Anti-CD40LXCD28 bsAb effectively inhibited GVHD and was more potent compared to the combined treatment of anti-CD40L and CD28 antibodies.

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Korean J Transplant 2023;37 Suppl 1:S268
https://doi.org/10.4285/ATW2023.F-8702

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Interspecies incompatibility of CD200 contribute to the xenogeneic immune response

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Background: CD200 is a cell surface glycoprotein that suppresses the xenogeneic immune response, including vascular xenograft rejection. In pig-to-human organ xenografts, the functional and molecular incompatibility between pig CD200 and human CD200R is believed to contribute to dysregulated immune xenoresponse.
Methods: To investigate this, we conducted an *in vitro* study examining the effect of human CD200 and pig CD200 on the xeno-immune interaction between pig endothelial cells (pECs) and human macrophages.
Results: Both hCD200 and pCD200 in pECs were found to suppress the phagocytic activity of macrophages against pECs. The presence of hCD200 in pECs further suppressed the cytotoxic activity and led to a decrease in the secretion of M1-associated macrophage cytokines, such as tumor necrosis factor-alpha, interleukin (IL)-1beta, and interferon-gamma. Additionally, hCD200 reduced the expression of M1-associated macrophage polarization markers, including iNOS, Dectin-1, and CD86. However, there was no significant change observed in the secretion of the M2-related cytokine IL-10 or the expression of M2 phenotype markers, CD163 and CD206. In contrast, pCD200 did not exhibit any inhibitory effect on cytotoxicity, and it did not significantly affect the expression or activation of M1 or M2 associated markers. In response to CD200-CD200R signaling, we investigated Dok2 phosphorylation in macrophages and observed an increase in Dok2 phosphorylation in the presence of hCD200 compared to the control. Additionally, we confirmed a reduction in AKT phosphorylation and IKB degradation. However, these changes were not observed in the presence of pCD200.
Conclusions: These results suggest that hCD200 suppresses xenogeneic immune responses via the CD200-CD200R signaling pathway, while pCD200 exhibits weaker inhibitory effects due to its inadequate binding to the CD200R receptor in comparison to hCD200, and pCD200 may not be compatible with the CD200R binding process. The genetic induction of human CD200 on pig cells could offer a novel approach for mitigating macrophage-mediated xenograft rejection.

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Korean J Transplant 2023;37 Suppl 1:S269
https://doi.org/10.4285/ATW2023.F-8738

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A small-volume center experience of liver transplantation for the patients with hepatocellular carcinoma

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Background: Liver transplantation (LT) has been established as a best treatment in selected hepatocellular carcinoma (HCC) patients. However, most of LT for patients with HCC have been performed mainly in large-volume centers. In here, we introduce the experiences of LT for patients with HCC in small-volume center.
Methods: A total of 43 HCC patients who underwent LT between January 2010 and February 2023 were included in this study. We reviewed the medical records of these patients retrospectively and analyzed the outcomes.
Results: The mean follow-up period was 53.9 months and there was one perioperative mortality case. About 58% of patients met Milan criteria (MC) and 42% of patients presented beyond MC. The overall survival rates in 1-, 3-, and 5-year were 90%, 82%, and 73%, respectively. The recurrence-free survival rates in 1-, 3-, and 5-year were 98%, 82%, and 78%, respectively. The recurrence-free survival was significantly better in patients who met the Milan and University of California San Francisco (UCSF) criteria; however, the overall survival was not statistically different according to the Milan and UCSF criteria. Among these patients, recurrences were occurred in seven patients. The site of recurrence was lung in three patients, intraperitoneal space (omentum, peritoneum, and abdominal wall) in three patients, graft liver in three patients and lymph nodes in two patients. Recurred mass was resectable in three patients and these patients have been followed up healthy without further recurrence after resection.
Conclusions: The outcome of LT for HCC patients in small-volume center was comparable with high-volume center. If the recurrent tumor would be resectable, resection can be a good treatment option for long-term survival.

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Korean J Transplant 2023;37 Suppl 1:S270
https://doi.org/10.4285/ATW2023.F-8802

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A report on the longest graft survival of a porcine kidney transplanted into a non-human-primate in Korea

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Long-term survival of a porcine kidney graft transplanted into a non-human primate (NHP) for more than 6 months is a prerequisite for the successful clinical translation of xenotransplantation in the current era. We recently achieved long-term porcine kidney graft survival in an NHP and share our experience here. A kidney was harvested from a genetically modified pig (Optipharm Inc., Cheongju, Korea). The donor pigs genetic modifications include triple knockout (GGTA1, CMAH, and B4galNT2) and double knock-in (hCD55 and hCD39). The donor pig weighed 11.5 kg, and the transplanted kidney weighed 28 g. The recipient was a cynomolgus macaque weighing 3 kg. Rituximab and thymoglobulin were used for induction immunosuppression. Maintenance immunosuppression included once-daily tacrolimus, mycophenolate mofetil, steroids, and anti-CD154 monoclonal antibody. Cobra venom factor was employed to inhibit the complement response. Following a midline incision, the porcine kidney was transplanted into the recipients right iliac fossa. Immediate posttransplant urine output was satisfactory. The recipient's right kidney was removed simultaneously, and the left kidney was removed on posttransplant day 75. Following native kidney removal, the recipients renal function remained stable. Serum creatinine was 0.77 mg/dL on posttransplant day 98, a favorable result compared to the recipient's baseline level of 0.94 mg/dL. Renal function remained stable until posttransplant day 182 (serum creatinine was 0.98 mg/dL). However, renal function deteriorated after posttransplant day 210, leading to euthanasia on posttransplant day 221 due to renal failure. Histopathologic findings are pending. We present a case of long-term survival involving a porcine kidney transplanted into nonhuman primates and anticipate the clinical translation of xenotransplantation in the near future.

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Korean J Transplant 2023;37 Suppl 1:S271
https://doi.org/10.4285/ATW2023.F-8812

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of donor body mass index on the clinical outcomes after deceased donor kidney transplantation: a multicenter cohort

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Background: The aim of this study is to investigate the effect of body mass index of kidney transplant donor (KTD) on short and long-term clinical outcomes after deceased donor kidney transplantation (DDKT).
Methods: Among initial 873 patients, a total of 754 patients receiving DDKT between 2006 and 2021 among three multi-centers were included in the study. Patients were divided according to their kidney donors body mass index (BMI) into underweight (BMI, <18.5 kg/m^2; n=41), normal weight (BMI, 18.5 kg/m^2 to < 25 kg/m^2; n=496), and obese (BMI, ≥25 kg/m^2; n=217) groups. Their clinicopathological characteristics, graft function, graft survival rates, donor kidney acute kidney injury (D-AKI), acute rejection (AR), and delayed graft function (DGF) were analyzed retrospectively.
Results: In obese donor group, the incidence of D-AKI was significantly higher in comparison with those in underweight or normal weight group. Furthermore, multivariate analysis showed that donor obesity was an independent prognostic factor for D-AKI development (odds ratio, 3.11; 95% confidence interval, 1.365–7.073; P=0.007). However, the prevalence of DGF and AR did not show meaningful difference among donor BMI groups. There was no significant association between donor BMI and 3-month to 3-year follow-up creatinine level (P=0.516) and also graft survival (P=0.619).
Conclusions: In this cohort study, we identified donor obesity is significant risk factor for donor kidney acute kidney injury. Though D-AKI is known risk factor for DGF, our results implies that donor BMI does not impact long-term allograft function and survival outcomes of DDKT. Therefore, utilization of obese donors kidney for transplantation could be considered positively.

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Korean J Transplant 2023;37 Suppl 1:S272
https://doi.org/10.4285/ATW2023.F-8866

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical relevance of the Living Kidney Donor Profile Index in Korean kidney transplant recipients

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Background: The Living Kidney Donor Profile Index (LKDPI) was developed in the United States to predict graft outcomes based on donor characteristics. However, there are significant differences in donor demographics, access to transplantation, proportion of ABO incompatibility, and posttransplant mortality in Asian countries compared with the United States.
Methods: We evaluated the clinical relevance of the LKDPI score in a Korean kidney transplant cohort by analyzing 1,860 patients who underwent kidney transplantation between 2000 and 2019. Patients were divided into three groups according to LKDPI score: <0, 1–19.9, and 20. During a median follow-up of 119 months, 232 recipients (12.5%) experienced death-censored graft loss, and 98 recipients (5.3%) died.
Results: High LKDPI scores were significantly associated with increased risk of death-censored graft loss independent of recipient characteristics (LKDPI 1–19.9: hazard ratio 1.389, 95% confidence interval 1.036–1.863; LKDPI 20: hazard ratio 2.121, 95% confidence interval 1.50–2.998). High LKDPI score was also significantly associated with increased risk of biopsy-proven acute rejection and impaired graft renal function. By contrast, overall patient survival rates were comparable among the LKDPI groups.
Conclusions: High LKDPI scores were associated with an increased risk of death-censored graft loss, biopsy-proven acute rejection, and impaired graft renal function among Korean kidney transplant cohorts.

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Korean J Transplant 2023;37 Suppl 1:S273
https://doi.org/10.4285/ATW2023.F-8867

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impacts of pretransplant panel-reactive antibody on posttransplantation outcomes: a study of nationwide heart transplant registry data

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Background: The number of sensitized heart failure (HF) patients on waiting lists for heart transplantation (HTx) is increasing. We investigated the prevalence and clinical impact of calculated panel-reactive antibody (cPRA) in patients undergoing HTx using the Korean Organ Transplantation Registry (KOTRY), a nation-wide multicenter database.
Methods: We retrospectively reviewed 813 patients who underwent HTx between 2014 and 2021. Patients were grouped according to peak PRA level as group A, patients with cPRA <10% (n=492); group B, patients with cPRA ≥10% & <50% (n=160); group C, patients with cPRA ≥50% (n=161). Post-HTx outcomes were freedom from antibody-mediated rejection (AMR), any treated rejection, acute cellular rejection, coronary allograft vasculopathy, and all-cause mortality.
Results: The median follow up duration was 44 months (range,19–72). Female sex, retransplantation, and pre-HTx renal replacement therapy were independently associated with increased risk of sensitization (cPRA ≥50%). Group C patients were more likely to have longer hospital stay and to use anti-thymocyte globulin as an induction agent compared to groups B and C. Significantly more patients in group C had positive flow-cytometric crossmatch, and had higher incidence of preformed donor-specific antibody compared to groups A and B. During follow-up, group C had significantly lower rates of freedom from AMR, but the overall survival rate was comparable with those of groups A and B.
Conclusions: Patients with cPRA ≥50% had significantly higher incidence of preformed DSA and lower freedom from AMR but post-HTx survival rates were similar to those with cPRA <50%.

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Korean J Transplant 2023;37 Suppl 1:S274
https://doi.org/10.4285/ATW2023.F-8871

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Comparison of clinical and pathological features of rejection in ABO-incompatible and ABO-compatible kidney transplantation

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Background: ABO-incompatible (ABOi) living donor kidney transplantation (LDKT) is gradually being implemented to overcome the shortage of donor kidneys. Since ABOi LDKT began in 2007 in Korea, there have not been yet sufficient reports regarding the posttransplant long term outcomes including the incidence of rejection of ABOi LDKT. We analyzed the decade of our experiences of ABOi LDKT with comparing ABO-compatible (ABOc) LDKT from the standpoint of rejection and *de novo* donor-specific alloantibody (DSA).

Methods: We retrospectively analyzed 1,190 living donor kidney transplant recipients between July 2010 and December 2020 at the Severance Hospital. We compared clinical outcomes and rejection type of ABOi LDKT (n=246) with those of ABOc LDKT (n=749).

Results: No significant difference in death-censored graft survival was observed between ABOi KT and ABOc KT (P=0.217). Patient survival after ABOi KT was similar to that after ABOc KT (95.0% vs. 97.3%, respectively; P=0.108). The prevalence of *de novo* DSA production and biopsy-proven acute T-cell mediated rejection (TCMR) and chronic antibody-mediated rejection (ABMR) were comparable between the two groups. The incidence of biopsy-proven active ABMR was significantly higher ABOi KT than ABOc KT (9.8% [24/246] vs. 5.5% [41/749], respectively; P=0.018). In addition, biopsy-proven acute rejection (BPAR) free survival rate was lower in ABOi KT than ABOc KT (71.8% vs. 76.4%, respectively; P=0.024). Multivariable cox regression confirmed that DR and DQ associated *de novo* DSA was independently associated BPAR but ABO incompatibility was not a significant risk factor of BPAR after adjustment with covariates.

Conclusions: ABOi LDKT was not inferior to ABOc LDKT for patient survival and graft survival. However, ABO incompatibility was associated with the increased incidence of active ABMR.

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Korean J Transplant 2023;37 Suppl 1:S275
https://doi.org/10.4285/ATW2023.F-8882

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Graft-to-recipient weight ratio does not affect hepatocellular carcinoma recurrence after living donor liver transplantation

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Background: Studies have yielded contradictory results on whether low graft-to-recipient weight ratio (GRWR) is involved in the risk prognosis of hepatocellular carcinoma (HCC) patients. The present study assessed whether GRWR could affect the incidence of HCC recurrence after living donor liver transplantation (LDLT) using data from a high-volume transplant center in South Korea.
Methods: This retrospective observational study included 856 HCC patients who underwent LDLT between January 2006 and December 2016 at Asan Medical Center.
Results: The number of patients with GRWR <0.8%, 0.80.99, 1.01.19, and 1.2 were 54 (6.3%), 272 (31.8%), 274 (32.0%), and 256 (29.9%), respectively. Analysis with all patients revealed that the disease-free survival (DFS; P=0.545) and overall survival (OS; P=0.313) rates were not different in these four groups. Subgroups analyses also showed no difference according to GRWR in patients within Milan criteria (DFS, P=0.398; OS, P=0.676) and beyond Milan criteria (DFS, P=0.602; OS, P=0.649), as well as in patients with ADV score <5 log (DFS, P=0.633; OS, P=0.285) and 5 log (DFS, P=0.674; OS, P=0.906).
Conclusions: The present study demonstrated that GRWR <0.8% appears to have no significant prognostic impact on the oncological outcome of patients undergoing LT for HCC. High-volume multi-center studies are necessary to validate the results of the present study.

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Korean J Transplant 2023;37 Suppl 1:S276
https://doi.org/10.4285/ATW2023.F-8896

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Successful case series of living donor kidney transplantation without systemic heparinization during donor nephrectomy

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Background: The use of heparin during donor nephrectomy is to prevent microthrombi and improve the graft function. But there are risks for the donor of hemorrhagic complications. We share our experiences of the recent 3 years of living donor kidney transplantation without administration of heparin to the donor.
Methods: We retrospectively reviewed 22 cases of living donor kidney transplantation from January, 2019 to April, 2023.
Results: For the donors, 11 patients were male (50%) and 11 were female (50%). Median age was 52 years (range, 23–69). Median operation time was 157 minutes (range, 110–195), blood loss 100 mL (range, 10–550) and none underwent transfusion. Median hospital stay was 8 days (range, 7–9). Median postoperative day (POD) 0 and POD 1 hemoglobin levels were 13.6 g/dL (range, 11–16.7) and 11.6 g/dL (range, 11–15.4), respectively. Median creatinine on preoperative and POD 0 were 0.73 mg/dL (range, 0.5–0.95) and 0.88 mg/dL (range, 0.44–1.8), respectively. Median blood urea nitrogen (BUN) was 12.8 mg/dL (range, 6.7–18.4) and 12 mg/dL (range, 7.1–16.3), and estimated glomerular filtration rate (eGFR) were 98.95 mL/min/1.73 m (range, 64.4–116.4) and 79.85 mL/min/1.73 m (range, 67–125.7), respectively. There were no major complications. For the recipients, 14 patients were male (64%) and eight were female (36%). Median age was 51.5 years (range, 19–61). Median operation time was 305 minutes (range, 245–370). Median blood loss was 200 mL (range, 0–3,400). Median hospital stay was 14 days (range, 9–28) with no major complications. Median urine output on POD 0, and 1 were 6,220 mL (range, 2,235–16,660), and 4,334 mL (range, 1,770–6,500), respectively. Median postoperative resistive index was 0.71 (range, 0.57–1). There were five cases of rejection. Two were acute and three were chronic rejections.
Conclusions: In our institution, without heparin during donor nephrectomy, there were no graft loss caused by vascular thrombosis. Moreover, there were no complications like hemorrhages in donors. We conclude that no systemic heparinization during donor nephrectomy is both feasible and safe, with no adverse effects on donor or recipient outcomes.

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Korean J Transplant 2023;37 Suppl 1:S277
https://doi.org/10.4285/ATW2023.F-8897

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Excess mortality of end-stage renal disease patients during early SARS-Cov-2 pandemic in South Korea

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Background: South Korea used strong public quarantine policies during the early COVID-19 pandemic. With the good public adherence to social distancing, overall mortality of South Korea during early COVID-19 pandemic was reported as similar to the historical trend. However, mortality of end stage renal disease population during COVID-19 pandemic was not reported. This study aimed to whether excess mortality was different by the type of renal replacement modality among end-stage renal disease patients for 2 years of COVID-19 era (2020–2021).
Methods: All-cause death data and population statistics from 2015 to 2021 were obtained. The expected mortality in 2020 January to 2021 December was estimated by quasi-Poisson regression model. Excess mortality was defined as deaths above expected rates (numbers per 100,000 person-years). End stage renal disease patients were classified as hemodialysis, peritoneal dialysis, and kidney transplantation groups.
Results: The observed mortality of end stage renal disease in 2020 to 2021 were 9,790.2 per 100,000 person-years, and the expected mortality was 9,176.9 per 100,000 person-years (95% confidence interval [CI], 9,059.8 to 9,294.1). Excess mortality peaked at the period of Delta variant appearance (2021 August, 2021 December). Hemodialysis patients showed the highest excess mortality of 582.5 (95% CI, 440.5 to 724.4) in overall 2 years period. There were no significant excess in patients mortality among peritoneal dialysis (44.5 per 100,000 person-years; 95% CI, –767.3 to 856.2) or kidney transplant (129.4 per 100,000 person-years; 95% CI, –6.5 to 265.3).
Conclusions: In South Korea, there was no significant excess mortality among kidney transplant recipients or peritoneal dialysis patients during early SARS-Cov-2 pandemic period. However, hemodialysis population experienced excess mortalities. Feasibility of social isolation should be the key issue in public quarantine. Highest excess mortality in hemodialysis patients' needs attention for future pandemic situation.

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Korean J Transplant 2023;37 Suppl 1:S278
https://doi.org/10.4285/ATW2023.F-8905

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Effect of desensitization protocol according to the degree of antibody-mediated rejection risk in living donor liver transplant: a retrospective cohort study

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Background: Graft failure associated with donor specific antibody (DSA) is rare but consistent in living donor liver transplant (LDLT). This study aims to analyze the outcomes of desensitization protocol according to the preoperative antibody mediate rejection (AMR) risk.
Methods: We reviewed 998 cases of LDLT between January 1, 2012 and December 31, 2021 retrospectively. The desensitization treatment was protocolized for three different risk groups based on crossmatching (CDC), flow cytometry cross-matching (FCXM), and single antigen DSA test results: Rituximab+plasma pheresis for high risk (all positive), Rituximab only for intermediate risk (CBC–, FCXM+, DSA+), no treatment for low risk (only DSA+). The graft and patient survival of those retrospective cohort were analyzed.
Results: From 640 ABO compatible cases there were 292 cases (45.6%) and 348 cases (54%) each before and after desensitization treatment was protocolized, with two incidents (0.7%) and four incidents (1.1%) of AMR, respectively. From 69 cases with DSA test results, 20 cases (29.0%) received Rituximab+plasma pheresis, 17 cases (24.6%) received Rituximab only, and 32 cases (46.4%) received no treatment. Number of cases in higher AMR risk group increased after protocol initiation (P=10-8), while AMR risk did not show any significant difference (P=0.69).
Conclusions: AMR incidence remaining relatively similar despite the significant increase in number of high-risk group recipients post protocol initiation, suggests that the desensitization treatment is effective. While we were not able to isolate the effects of treatments due to the limited number of patients with DSA test results, we were able to analyze various factors in relation to AMR. Studies including larger number of cases are needed to prove the necessity of desensitization protocol in clinical settings.

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Korean J Transplant 2023;37 Suppl 1:S279
https://doi.org/10.4285/ATW2023.F-8922

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The safety and feasibility of adjuvant immunotherapy with autologous cytokine-induced killer cells for patients with hepatocellular carcinoma beyond Milan criteria after liver transplantation

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Background: Adjuvant immunotherapy with autologous cytokine-induced killer (CIK) cells has shown promise postsurgery, yet research concerning hepatocellular carcinoma (HCC) patients postliver transplantation remains sparse. This scarcity is in part due to the immunosuppressive therapy required posttransplantation, which may elevate the risk of acute cellular rejection, potentially diminishing the efficacy of immunotherapy. Furthermore, the generally lower recurrence rate posttransplantation within the Milan criteria complicates the verification of immunotherapies efficacy in relation to HCC.
Methods: This study included HCC patients who exceeded the Milan criteria, selected from two large-volume tertiary hospitals in Korea. Immune cell subsets including NK cells, CD8 TCM, CD8 TEM, CD8 nave cells, MDSCs, Tregs, and CD69 T cells, along with immune markers such as perforin, granzyme, INF-gamma, and TNF-alpha were analyzed pre- and post-CIK therapy.
Results: A comparative analysis was carried out between patients who received CIK therapy and those who did not, with a focus on rejection, recurrence-free survival rates, and overall survival rates. Although there were no significant differences in rejection or safety between the groups, the group receiving CIK therapy demonstrated promising improvements in both survival and recurrence rates. The better outcome in patients with immunotherapy is due to the anti-tumor immune environment for suppressing the tumor recurrence according to the immune cell subsets analysis.
Conclusions: CIK therapy could be a safe option for HCC patients who exceed the Milan criteria and undergo liver transplantation. The therapy appears to contribute to an anti-tumor environment and lower recurrence rates, presumably by influencing various immune cells and their functions. Given the small experimental group size, these findings should be interpreted as preliminary, necessitating further validation in larger cohorts. Future studies are warranted to deepen the understanding of CIK therapy mechanisms, particularly its correlation with improved patient outcomes in the context of specific immune markers.

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Korean J Transplant 2023;37 Suppl 1:S280
https://doi.org/10.4285/ATW2023.F-8931

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of individual eplets to acute rejection in kidney transplant recipients: machine learning analysis of Korean Organ Transplantation Registry

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Background: Epitope matching has been shown to predict allograft survival and development of de novo donor-specific antibodies. However, superiority of eplet mismatch to predict rejection outcome than that of HLA genotype mismatch were not thoroughly investigated.
Methods: Patients included in the Korean Organ Transplantation Registry (KOTRY) were used. Kidney transplant recipients who received transplants from 2014 to 2021 were enrolled. HLA four-digit genotypes were imputed by matching to the four-digit haplotype distribution as our previous method. The primary outcome measurement was acute rejection, biopsy-proven acute rejection (BPAR), T-cell mediated rejection (TCMR) and B-cell mediated rejection (BCMR) within 1 year. Ten-fold cross-validated Extreme Gradient Boost (XGBoost) model and logistic regression were used as statistical method and cross-validated receiver operating characteristics (ROC) curves were compared.
Results: Among 9,150 donor-recipient pairs, four digits HLA estimation were successful in 7,607 pairs. Exact 1:1 matching of HLA haplotype were successful in 1,980 pairs (call 4 digits group). Mean class I and class II eplet mismatches were 10.6±7.1 and 17.8±12.4, respectively. The area under curve (AUC) of individual eplets are not better than HLA mismatch numbers in total population (0.549 vs. 0.576 by XGBoost and 0.562 vs. 0.568 by logistic regression). In call 4 digits group, individual eplets using XGBoost better predict acute rejection (0.585 vs. 0.575), BPAR (0.536 vs. 0.500), TCMR (0.535 vs. 0.500) than HLA mismatch numbers. Sum of eplet mismatch by logistic regression did not show any better predictability to rejection episode than HLA mismatch numbers.
Conclusions: In this Korean population study, individual eplet mismatches predicted acute rejection better than HLA mismatches in the subpopulation who had accurate four digits matched subpopulation. Sum of eplet mismatch number did not show better predictability than HLA mismatch numbers.

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Korean J Transplant 2023;37 Suppl 1:S281
https://doi.org/10.4285/ATW2023.F-8934

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impact of donor-recipient gender on the outcome of liver transplantation: a real world evidence study

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Background: The disparities based on gender were observed in liver transplantation (LT), but the impact of donor-recipient gender on the outcomes of LT remains elusive.
Methods: The clinicopathologic data of patients undergoing LT from February, 2002 to June, 2022 in the United Network for Organ Sharing (UNOS) national database were collected. The study population were divided into four groups according to donor-recipient gender. Propensity score matching (PSM) analysis was used to minimize between-group imbalances. The graft survival (GS) between the four groups was compared. Recipient variables that amplified the impact of female-male donor-recipient LT on GS were identified via interaction analysis.
Results: A total of 107,183 eligible recipients were finally included in this study according to the screening criteria. Of these recipients, 35,703 (33.3%) were women, and the median age was 56 years (inter quartile range, 49–62 years). After PSM, the 1-, 3- and 5-year GS of recipients in female-male donor-recipient group were significantly reduced when compared with male-female, male-male and female-female donor-recipient groups (P<0.001). Recipients in the female-female donor-recipient group have the best prognosis, with a 5-year survival rate up to 76.3%, significantly higher than other groups (P<0.001). There was significant interaction between the GS of recipients in female-male donor-recipient group with age 60 years (hazard ratio [HR], 1.005; P=0.023), autoimmune liver disease (HR, 1.202; P=0.020) and other liver disease (HR, 1.211; P=0.003). We classified recipients without these factors (age< 60 years and alcoholic liver disease or nonalcoholic fatty liver disease or viral hepatitis) as preferred cohort, in which GS of recipients in female-male donor-recipient group was no worse than other three groups after adjustment (P> 0.05).
Conclusions: Women could overcome the problem of allocation inequity with access to female donor livers preferentially with excellent prognosis. The risks of recipients in female-male donor-recipient group could be minimized by appropriate recipient selection.

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Korean J Transplant 2023;37 Suppl 1:S282
https://doi.org/10.4285/ATW2023.F-8977

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Prognostic potential: evaluating graft donor specific antibody and HLA antigen complexes in living-donor liver transplantation

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Background: Predicting clinical outcomes like rejection or biliary complications in liver transplant recipients with serum mismatched donor-specific antibodies (DSA) is difficult. This study aims to examine the correlation and outcomes of graft and serum DSA positive patients, utilizing immunocomplex capture fluorescence analysis (IFCA).
Methods: During liver transplantation, the donor graft specimen were reacted in vitro with the recipients serum. It was then dissolved in PBS using lysis buffer, and the HLA antigen-antibody complex was captured with anti-human leukocyte antigens (HLA) beads. Detection was performed using PE-conjugated anti-human IgG and analyzed using the Luminex system. The clinical outcomes of graft DSA positive and serum DSA positive patients were then compared.
Results: When the ratio of sample mean fluorescence intensity (MFI)/control MFI was defined as >1.5 for suspicious positive, and >2.0 for positive, out of 51 patients we examined, 12 were suspicious positive, and two were positive. None of these patients showed serum DSA positivity or acute cellular rejection or antibody-mediated rejection. Of these patients, seven had biliary complications, with six having biliary stricture and one biliary leakage. All biliary strictures were at the anastomosis site. Additionally, out of the total 51 patients, six were serum DSA positive, with no graft DSA positive among them. There was one case of antibody-mediated rejection, and two patients had bile duct anastomotic stricture. There was no clinical correlation between graft DSA positive patients and serum DSA positive patients.
Conclusions: Serum DSA and graft DSA are distinct tests, and the IFCA method may enable prediction of long-term graft damage before liver transplantation.

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Korean J Transplant 2023;37 Suppl 1:S283
https://doi.org/10.4285/ATW2023.F-8980

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Indication and survival among liver transplant patients in Yangon Speciality Hospital, Myanmar

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Liver transplantation has become the standard of treatment for various liver diseases such as end stage liver disease from various etiologies and early stages of hepatocellular carcinoma (HCC). The major goals of liver transplantation are to prolong life expectancy and to improve quality of life. In Myanmar, the first liver transplantation was successfully performed in 2004 by Dr. Norman Hla, Professor of Surgery who pioneered in liver transplantation of our country. In 2016, collaborated liver transplantation program with Korean liver transplant surgeons was implemented in Yangon Speciality Hospital. From October 2016 to December 2019, a total 30 of adult liver transplantation has been performed in Department of Hepatobiliary and Pancreatic Surgery, Yangon Speciality Hospital. Indications for liver transplantation includes 20 cases of HCC, nine cases with cirrhosis from chronic liver diseases and one case with Budd-Chiari syndrome. Among 30 patients, hepatitis B and C infected patients are 25 cases and only five cases are non B, non C. One year survival rate and graft survival rates are 73% and 80%, respectively. The best survival has been shown to occur among patients underwent liver transplant for cirrhosis with chronic liver disease and the worst survival occurred in patients with HCC. No donor mortality or transplant related morbidity account in our center experience. The prevalence of hepatitis B and C are high in Myanmar and genotype of hepatitis B virus (HBV) among Myanmar patients is high associated with HCC, therefore HBV and hepatitis C virus related chronic liver failure and HCC are increasing. As liver transplant becomes the standard of treatment for chronic liver disease, patients needing liver transplant as the definitive treatment of their diseases on the other hand. Therefore. strong multidisciplinary teams for liver transplant program are needed for future of our country and also national strategies for elimination of hepatitis B and C should be much more promoted.

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Korean J Transplant 2023;37 Suppl 1:S284
https://doi.org/10.4285/ATW2023.F-8988

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Tet2-mediated macrophage activation promotes liver regeneration

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Background: Macrophages are predominant immune cells that secret interleukin 6 (IL-6) and hepatocyte growth factor to promote liver regeneration after liver resection. Ten-eleven translocation-2 (Tet2) DNA dioxygenase regulates the secretion of pro-inflammatory factors in macrophages. In this study, we explored the role of Tet2 in macrophages and its function independent of its enzymatic activity in liver regeneration.
Methods: A 70% partial hepatectomy mice model was established. Enzyme-linked immunosorbent assays, quantitative reverse transcription-polymerase chain reaction, western blotting, immunofluorescences, and flow cytometry were performed to explore the infiltration and phenotypes of immune cells in mice models. Molecular dynamics simulations were carried out to study the interaction of Tet2 with Stat1.
Results: We found Tet2 in macrophages negatively regulates liver regeneration in the partial hepatectomy mice model. In mechanism, Tet2 interacts with Stat1 to inhibit the expressions of proinflammatory factors and suppress liver regeneration. Tet2 inhibitor BC339 attenuated the interaction of Stat1 and Tet2, enhanced Stat1 phosphorylation, and promoted hepatocyte proliferation. Notably, Tet2 also directly affected hepatocyte proliferation, independent of the IL-6-Stat3 signaling pathway.
Conclusions: Tet2 in macrophages negatively regulates liver regeneration via interacting with Stat1. Our results suggest that specific targeting Tet2 in macrophages promotes the recovery of liver function after hepatectomy.

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Korean J Transplant 2023;37 Suppl 1:S285
https://doi.org/10.4285/ATW2023.F-9025

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Outcomes of peripheral cannulation in ECMO as a bridge to heart transplantation: a single-center preliminary experience

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Background: While the number of patients receiving extracorporeal membrane oxygenation (ECMO) as a bridge to heart transplantation gradually increases, the outcomes remain suboptimal. Notably, waiting for transplantation in a peripheral cannulation state is controversial due to the potential for various complications.
Methods: We retrospectively reviewed patients who received ECMO as a bridge to heart transplantation at Chonnam National University Hospital between January 2018 and June 2023.
Results: Of the 23 heart transplant recipients, 12 were bridged with ECMO. The median age of these patients was 59 years (range, 41–73 years). The median duration from ECMO initiation to transplantation was 22 days (range, 9–36 days). Nine patients (75%) survived and were discharged, with a median waiting time of 18 days. Eight were on peripheral cannulation. All surviving patients proceeded with transplantation in a non-intubated and awakening state. In contrast, the three non-survivors waited a median of 23 days and required mechanical ventilation before surgery.
Conclusions: Although limited by a single-center experience over a short period, our findings suggest that peripheral ECMO cannulation might be suitable for patients awaiting heart transplantation.

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Korean J Transplant 2023;37 Suppl 1:S286
https://doi.org/10.4285/ATW2023.F-9029

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Left at right heterotopic implantation of left liver graft in adult-to-adult living donor liver transplantation: the technical concern for decision-making

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Background: Left liver graft is important role in living donor liver transplantation in aspect of donor safety. However, conventional implantation technique of left liver graft is technically demanding and has potential risk for inferior vena cava compression, or inflow, outflow and bile duct kinking related to liver graft position. We have two cases of left at right heterotopic implantation of left liver graft and compare with conventional left liver implantation technique.
Methods: From March 2022 to March 2023, we performed 33 cases of living donor liver transplantation and two cases of deceased donor liver transplantation. There were four cases of left liver graft, two were conventional technique and two were heterotopic technique. Three cases were living donor liver transplantation and one case was deceased donor split liver transplantation.
Results: There was no immediate postoperative complication, discharged without adverse event. Biliary complication was occurred in conventional implantation technique with living donor left graft and resolved using percutaneous biliary drainage.
Conclusions: Left liver graft has advantage in donor safety and heterotopic implantation technique of left liver graft could solve potential risk of left liver graft. However, conventional technique should be performed in graft with long lateral segment or large graft volume. Therefore, thorough preoperative evaluation is essential for decision making.

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Korean J Transplant 2023;37 Suppl 1:S287
https://doi.org/10.4285/ATW2023.F-9042

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Split liver transplantation for two adult recipients

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Background: Split liver transplantation (SLT) is an important tool to reduce the paucity of donor organ and waitlist mortality. However, a SLT is technically challenging, may cause increased perioperative complications, and has potential risk that transform an excellent deceased donor organ into two marginal grafts. Therefore, critical evaluation of deceased organs suitable for split transplantation and careful screening of potential SLT recipients is warranted. We introduce one case that SLT for two adult recipients.
Methods: A 28-year-old woman was waiting for deceased donor liver transplantation. Her model for end-stage liver disease (MELD) score was 40 point and stayed intensive care unit with renal replacement treatment. Her height was 150 cm and weight were 52 kg, blood type was O+. Deceased donor allocation was done, 52-year-old male, 175 cm and 85 kg. In preoperative volumetry, donor whole liver volume was about 1,600 g and the liver volume was too large for recipient. At that time, a 56-year-old woman hospitalized due to massive pleural effusion and ascites because of alcoholic liver cirrhosis. Her MELD score was 12 points and she had no living liver donor. Her blood type was O+ and body weight was 52 kg. We decided SLT for two recipients, 28-year-old woman received modified right lobe with S1 graft, 56-year-old woman received extended left lobe graft.
Results: Modified right lobe graft with S1 graft was 1,030 g, extended left lobe graft was 670 g. The recipient who received right lobe graft had postoperative bleeding, resolved with angioembolization. There was no postoperative complication except that event.
Conclusions: Donor organ shortage and donor pool expansion is conundrum in liver transplantation. SLT is alternative for this problem, however, potential risk and ethical issue for graft quality because of split should be considered carefully.

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Korean J Transplant 2023;37 Suppl 1:S288
https://doi.org/10.4285/ATW2023.F-9046

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Procurement of extended right lobe graft with multiple hepatic veins and suitable outflow reconstruction

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Background: We will discuss this case as a method of overcoming small graft size in living donor liver transplantation and organ shortage.
Methods: A 47-year-old male patient suffered from decompensated liver cirrhosis due to hepatitis B. He had esophageal varix bleeding event. His sister, 42-year-old woman volunteered for living liver donor. There were no abnormal findings on the preoperative examination. In computed tomography imaging, portal vein and hepatic artery anatomy were normal, hepatic vein was complex vasculature. Right hepatic vein (RHV) drained segment 7 only, and there were 2 right inferior hepatic veins (RIHV) for S6 drainage. Middle hepatic vein (MHV) branch of segment 5 (V5) and segment 8 (V8) were present, segment 8 branch drained S5 territory. Segment 4a drainage vein (V4a) was separated. In volumetry, right lobe graft was 559 g, graft-to-recipient weight ratio (GRWR) 0.83% and remnant left liver was 355g, 38.8% of whole liver volume. the patient MELD score was 8 point and there was no living donor except his sister. We decided living donor liver transplantation.
Results: We planned laparoscopic V4a-preserving right extended donor hepatectomy, and recipient's splenectomy due to remnant left liver volume and GRWR. On bench work, V5, V8 and MHV were reconstructed using Dacron graft. Venoplasty was performed on RHV and MHV to create one orifice, reconstructed RHV-MHV was anastomosed to recipient RHV. Two RIHV was also reconstructed for one orifice and anastomosed to inferior vena cava. The graft was no congested area after reperfusion. Donor had cut surface bile leak, it resolved without intervention. Recipient discharged uneventfully at postoperative day 20.
Conclusions: Right extended graft is sufficient for recipient's metabolic demand; however, post-hepatectomy hepatic failure risk is high for donor. Thorough review of preoperative examination of donor and recipient and experienced transplant surgeons for liver resection and vascular reconstruction was essential for decision-making.

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Korean J Transplant 2023;37 Suppl 1:S289
https://doi.org/10.4285/ATW2023.F-9047

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Factors affecting the long-term graft survival after pig to NHP renal xenotransplantation

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Background: The xenotransplantation research team at Konkuk University performed 30 pig-to-non-human primate (HNP) renal xenotransplantation since 2011. Among them, 12 NHPs showed survival from 30 to 80 days and five showed survival of more than 80 days. We regarded survival for less than 30 days as a technical failure. As such, in this study, to find out what factors made the difference in survival, we analyzed different types of medi pig and immunosuppressants, the weight of NHPs, and date of surgery.
Methods: Average age of donor medi pigs was about 1–2 months old (body weight, 1.7 to 11.5 kg). All transgenics were Gal-knockout (GTKO) based, and the knock-in genes were thrombomodulin (TBM), ectonucleoside triphosphate diphosphohydrolase-1 (CD39), membrane cofactor protein (CD46), and complement decay-accelerating factor (CD55), as well as multiple-edited genes, similar to GGTA1/CMAH/ B4galNT2 (triple-knockout, TKO) transgenic pigs. Cynomolgus monkeys weighing 2.6 to 6.13 kg were used. The transplantation technique was similar to allotransplantation. We extracted the right kidney of the host monkey before intraabdominal anastomosis of the pig kidney. Anti-CD154 antibody, rituximab, anti-thymocyte globulin, tacrolimus, mycophenolate mofetil, and steroids were used as immunosuppressants. Remained host kidney was extracted after the 2 weeks as the second-look operation. All data are expressed as mean±SE. The statistical differences in mean values between various groups and GTKO groups were analyzed by one-way analysis of variance followed by Tukey multiple comparison tests as a post hoc test using statistical software (Prism ver. 5.01, GraphPad Software Inc.). A value of $P<0.05$ was considered statistically significant.
Results: The average life expectancy of these two groups was 48 days and 117.2 days, respectively. CVF+ATG+Rituximab+aCD154 as immunosuppressants were used equally in all experimental groups. Other factors included the use of calcineurin inhibitor in the immunosuppressive agents used, the different types of medi pig, the weight of the NHPs used in the experiment, and the timing of surgery. Compared to the GTKO group, the graft survival rate increased significantly at 80 days after transplantation compared to 30 to 80 days after transplantation ($^{***}P<0.001$ vs. GTKO group). Graft survival rate when rapamycin and tacrolimus were administered was significantly increased when tacrolimus was administered compared to the GTKO group ($^{**}P<0.01$ at rapamycin and $^{***}P<0.001$ at tacrolimus, vs. GTKO group, respectively). When comparing survival rates in several medi pigs knocked-in, there were no significant results, and although the number of experimental groups was small, CD39 and CD55 were knocked in based on TKO and the 2nd-look period, the graft long-term survival rate showed a tendency to increase. Although no significant results were found between NHPs body weight and graft long-term survival rate, in terms of transplant technique and primate management proficiency, technical failure of less than 30 days was higher than the suspected survival rate in previous studies. As a result, the long-term survival rate tended to increase compared to previous studies.
Conclusions: In this study, factors such as the development of various knock-in (e.g., CD39 and CD55) transgenic technologies based on TKO, appropriate immunosuppressive control, improvement of techniques, and increased proficiency in primate management may affect long-term survival.

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Korean J Transplant 2023;37 Suppl 1:S290
https://doi.org/10.4285/ATW2023.F-9053

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

ABO blood type does not affect recurrence of hepatocellular carcinoma after liver transplantation: analysis of the Korean Organ Transplantation Registry database

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Background: Liver transplantation (LT) is a viable treatment for hepatocellular carcinoma (HCC), removing the tumor and resolving cirrhosis. The effect of ABO blood types on HCC recurrence after LT is debated. This study analyzes the Korean Organ Transplantation Registry (KOTRY) database to investigate this relationship, aiming to understand the impact of ABO blood types on HCC recurrence and potentially inform patient selection and therapeutic strategies.
Methods: This study examined 2,380 patients from the KOTRY registry who underwent adult living donor LT between April 1, 2014, and December 31, 2021, for HCC. Exclusions were made for retransplantation, multi-organ transplantation, age <20 years, and other liver diseases. There was no statistically significant difference in characteristics of recipient, donor and graft by ABO blood groups except ABO incompatibility of LT because there was no ABO incompatible LT in AB group.
Results: No significant differences were observed in recurrence-free survival (P=0.788) and overall survival (P=0.447) across different ABO blood groups following LT. In the subgroup analysis of the ABO compatible LT, ABO incompatible LT, within Milan criteria, and beyond Milan criteria, there were no significant differences in recurrence free survival and overall survival between the ABO blood groups.
Conclusions: This study is based on the nationwide database, and among the studies comparing the effects of ABO blood type in patients who received LT for HCC, the largest number of patients data was analyzed. Based on the KOTRY database, ABO blood type does not affect HCC recurrence and overall survival after LT.

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Korean J Transplant 2023;37 Suppl 1:S291
https://doi.org/10.4285/ATW2023.F-9055

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Clinical implication of the grading system for airway complications after lung transplantation

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Background: Airway complications remain a major cause of morbidity and mortality after lung transplantation. Since there were clear consensus before, 2018 International Society of Heart and Lung Transplantation (ISHLT) had proposed the universal guidelines for description of airway complications after lung transplantation. This study is aim to analyze the feasibility and reproducibility of the grading system and its clinical implication after lung transplantation.
Methods: We performed a retrospective analysis of 188 patients who underwent lung transplantation between January 2018 and December 2021. The airway complications were diagnosed by the routine fibrotic bronchoscopy after lung transplantation. We performed postoperative 1 months, 3 months, 6 months, and 1 year follow-up procedure. Demographic features and relevant clinical data were retrospectively analyzed.
Results: There are 63.1% of patients who suffered any type of airway complications after lung transplantation. percent of patients suffered any type of airway complications after lung transplantation. Ischemic or necrotic change of airway was more frequent in right side and the extent was wider in right side (18.3% vs. 30.2%; the ratio of more than grade 2 extent, 2.4% vs. 6.3%). The airway dehiscence was found only in seven patients during the study period, and all of them were more than grade 3 dehiscence, thus they underwent the surgical repair for the airway dehiscence. For the stenosis, the frequency was higher in the left side (5.6% vs. 0.8%); however, the grade and extent of the stenosis demonstrated more higher in the right side. The clinical course of the patients with airway complications were not significantly poorer; however, they showed longer hospital stays and more frequent postoperative readmission.
Conclusions: The 2018 ISHLT grading system for airway complications is feasible and shows the relevant clinical implications for grading airway complications after lung transplantation. However, it needs further investigations to modify and apply in the real world.

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Korean J Transplant 2023;37 Suppl 1:S292
https://doi.org/10.4285/ATW2023.F-9060

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Urinary tract infection in kidney transplant recipient at Prof. dr. I.G.N.G Ngoerah General Hospital, Bali, Indonesia

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Background: Kidney transplant recipients most often have urinary tract infections (UTIs). Surgical advances and immunosuppressive therapies have improved graft survival. However, infection problems have increased, causing concernenteric Gram-negative bacilli and enterococci cause posttransplant UTIs. Our study investigated UTI incidence and microbiological profile in renal transplant recipients at our institution.
Methods: Twenty-four kidney transplant patients at Prof. Dr. I.G.N.G Ngoerah General Hospital were studied for seven years from 2016 to 2023 in this prospective cohort study. UTI, culture results, and bacteria types were recorded for all kidney transplant patients.
Results: The average age of the 24 participants was 34 (9.36) years (17 males [70.8%], 7 females [29.2%]). The incidence of UTIs over 7 years reached 70.8% (37.5% for primary UTI and 33.3% for recurrent UTI). The entire UTI patients have gram-negative infections, with only two (11.8%) exhibiting gram-positive infections. *Klebsiella pneumoniae* (30.7%), *Enterobacter* (30.7%), *Pseudomonas* (15.38%), and *Escherichia coli* (11.54%) were the most prevalent causes of all bacterial infection episodes (26 infection episodes in all samples). The incidence of UTI was found to be greater in females (85.7%) than in males (64%). One hundred percent of *K. pneumoniae* exhibited multidrug resistance. The median duration of urinary catheter use was 10 days (range, 7–30 days), and we observed a higher incidence of UTI in patients with urinary catheter use durations exceeding 10 days, with a relative risk of 1.5 (95% CI, 0.54–4.12).
Conclusions: At Prof. dr. I.G.N.G. Ngoerah General Hospital, 70.8% of kidney transplant patients suffered from urinary tract infections. There were no gram-positive bacteria and only 11.8% gram-negative bacteria present. *K. pneumoniae* with multidrug resistance was the most prevalent causative microorganism.

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Korean J Transplant 2023;37 Suppl 1:S293
https://doi.org/10.4285/ATW2023.F-9061

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Modulation of immunosuppression for long-term graft survival in lamellar pig-to-monkey corneal xenotransplantation from the genetically engineered pig model

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Background: In this study, the following study was conducted to find out whether immunosuppression control through antibiotic eye drops and subconjunctival injection in partial thickness corneal transplantation using different types of medi pigs could affect the difference in graft survival.
Methods: The transgenic donor pigs used were Gal-knockout (GTKO)+membrane cofactor protein (CD46) in one recipient and GTKO+CD46+thrombomodulin (TBM) in the other. For minimal immunosuppression subconjunctival injection of dexamethasone (1.5 mg/0.3 mL) was done immediate postoperatively and eyedrops of 0.5% levofloxacin and 1% prednisolone acetate were applied 4 times a day for 1 week, gradually tapered and once a day after 1 month. Subconjunctival injections such as dexa were additionally administered to subjects with corneal opacity and rejection. No eye drops were applied after 2 months.
Results: Compared to the GTKO group, the GTKO+CD46 group tended to increase the corneal graft survival rate, whereas the GTKO+CD46+TBM group showed a tendency to decrease the corneal graft survival rate. In particular, in each NHPs that showed a long-term survival rate, graft survival tended to increase in individuals who received a lot of subconjunctival injection, and corneal opacity such as graft rejection was observed in the GTKO+CD46 group than in the GTKO+CD46+TBM group showed a decreasing trend. In addition, in the GTKO+CD46 group, the inflammatory response in graft tissue cells was not severe in the long-term surviving individuals.
Conclusions: Therefore, it is thought that controlling immunosuppression through eye drops with antibiotics requires subconjunctival injection or systemic immunosuppressive control rather than weak immunosuppression. Although our teams partial layer survival results hold the world's longest transplant survival record, it is necessary to develop various knock-in suitable source animals such as CD46 based on GTKO and control immunosuppression through continuous experiments and research. It is thought that this may affect transplant long-term survival.

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Korean J Transplant 2023;37 Suppl 1:S294
https://doi.org/10.4285/ATW2023.F-9079

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Small for size syndrome in adult living donor liver transplantation based on ILTS-iLDLT-LTSI 2023 consensus definition

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Background: Small for size syndrome (SFSS) is a clinical syndrome caused by a partial liver graft, that is too small to sustain the metabolic demands of the recipient. This study aims to identify the presence of SFSS and analyze its outcomes in adult patients who underwent living donor liver transplantation (LDLT).
Methods: SFSS was defined and classified as per the new ILTS-iLDLT-LTSI 2023 consensus definition. All adult patients who underwent LDLT from 2013 to 2022 were included in the study. The demographic factors, intraoperative factors, and postoperative outcomes including 90-day mortality and survival were analyzed.
Results: Out of 1,528 LDLTs done during the study period, 298 patients (19.5%) developed SFSS. The incidence of grade A, B, and C SFSS were 58.4%, 39.6%, and 2%, respectively. All grades of SFSS patients had a mean graft-to-recipient weight ratio (GRWR) of >0.8 in our cohort. Sepsis and rejection were significantly higher in grade C SFSS patients. The 90-day mortality rate among the three grades were 4.02%, 15.25%, and 16.6%, respectively which was statistically significant (P=0.002). The 1-year survival was 93.68%, 84.75%, and 83.3% among the three grades, respectively.
Conclusions: To conclude, grade C patients were associated with poorer outcomes and GRWR did not predict the occurrence of SFSS in our patient cohort.

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Korean J Transplant 2023;37 Suppl 1:S295
https://doi.org/10.4285/ATW2023.F-9080

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Protective effect of cyanidin-3-O-glucoside against tacrolimus-induced pancreatic beta cell dysfunction

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Background: Tacrolimus (FK506) induces pancreatic cell dysfunction, causing new-onset diabetes mellitus (NODM) after transplantation. Cyanidin-3-O-glucoside (C3G), a major anthocyanin found in the extract of Chinese bayberry has powerful antioxidant capacity. Here, we investigated the protective role of C3G on FK506-induced pancreatic beta cell dysfunction.
Methods: In this study, INS-1 cell cultured with or without C3G were treated with FK506. The INS-1 cell were used, and treated with FK506 and C3G for 24-hour duration. INS-1 cell was assayed to determine C3G effect on cell viability and function, reactive oxygen species (ROS), oxidative stress, apoptosis, and the presence of inflammatory as well as autophagic markers.
Results: C3G treatment of INS-1 cell exposed to FK506 increased cell viability, beta cell secretory function and further alleviate cell apoptosis. A reduction in MDA and an increase in HO-1 gene expression as well as in vitro function were also observed in C3G-treated INS-1 cell exposed to FK506. Additionally, treatment with C3G resulted in a significant reduction in the gene expression of inflammatory markers IL-1 beta and TNF-a as well as an increase in LC3 autophagic marker in INS-1 cell treated with FK506.
Conclusions: C3G appears to have a protective effect on INS-1 cell against FK506 *in vitro*, possibly through its anti-oxidant property and alteration of inflammatory pathways.

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Korean J Transplant 2023;37 Suppl 1:S296
https://doi.org/10.4285/ATW2023.F-9085

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Cohort profile: Study of Musculoskeletal Health in Renal Transplant (SMART): a prospective cohort study

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Renal transplant recipients often encounter musculoskeletal challenges such as osteoporosis and sarcopenia, which are linked to prolonged glucocorticoid use, physical inactivity, underlying medical conditions, and hormonal imbalances. Despite the evident impact of these issues on posttransplant outcomes, comprehensive studies investigating musculoskeletal health among renal transplant recipients are lacking. To address this gap, we have initiated the Study of Musculoskeletal Health in Renal Transplant (SMART) cohort. The SMART cohort aims to prospectively assess the longitudinal changes in various aspects of musculoskeletal health following renal transplantation. This involves assessing body composition through computed tomography, dual-energy X-ray absorptiometry, and bioimpedance analysis. Additionally, we will measure bone mineral density and muscle function using hand grip strength, 4-meter gait speed, jump power, and chair rise test. We will also evaluate participants quality of life and biochemical parameters. A total of 401 renal transplant recipient participated in the SMART cohort at baseline from September 2020 to July 2023. Among them, 330 received transplants from living donors, while 71 received transplants from deceased donors. The cohorts average age was 50.5 years, with females comprising 42.6% of the participants. The SMART cohort boasts comprehensive muscle function assessments, quantifiable imaging datasets, and detailed information regarding immunosuppression. This initiative will provide valuable longitudinal data on musculoskeletal health in renal transplant recipients.

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Korean J Transplant 2023;37 Suppl 1:S297
https://doi.org/10.4285/ATW2023.F-9088

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Disparities in heart transplantation allocation and outcomes by blood type in Korea (2010-2022)

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Background: Heart transplantation, a pivotal therapeutic modality for end-stage heart disease, is influenced by the recipient's blood type in organ allocation. We investigated the role of recipient blood type on donor matching, wait times, and survival outcomes in Korea between 2010 and 2022.
Methods: In this retrospective cohort study, we examined 1,745 heart transplant recipients classified by blood types: A (n=631), B (n=488), AB (n=256), and O (n=370). Parameters studied encompassed donor and recipient ages, donor blood type compatibility, organ type, emergency status, waiting periods, and survival rates up to 1-year posttransplant.
Results: Blood type O recipients waited the longest (median, 110 days), with an average of 205±514 days. Remarkably, type A and O recipients predominantly received organs from donors of matching blood types (79.5% and 100%, respectively). Gender distribution was consistent across blood types, with the majority (>96%) undergoing heart-only transplants. One-year posttransplant survival rates were comparable across the groups, exceeding 80%.
Conclusions: From 2010 to 2022, heart transplantation allocation in Korea exhibited distinct disparities among blood types. The prevalent system, heavily reliant on precise blood type matches, extended waiting times, especially for type O recipients. Despite these imbalances in organ allocation, posttransplant survival remained high across all blood groups. Reassessing the allocation criteria is crucial to ensure equitable organ distribution.

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Korean J Transplant 2023;37 Suppl 1:S298
https://doi.org/10.4285/ATW2023.F-9091

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The impact of regional allocation policy on heart transplantation outcomes in Korea: 2010–2022

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Background: In Korea, a regional prioritization system for heart transplantation was implemented in 2018. Given Koreas compact geographic size, we assessed the relevance of geographic distance versus patient severity on heart transplantation outcomes.

Methods: We retrospectively reviewed 1,740 heart transplant recipients between 2010 and 2022, stratified into three regions: area 1 (n=1,527), area 2 (n=16), and area 3 (n=197). The focus was on wait times, patient severity at the time of transplantation, and posttransplant survival rates.

Results: Area 1, despite housing the majority of transplant centers, had patients enduring prolonged waiting times (mean±standard deviation [SD], 219±515 days) compared to area 2 (mean±SD, 102±140 days) and area 3 (mean±SD, 140±341 days). Area 3 observed an increase in transplant centers, even with traditionally fewer facilities. Area 2 demonstrated lowered survival rates at all time points, with 1-month survival at 75% and 1-year survival at 62.5%. Intriguingly, cross-regional transplants, termed mismatch, showed enhanced survival rates (87.6%) when juxtaposed with within-region transplants (82.7%).

Conclusions: The findings indicate that in a geographically compact country like Korea, the distance to a transplant center might not be as critical as the severity of the patient's condition. Despite the regional allocation intent, patients in transplant-dense regions experienced longer wait times. Prioritizing transplantation based on patient severity, rather than geographic proximity, could be a more effective approach for better patient outcomes.

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Korean J Transplant 2023;37 Suppl 1:S299
https://doi.org/10.4285/ATW2023.F-9096

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Analysis of characteristics of deceased patients during the wait for deceased donor kidney transplantation: a study focused on a university hospital

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Background: Due to the aging population and the increasing prevalence of chronic diseases, the incidence of end-stage renal disease (ESRD) has been rapidly rising in recent times. On the other hand, the organ donation rate from deceased donor in Korea is very low. In contrast, the number of patients awaiting deceased donor kidney transplants (DDKT) has been steadily increasing, leading to a continuous rise in the waiting period for transplants. Patient with ESRD, in cases where there are no living donors, undergo alternative renal replacement therapies such as hemodialysis or peritoneal dialysis while awaiting DDKT. It is known that as the waiting period extends, the mortality rate tends to increase. Therefore, this study aims to analyze the characteristics of patients who died during the waiting for DDKT in a university hospital. The goal is to identify high-risk groups among patients awaiting DDKT and utilize the findings as foundational data to establish a systematic management system.
Methods: This study is a retrospective analysis of the characteristics of patients who died during the wait for DDKT. From January 2000 to December 2022, among 577 patients who died while on the waiting list for DDKT in a university hospital, one patient registered before the implementation of electronic medical records, one patient with challenging access to previous medical records, and 78 patients with multi-organ registrations were excluded. Thus, the characteristics of a total of 498 patients were analyzed. Data analysis was conducted using the SPSS ver. 26, and general characteristics as well as clinical features were analyzed using descriptive statistics.
Results: The average age of 498 patients was 59.71±11.394 years old. Among them, 184 patients (36.9%) were aged 65 years and above, with males accounting for 65.1% and females for 34.9%. The average body mass index was 22.79±3.58 kg/m^2. The mean duration of dialysis was 94.91±90.93 months, and the average waiting period for DDKT was 131.71±87.56 months. Patients with previous kidney transplantation experience constituted 22.3%. Hemodialysis was the predominant dialysis type at 78.6%. The leading underlying causes of ESRD were diabetes (41.4%) and hypertension (15.9%). The most common comorbidities were hypertension (85.1%), diabetes (51%), and cardiovascular diseases (31.3%). Causes of death included undetermined (74.7%), infection (8.8%), diabetic complications (4.6%), malignancy (4.6%), cerebrovascular disease (3.8%), and others (3.6%).
Conclusions: This study, analyzing characteristics of patients who died during awaiting DDKT in a university hospital, did not confirm statistical significance among the mortality, underlying diseases, comorbidities, and causes of death. However, prevalent underlying diseases for deceased patients were diabetes and hypertension, with common comorbidities being hypertension, diabetes, and cardiovascular diseases. Causes of death included infection, diabetic complications, malignancy, cerebrovascular disease, and cardiovascular conditions. Based on these findings, the aim is to establish a systematic management system for identifying high-risk groups in DDKT waiting registrations.

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Korean J Transplant 2023;37 Suppl 1:S300
https://doi.org/10.4285/ATW2023.F-9098

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Analysis of transplantation status of zero human leukocyte antigen mismatch for 10 years

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Background: While the total case number of organ donations from patients with brain death has not increased significantly since a total of 573 cases of donations were reported in 2016, the average waiting time prior to transplantation has continued to prolong due to multiple factors, including extended life expectancy in old adults' population. As of the end of February 2021, there are a total of 27,096 patients on waiting list for a kidney transplant, and the average waiting time for a patient to undergo a kidney transplant obtained from patients with brain death has doubled from 3.07 in 2010 to 6.08 in 2020 over 10 years. In order to resolve the difficulties in managing patients waiting for organ donation as the average waiting time has extended, it is imperative to figure out ways to improve the discovery of donors for transplantation, but also to revisit the criteria for organ distribution, rightful determination, and efficiency, which has been decided among the Korean Association of Organ Transplant Coordinators after multiple meetings in efforts to resolve the problem. Therefore, we decided to conduct to this study. Currently, patients waiting for kidney transplant surgery are assigned based on a transplant waiting time, same blood type, same region originated, and human leukocyte antigen (HLA) zero antigen-level mismatch (Ag MM) score. Firstly, the study team analyzed the current status of HLA Ag MM patient benefit rates by comparing the number of transplant patients who received HLA zero Ag MM over the past 10 years with the total number of transplantees. Secondly, we explored the effects of extended transplant waiting time. Lastly, this study intended to provide basic data for comparative analysis of the distribution standards of HLA zero Ag MM.

Methods: We analyzed retrospective data received from the Korean Network for Organ Sharing statistical yearbook and statistics team, and the ratio of the annual number of HLA zero Ag MM recipients and the total number of deceased kidney transplant recipients over the past 10 years was calculated.

Results: As a result of this study, the total number of kidney transplants for patients with brain death increased from 491 in 2010 to 677 in 2022, and the biggest number of kidney transplants for patients with brain death was performed in 2016 at 1,059 cases. As a result of analyzing the number and ratio of kidney transplants performed with zero Ag MM among the number of kidney transplants from patient with brain death, the number of kidney transplants performed with zero Ag MM has more than doubled from 22 cases (4.5%) in 2010. The most cases were confirmed at 72 (10.6%) in 2022, and 82 (11.0%) in 2021.

Conclusions: Since the waiting time for patients to undergo a kidney transplant is getting longer, the number of zero HLA mismatch kidney transplants has increased, as shown in the study results. Therefore, based on the results of this study, we suggest that scientific evidence and ethical evaluation are warranted to determine the priority of zero HLA mismatch compared to the waiting time, utilizing current kidney transplant distribution criteria for patients with brain death, along with the increased causes.

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Korean J Transplant 2023;37 Suppl 1:S301
https://doi.org/10.4285/ATW2023.F-9107

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Impacts of monthly arteriovenous fistula flow surveillance on hemodialysis access thrombosis and loss

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Background: Arteriovenous fistula flow dysfunction is the main cause of vascular access thrombosis and loss in hemodialysis patients. However, data on the influence of access flow rate measurement on the long-term outcomes of access are limited. The aim of this study was to identify access at a high risk of thrombosis and loss among hemodialysis patients by measuring access flow rate and to explore an optimal threshold value for predicting the future access thrombosis.
Methods: We enrolled 220 hemodialysis patients with arteriovenous fistula. The primary outcome was the occurrence of access thrombosis. Access flow rates were measured monthly with ultrasound dilution method and averaged using all measurements in patients with patent access.
Results: In patients experienced access thrombosis, those immediately before the thrombosis were selected. Using these, the threshold of access flow rate for the occurrence of thrombosis was calculated by the analysis of the receiver operating characteristic curve, and the patients were divided into two groups according to access flow rates higher or lower than 400 mL/min. During the median follow-up of 3.1 years, 4,510 access flow were measured (median measurements per patient, 33 times; interquartile range, 11–54 times). Sixty-five access thromboses and 19 abandonments occurred. When the occurrence of access thrombosis and loss were compared between the two groups, the low flow group had increased access thrombosis and loss than the high flow group.
Conclusions: This study showed that low access flow rates detected is strongly associated with the occurrence of thrombosis and subsequent loss of arteriovenous fistula in hemodialysis patients.

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Korean J Transplant 2023;37 Suppl 1:S302
https://doi.org/10.4285/ATW2023.F-9110

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Introduction of minimal invasive living donor liver transplantation: hybrid cases and totally laparoscopic living donor liver transplantation with partial clamping of the inferior vena cava

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As minimal invasive surgery is increasingly performed in liver surgery, the procedure is starting to expand throughout the leading centers. Until now our center performed two hybrid cases with laparoscopic explant hepatectomy combined with implantation using upper midline incision and three cases of totally laparoscopic living donor liver transplantation. Among the three cases, the second case was converted to open surgery. The laparoscopic explant hepatectomy was performed with the patient in French position and the usual trocar insertion. Clamping of the portal vein was delayed to the last step for minimizing bowel congestion. After mobilization of most of the liver, portal vein was clamped, and hepatic vein was ligated using laparoscopic stapler. Inferior vena cava was partially clamped using aortic clamp inserted through the epigastric incision. Hepatic vein, portal vein, hepatic artery, and bile duct anastomosis was performed with the usual method mimicking open procedure. The total operation time of the first two hybrid cases were 279 and 312 minutes, respectively. The total operation time of the three totally laparoscopic living donor liver transplantations were 315 minutes, 455 minutes, and 595 minutes, respectively. All the recipients were discharged without delay in the usual posttransplantation course.

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Korean J Transplant 2023;37 Suppl 1:S303
https://doi.org/10.4285/ATW2023.F-9125

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Desensitization of a highly sensitized lung transplant recipient immediately after childbirth with a history of multiple births: a case report

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Sensitization to human leukocyte antigen (HLA) is a significant obstacle to successful lung transplantation. If irreversible diffuse lung damage occurs due to acute respiratory distress syndrome (ARDS) caused by acute infection, there are many limitations to having the opportunity for lung transplantation. We report a case in which a lung transplant was successfully performed on a highly sensitized patient with coronavirus disease 2019 (COVID-19) infection during the peripartum period. A 39-year-old woman was admitted with severe ARDS caused by COVID-19 infection. Based on the patient's medical records, she had no diagnosed diseases. However, it is noteworthy that the patient had given birth three times and delivered her fourth child 2 days before admission. Despite receiving invasive mechanical ventilation, her oxygenation rapidly deteriorated. Venous-venous extracorporeal membrane oxygenation (ECMO) was initiated on the 7th day of hospitalization. The patient's condition continued to worsen, and on the 28 day of hospitalization, chest computed tomography (CT) confirmed irreversible changes marked by numerous air cysts, which necessitated lung transplantation. Before lung transplant, the patient exhibited high levels of mean fluorescence intensity (MFI) in anti-human leukocyte antigen (HLA) testing (Class I: MFI 25,738, calculated panel-reactive antibody [cPRA] 100%; Class II: MFI 1,581, cPRA 0%), likely due to multiparity. A bilateral lung transplant was performed on the 72nd day of ECMO application, using a desensitization protocol involving perioperative plasma exchange without basiliximab induction, followed by five plasma exchange sessions. Intravenous immunoglobulin was not administered due to pneumonia recurrence while waiting for a transplant. ECMO was successfully discontinued immediately after the lung transplant. The patient was discharged on the 108th day (postoperative day 29) with no hypoxia in room air and could return to normal daily activities after 3 months.

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Korean J Transplant 2023;37 Suppl 1:S304
https://doi.org/10.4285/ATW2023.F-9135

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

The significance of non-HLA autoantibodies as a biomarker of chronic lung allograft dysfunction in lung transplantation

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Background: Lung transplantation generally shows poor outcomes compared to other solid organ transplantations. Chronic lung allograft dysfunction (CLAD) is the most crucial factor related to such dismal outcomes. While the role of non-human leukocyte antigen (HLA) antibodies in kidney or liver transplantation is well established, little is known in lung transplantation. This study aims to evaluate the role of non-HLA autoantibodies in the prediction of CLAD in lung transplantation recipients.
Methods: Among 58 patients who received lung transplantation at Samsung Medical Center from 2016 to 2021, 44 sera from 22 patients who survived more than 1 year after lung transplantation were included in the exploration study using Luminex bead array tests detecting 39 non-HLA autoantibodies and anti-angiotensin type 1 receptor (AT1R) antibody enzyme-linked immunosorbent assay (ELISA) test. Further verification study, sera of non-CLAD patients and CLAD patients from the Korean Organ Transplantation Registry were subjected to single ELISA for selected target autoantibodies.
Results: Among 22 patients who survived more than 1 year after the first lung transplantation, there were 18 non-CLAD and 4 CLAD patients according to the latest International Society for Heart and Lung Transplantation (ISHLT) CLAD definition. In the exploration study, three autoantibodies were significant as predictors of CLAD; pretransplant PLA2R (P=0.013), posttransplant IFIH1 (MDA-5; P=0.01), and posttransplant TNFA (P=0.01). AT1R and tubulin antibodies were not significant in either pretransplant or posttransplant sera in the exploration study. To confirm the association between candidate autoantibodies and CLAD, confirmative ELISA tests with a larger number of sera are on the way.
Conclusions: The presence of non-HLA autoantibodies in the pre- and posttransplant period might serve as promising biomarkers of CLAD; however, further studies with large prospective cohort would be warranted for the practical application of each biomarker.

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Korean J Transplant 2023;37 Suppl 1:S305
https://doi.org/10.4285/ATW2023.F-9149

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Super-fast-track discharge of liver transplant recipients

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Infectious complications are the leading cause of morbidity and mortality after liver transplantation (LT) in our region, especially hospital-borne infections. Furthermore, a lack of medical insurance adds a tremendous financial burden when these patients stay is prolonged for the management of multiple complications. Enhanced recovery after surgery has enabled fast-track LT at many centers around the world. We, therefore, changed our transplant protocols for selected patients and applied a super-fast-track pathway (preoperation to discharge). Our patients were discharged at 5.5±1.6 days after LT on average. All are alive, are receiving regular follow-up, and have not experienced any complications until the time of writing this report. We therefore briefly present our super-fast-track discharge protocol. Nine blood group-compatible liver transplants were done between October 2021 and August 2022. Among them, three were living-donor LT and six were deceased-donor LT.

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Korean J Transplant 2023;37 Suppl 1:S306
https://doi.org/10.4285/ATW2023.F-9150

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Short-term outcomes of ABO-incompatible kidney transplantation at Cho Ray Hospital

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Background: Despite many efforts to promote kidney donation from deceased donors, most kidney transplants in Vietnam are performed from living donors; furthermore, ABO blood group incompatibility (ABOi) remains a crucial barrier. We started performing ABOi kidney transplants (ABOi KT) in December 2021. This study evaluates the results of ABOi KT cases at Cho Ray Hospital.
Methods: In a case study, patients underwent ABOi KT from living donors. The desensitization protocol included rituximab followed by plasmapheresis. Immunosuppression was undertaken using tacrolimus, mycophenolate mofetil, and prednisolone. All patients received basiliximab for induction therapy.
Results: From December 2021 to March 2023, three male patients received ABOi kidney transplantation. Transplantation was performed at antibody titers ≤1:16. The patient attended two to four plasmapheresis sessions before transplantation. Graft survival was 100%, with normal kidney function, no rejection, and complications.
Conclusions: ABOi KT will significantly expand the living donor pool and offer hope to many end-stage renal disease patients without ABO-compatible donors. However, the high cost and risk of acute rejection and infection remain a significant concern.

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Korean J Transplant 2023;37 Suppl 1:S307
https://doi.org/10.4285/ATW2023.F-9157

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Anesthetic conundrum of a patient with atrial fibrillation, heart failure and peripheral vascular disease for kidney transplantation

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End stage renal disease (ESRD) patients commonly have multisystem comorbidities. Intraoperative anesthetic challenge arises in providing adequate renal perfusion and maintaining good cardiac function. A case of 63-year-old male with atrial fibrillation, peripheral vascular disease, heart failure status postoperation 3 vessel angioplasty and ESRD secondary to diabetic nephropathy presented for kidney transplantation, living nonrelated donor (KT-LNRD). Patient experienced atrial fibrillation (AF) in rapid ventricular rate (RVR) post anesthesia induction. Amiodarone was given but vital signs were nonoptimal thus the procedure was aborted. Reassessment and optimization were done. After 3 days, the patient was rescheduled for KT still on AF in RVR, Digoxin was given. Noninvasive hemodynamic estimated continuous cardiac output (esCCO) and central venous pressure (CVP) were utilized for monitoring. Upon induction, hypotension occurred and dobutamine and norepinephrine was started and titrated to acceptable blood pressure. Remifentanil and Sevoflurane were used for anesthesia maintenance. Intraoperative findings showed calcified right internal iliac up to common iliac and distal aorta thus they proceeded with incision on the left iliac fossa. Immediate graft function was noted after reperfusion. Patient was hemodynamically stable for the rest of the procedure. No further incidence of AF in RVR during the rest of hospital stay. Detailed monitoring of a patient's vital signs is essential for the safety of every surgery. It is important to identify and manage factors that may trigger AF in RVR such as surgical stress, electrolyte abnormalities, pain, hypoglycemia, anemia, hypoxia, hypervolemia and intraoperative hypovolemia. To achieve this, anesthesiologists should maintain adequate anesthetic depth, adequate pain control, acceptable blood sugar, and adequate fluid management.

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Korean J Transplant 2023;37 Suppl 1:S308
https://doi.org/10.4285/ATW2023.F-9171

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Early graft function using predicted donor renal cortical volume with CT image analysis

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Background: Recent improvements in image analysis technology have contributed to more accurate diagnosis and treatment in medicine. We performed image analysis of the donor kidney and correlated the results with the recipient's postoperative renal function.
Methods: This single center, backward looking cohort observational study evaluated 160 pairs of donors and recipients who underwent living donor renal transplantation from April 2020 to December 2021. Percentages were derived from a combination of four donor factors (renal volume and renal cortical volume analyzed using a Volume Analyzer based on computed tomography images, and actual excised kidney weight) and five recipient factors (preoperative weight, ideal weight, height, body surface area, and body mass index). The correlation between the percentage and the serum creatinine of the recipient at 1 month postoperatively was analyzed and a predictive model of serum creatinine was created by multiple regression analysis.
Results: The correlation coefficients between the percentages obtained from the donor and recipient factors, respectively, and the recipients serum creatinine are shown in the figure. Recipients' serum creatinine correlated more strongly with the renal volume calculated by the analysis than with the actual kidney weight extracted, and even more strongly with the volume of the renal cortex alone. In addition, preoperative body weight was found to be most representative of the recipients reflux volume. The equation for predicting serum creatinine at 1 month postoperatively for the recipient, calculated by multiple regression analysis using the percentage of analyzed renal cortical volume and recipient body weight, was as follows.
Conclusions: Using the renal cortical volume analyzed from the image analysis, we successfully calculated the recipients predicted postoperative renal function at 1 month postoperatively. This result can be used to make decisions in the case of multiple donors, and if the postoperative renal function differs significantly from the predicted value, it can be used as a basis for suspecting some kind of graft trouble.

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Korean J Transplant 2023;37 Suppl 1:S309
https://doi.org/10.4285/ATW2023.F-9180

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Fusarium infection in a lung transplant patient and a simultaneous heart-kidney transplant patient

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Fusarium spp. constitute a genus of filamentous fungi found ubiquitously in the environment. Occasionally, they can lead to invasive fungal infections in immunocompromised individuals. Despite the high mortality rate associated with invasive fusariosis, no well-established treatment protocol exists. There are only a limited number of case reports in Korea. This study presents two recent cases of Fusarium lung infections occurring in a simultaneous heart-kidney transplant recipient and a lung transplant recipient at Pusan National University Yangsan Hospital. Case 1. A 64-year-old man with idiopathic pulmonary fibrosis received lung transplantation in February 2023. The patient received empirical voriconazole prophylaxis for 3 months. Following a bronchoscopy conducted at the 3-month posttransplantation follow-up, Fusarium spp. was detected in bronchial washing. Two nodules with reversed halo signs were observed in the right upper lobe in the chest computed tomography, suggesting invasive fungal infection. Subsequently, the patient-initiated amphotericin B treatment, and the target level of tacrolimus was also downwardly adjusted. The patient developed acute kidney injury, so from amphotericin to posaconazole was changed and he was discharged without complications. Case 2 was a 64-year-old man with a medical history of heart failure, coronary artery occlusive disease, and autosomal-dominant polycystic kidney disease. He underwent a simultaneous heart-kidney transplant in April 2023. In a chest computed tomography scan performed 1 month after transplantation, multiple nodules of variable size were observed in both lungs. Invasive fungal infection was suspected, and voriconazole treatment was started. After using voriconazole for 7 days, variable-sized nodules and patchy ground-glass opacity in both lungs increased, and cavitary lesions in the left lower lobe worsened. Fusarium spp. was identified in the sputum culture test and replaced with amphotericin B. Unfortunately, he developed pneumonia, septic shock, and eventually expired. Since fusarium can cause serious infections that can lead to death in immunocompromised patients, early detection and appropriate treatment are necessary, and antifungal drugs should be discussed.

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Korean J Transplant 2023;37 Suppl 1:S310
https://doi.org/10.4285/ATW2023.F-9195

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Current status and characteristics of lung transplantation for elderly people in Korea: analysis of Korean Network for Organ Sharing Data

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Background: The incidence and prevalence of end-stage lung disease are increasing with age. Accordingly, the number of lung transplants for patients over 65 years of age is increasing worldwide. This study aims to determine the current status of lung transplantation in elderly patients in Korea.
Methods: We conducted a retrospective analysis of transplant candidates and transplant patients registered in Korean Network for Organ Sharing between March 2010 and August 2023. The patients were analyzed in two groups: <65 and 65 years old.
Results: During the study period, there were 2,574 patients registered for lung transplantation, of whom 511 were elderly. In the registered elderly patients, 68.5% had idiopathic pulmonary fibrosis (group C), 26.6% had acute respiratory distress syndrome and other interstitial lung diseases (group D), 4.3% had chronic obstructive pulmonary disease (group A), and 0.6% had primary pulmonary hypertension (group B). Among the elderly patients on waitlist, 188 (36.8%) received lung transplantation. Median survival in lung transplant recipients aged 65 years was 30.2 months (95% confidence interval [CI], 6.93–53.47 months). The 1-year and 3-year posttransplant mortality rate was 40.6% and 62.7% which were significantly higher than in the non-elderly transplantation (1-year: 40.6% vs. 28.4%, P=0.002; 3-year: 62.7% vs. 48.5%, P=0.003). In the multivariate COX regression analysis, age 65 years (hazard ratio [HR], 1.49; P=0.004), and high urgent status at registration (HR, 1.83; P<0.001) were significantly associated with 1-year posttransplant mortality. In a subgroup analysis of patients over 65 years of age, high urgent status at registration (HR, 2.04; P=0.006) was also a major risk factor for 1-year posttransplant mortality.
Conclusions: Age over 65 years significantly affects 1- and 3-year survival after lung transplantation. High urgent status at registration is an important factor affecting the survival of elderly lung transplant patients.

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Korean J Transplant 2023;37 Suppl 1:S311
https://doi.org/10.4285/ATW2023.F-9210

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Introducing free software for liver volumetry

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We introduce free downloadable software for semi-automated hepatic volumetry running on 5 mm computed tomography (CT) images. The precise URL will be open at presentation. The overall procedure for liver volumetry is illustrated in figure. First, the initial liver outline is detected through the sequential applications of seeded region growing onto level-set speed images. Malladis level-set method is adopted for liver segmentation based on the initially detected liver contour. The level-set speed function is formed by combining the curvature speed component, inversely proportional to the curvature of the zero level-set curve, with the propagation speed component. The zero level-set curve moves proportionally to the propagation speed. The curvature speed term regularizes the zero level-set curve by smoothing the high curvature region. Then, a rolling ball algorithm and the removal of false positives are performed to enhance the liver boundary more accurately. Secondly, liver vessel is identified by interactive thresholding with optimization of a lower limit to include the vessels identified on axial CT scans as much as possible while excluding the parenchyma. Finally, the operator can repeatedly define a resection line dividing the liver into the target volume (e.g., right or left hemiliver) and the remnant. When resection lines are drawn on at least two slices, all resection lines on slices in between can be computed utilizing the interpolation technique, and the control points of cubic Hermite spline curve are generated in the slice-by-slice manner. And the operator can modify control points for the resection lines in details in order that the target liver can be accurately divided from the rest part of the liver.

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Korean J Transplant 2023;37 Suppl 1:S312
https://doi.org/10.4285/ATW2023.F-9228

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Association of reduced bladder capacity in the incidence of complicated urinary tract infection in kidney transplant recipients

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Background: End stage renal disease (ESRD) patients are prone to have decreased bladder capacity. Loss of physiological distention of the bladder results in reduction of its capacity. Poorly compliant bladder may result in increased incidence of urinary tract infection (UTI). The study aims to determine the incidence of UTI in kidney transplant recipients with reduced bladder capacity. Furthermore, the study aims to provide insight into the preoperative evaluation of kidney transplant recipients and decision to stenting.

Methods: A retrospective cohort study wherein patients who underwent kidney transplantation in National Kidney and Transplant Institute from January 1 to December 31, 2022 was conducted. Patients were classified into reduced bladder capacity group (RB) and normal bladder capacity group (NB). Patients who developed UTI in their first 3 months of transplantation were identified from each group. From the group with UTIs, patients with stents and with no stents were identified. Descriptive and inferential statistics were used utilizing Microsoft Excel statistical function. The statistical analysis used was chi-square test. Significance levels were defined as P-values less than 0.05.

Results: Of 314 kidney transplants performed, 245 recipients were included. One hundred twenty-three recipients were determined to have normal bladder capacity and 61 patients have a reduced bladder capacity. Incidence of UTI during the first 3 months of transplantation in NB group is 40% (49/123), while for RB group, incidence is 33% (20/ 61), P=0.222. However, the difference is nonsignificant. Regarding stent placement, five patients were stented in the NB group. Of those, 20% (1/5) developed UTI. In the RB group, 22 patients were stented, 27% (6/22) developed UTI. The incidence of UTI in stented patients in the NB and RB group is not statistically significant (P=0.128).

Conclusions: Successful kidney transplantation can be achieved in patients with reduced bladder capacity. The incidence of UTI between the NB and RB group is comparable. The need for preoperative bladder expansion can be elective and can be deemed unnecessary.

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Korean J Transplant 2023;37 Suppl 1:S313
https://doi.org/10.4285/ATW2023.F-9253

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Surgical outcomes of laparoscopic donor hepatectomy performed by fellowship-trained surgeons: a comparative study with the expert surgeon

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Background: Implementation of laparoscopic donor hepatectomy (LDH) is still limited to the experienced surgeons. In 2019, Seoul guideline recommends that LDH should be performed by surgeons with expertise in open and laparoscopic liver resection and living donor liver transplantation (LDLT). However, our fellowship-trained surgeons (FTs) achieved to perform LDH independently by a proctored training through cognitive task analysis. The aim of our study is to compare the surgical outcomes of donor and recipient who underwent LDH and LDLT, respectively, performed by between the expert and two FTs, and to evaluate safety of LDH conducted by surgeons without the previous experience of open donor hepatectomy.
Methods: From December 2016 to December 2022, a total of 393 LDLTs for LDHs, performed by single expert (n=357) and two FT (n=33) surgeons, were included in the study. We compared 90-day surgical outcome of donor and recipient between the expert and FT groups.
Results: There was no open conversion of LDH in expert and FT group. Operation time of LDH in FT group was significantly longer than the expert (227 min vs. 382 min; P<0.001). In the donor cohort, there was no significant differences in major complication (grade III) rate between the expert versus FT groups (4.2% vs. 2.8%; P=0.260). In the recipient cohort, there was significant differences of hepatic vein complication (1.4% vs. 8.3%; P=0.029) and bile leakage (10.6% vs. 25%; P=0.026).
Conclusions: Cognitive task analysis of laparoscopic liver resection was beneficial for FTs to understand and perform complex procedure of LDH. With specific proctored training, FTs could conduct LDH safely based on donors outcomes. However, further studies with more cases are necessary to confirm the safety of LDH from FTs in terms of recipient outcomes.

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Korean J Transplant 2023;37 Suppl 1:S314
https://doi.org/10.4285/ATW2023.F-9271

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Validation of novel Japanese 5-5-500 criteria in large Indian LDLT cohort: a retrospective study

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Background: Liver transplantation is a curative treatment for selected patients with hepatocellular carcinoma (HCC). However, recurrence may still happen in 20% to 30% of the transplanted recipient. The widely accepted Milan criteria are restrictive and may deny many patients who would otherwise have a chance for a cure. Also, Milans criteria do not include alpha-fetoprotein (AFP) values. Thus, the quest for a more inclusive criteria continues. The novel Japanese criteria is unique as it includes size, number, and AFP value, all of which impact long-term survival. Therefore, we aim to validate this criterion in our cohort.
Methods: We retrospectively enrolled 3,677 patients who underwent living donor liver transplants (LDLT) at our center from 2006–2022. After excluding we had 600 patients who underwent LDLT for HCC. We categorized into four groups, group 1 (Milan+, 5-5-500+; n=435), group 2 (Milan–, 5-5-500+; n=62); group 3 (Milan+, 5-5-500–; n=17); and group 4 (Milan–, 5-5-500–; n=86), respectively. Clinico-demographic data, rates of recurrence of HCC, and long-term survival after surgery were obtained from clinical records. Baseline characteristics, overall survival, recurrence-free survival, and risk factors for recurrence-free survival were analyzed.
Results: The rate of HCC recurrence was significantly higher in group 4 compared to groups 1, 2, and 3 (12.7% vs. 6.6%, 6.4%, and 5.8%). The overall 5-year survival and recurrence-free survival were significantly better in group 2 compared to other groups (log-rank; P=0.0004 and P=0.04) respectively. AFP>25, downstaging+, beyond Milan, and beyond 5-5-500 were significant independent risk factors for recurrence in the overall cohort. In addition, graft-to-recipient weight ratio <1 was significant risk factor for HCC recurrence in 5-5-500 cohort.
Conclusions: Thus, 5-5-500 criteria could increase the number of eligible LDLT candidates for transplant by 7.5% compared to Milan as in our cohort. This novel criteria may help us to expand HCC candidates with HCC who may have long-term better overall and recurrence-free survival.

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Korean J Transplant 2023;37 Suppl 1:S315
https://doi.org/10.4285/ATW2023.F-9293

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Assessing Thailand's transplantation journey: a 10-year review and future directions

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Background: Transplantation stands as the gold standard treatment for end-stage organ failure. Thailand's position in the field of transplantation remains unknown.
Methods: This study conducts a comprehensive analysis using national data spanning organ transplantation cases from 2012 to 2022 including kidney, lung, heart, and liver transplants.
Results: Our analysis revealed a significant disparity between organ distribution among recipients with various medical insurances.
Conclusions: This finding solidifies the necessity for policy improvements in Thailand's organ transplantation landscape. A critical evaluation of our capacity and readiness for organ transplants, coupled with public education, is essential to bridge these disparities and enhance our transplantation endeavors to better serve the people of Thailand.

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Korean J Transplant 2023;37 Suppl 1:S316
https://doi.org/10.4285/ATW2023.F-9296

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Visualizing kidney transplant techniques: a comparative study of open and robotic surgery

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Background: Kidney transplantation is a vital treatment for end-stage renal disease, with minimally invasive robotic and open surgical methods being two primary approaches.
Methods: This study aims to enhance our understanding of the differences between minimally invasive robotic and open kidney transplant procedures, offering valuable insights into the relative advantages and disadvantages of these surgical techniques. A comprehensive literature and study review was conducted to identify representative cases of minimally invasive robotic and open kidney transplant surgeries. These cases were then meticulously illustrated to provide visual depictions of the anatomical aspects involved in each approach.
Results: The study results are encapsulated in a concise, one-page visual comparison of minimally invasive robotic and open kidney transplant procedures. This illustration emphasizes notable anatomical differences, aiding in a comprehensive understanding of the techniques.
Conclusions: Surgical illustrations, as showcased in this study, can be educational tools, particularly for surgical trainees seeking practical insights into kidney transplantation. These visuals facilitate a clearer grasp of the nuances between minimally invasive robotic and open approaches, ultimately contributing to improved surgical outcomes.

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Korean J Transplant 2023;37 Suppl 1:S317
https://doi.org/10.4285/ATW2023.F-9307

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Preoperative non-HLA antibody-based scoring system for risk stratification for antibody-mediated allograft rejection

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Background: The role of non-human leukocyte antigen (HLA) antibody on the development of antibody-mediated rejection (AMR) in kidney transplant (KT) remains unclear. We aimed to construct a non-HLA antibody-based scoring system to predict the risk of AMR before KT, effectively applicable in clinical practice.
Methods: This is a retrospective cohort study conducted using ABO-compatible KT recipient data of Seoul National University Hospital, as the development cohort, and the Korean Organ Transplantation Registry, as the validation cohort, from 2015 to 2021. Mean fluorescence intensity (MFI) titers of 39 non-HLA antibodies were measured by the Labscreen autoantibody panel using serum samples collected before KT. Outcome was biopsy-proven AMR. Multivariable-adjusted Cox proportional regression analysis was performed to select six antibodies significantly associated with AMR and to construct non-HLA antibody scoring system in the developmental cohort and then validated in the external cohort.
Results: A total of 380 KT recipients in the development cohort, 41 (10.8%) had performed donor-specific HLA antibodies and 43 (11.3%) occurred biopsy-proven AMRs. Non-HLA antibody scores consisting of PRPTN, PRKCZ, GSTT1, TNFA, Collagen I, and Collagen IV MFIs were established as antibodies that were significantly related to higher risk of AMR even after adjustment of other clinical factors including the presence of donor-specific HLA antibodies. This preoperative non-HLA antibody score was significantly associated with a higher risk of AMR (multivariable-adjusted model, hazard ratio, 2.83; 95% confidence interval, 1.25–6.41; P-value=0.012) even in the external validation cohort.
Conclusions: The newly developed preoperative non-HLA antibody scoring system may improve the risk stratification for AMR after KT. Further effort is necessary to reveal the clinically relevant non-HLA antibodies considering the substantial burden of AMR without identifiable donor-specific antibodies.

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Korean J Transplant 2023;37 Suppl 1:S318
https://doi.org/10.4285/ATW2023.F-9319

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

Human leukocyte antigen epitope definition using site-directed mutagenesis

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Recently, there have been great advances in our understanding of the nature of human leukocyte antigen (HLA) antibody binding at the epitope level. There are various tools available to facilitate this such as HLA Matchmaker, HLA epitope mismatch algorithm (HLA-EMMA), and electrostatic mismatch scoring. There are many examples where multiple amino acid residues may be responsible for antibody binding, so it is not possible to isolate the exact residue implicated due to sharing across multiple HLA antigens. An example of this is the reaction pattern positive on the single antigen bead assay only for HLA-A1 and A36 which could be due to recognition of any one of three shared polymorphic residues. To investigate this, we performed site directed mutagenesis to isolate these residues and assess the reactivity of human monoclonal antibodies (mAb) against these HLA variants using flow cytometry. With this approach we were able to identify that the binding to HLA-A1 and A36 of the human mAb VDK1D12 was specific for lysine at position 44. Additionally, using this approach we were able to define the critical binding residues for a number of HLA-DQ specific mAbs. We were able to demonstrate abrogation of binding following mutation of critical residues but importantly, we were also able to demonstrate that binding could be induced by the substitution of a critical amino acid residue to a previously non-reactive HLA allele. Site-directed mutagenesis of HLA molecules offers a reliable method for defining the amino acid residues crucial for HLA antibody recognition. This innovative technique offers a unique opportunity for us to further our understanding of HLA immunogenicity and allow for the in vitro validation of many epitopes currently listed as not antibody verified.

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Korean J Transplant 2023;37 Suppl 1:S319
https://doi.org/10.4285/ATW2023.F-10000

KJT
KOREAN JOURNAL OF TRANSPLANTATION

pISSN 2671-8790
eISSN 2671-8804

A comparative analysis of cardiopulmonary bypass and extracorporeal membrane oxygenation in lung transplantation

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Background: Cardiopulmonary bypass (CPB) and extracorporeal membrane oxygenation (ECMO) are commonly employed strategies for supporting lung transplantation, each with its own set of advantages and disadvantages. In this study, we conducted a comparative analysis of operative outcomes following lung transplantation based on the choice of cardiopulmonary support strategy.

Methods: We conducted a retrospective analysis of lung transplants performed between January 2010 and June 2023. Inclusion criteria encompassed patients who required cardiopulmonary support (conventional CPB or central ECMO) during the transplantation. Cases involving peripheral ECMO, veno-venous ECMO, heart-lung transplantation, and lung-liver transplantation were excluded from this study.

Results: Our analysis comprised 133 patients, with a mean age of 53 years, and 59% of them were male. Five patients were transitioned from ECMO to CPB due to unstable vital signs. The total operation time in the ECMO group was notably shorter than that in the CPB group (CPB vs. ECMO, 581±105 min vs. 437±80 min; P<0.001). Furthermore, the duration of cardiopulmonary support was shorter in the ECMO group (CPB vs. ECMO, 296±57 min vs. 272±60 min; P=0.027). The 30-day mortality rate was 5.3%, with no statistically significant difference between CPB and ECMO groups (CPB vs. ECMO, 2.1% vs. 7.0%; P=0.231). The quantity of red blood cell transfusions was comparable between the two groups (CPB vs. ECMO, 8.9±8.4 units vs. 8.3±7.5 units; P=0.654). However, there was a trend toward higher fresh frozen plasma transfusion in the CPB group (CPB vs. ECMO, 6.7±5.5 units vs. 4.7±6.9 units; P=0.087) and significantly more platelet transfusions in the CPB group (CPB vs. ECMO, 5.2±4.7 units vs. 1.6±5.9 units; P<0.001). Notably, 5-year survival rates showed no significant difference between the two groups (CPB vs. ECMO, 59% vs. 59%; P=0.930).

Conclusions: Central ECMO offers the advantages of shorter operation times and reduced requirements for blood transfusions compared to conventional CPB in the context of lung transplantation. These findings provide valuable insights into the selection of cardiopulmonary support strategies, potentially improving patient outcomes and resource utilization.

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Instructions for Authors

KJT
KOREAN JOURNAL OF TRANSPLANTATION
pISSN 2671-8790
eISSN 2671-8804

Recently revised March, 2023

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KJT provides the electronic backup and preservation of access to the journal content in the event the journal is no longer published by archiving in PubMed Central (https://www.ncbi.nlm.nih.gov/pmc/journals/4212/; from the 33rd volume, 2019), National Library of Korea (http://seoji.nl.go.kr/archive).

Preprint Policy
A preprint can be defined as a version of a scholarly paper that precedes formal peer review and publication in a peer reviewed scholarly journal. KJT allows authors to submit the preprint to the journal. It is not treated as duplicate submission or duplicate publication. KJT recommends authors to disclose it with DOI in the letter to the editor during the submission process. Otherwise, it may be screened from the plagiarism check program—Similarity Check (Crosscheck) or Copy Killer. Submissions of preprints to KJT will undergo the same thorough peer review process as regular submissions. This means that the submissions will be evaluated by experts in the field to ensure the quality and accuracy of the research before they are accepted for publication. If the preprint is accepted for publication, authors are recommended to update the information in the preprint with a link to the published article in KJT, including DOI at KJT. It is strongly recommended that authors cite the article in KJT instead of the preprint in their next submission to journals.

Peer Review Policy
All papers, including those invited by the editor, are subject to a rigorous peer review process. KJT has adopted a double-blind peer review policy, in which the identities of both the authors and reviewers are kept anonymous to each other throughout the review process. However, the editor managing the review process will have visibility of the authors and reviewers' identities. The Editorial Board selects reviewers based on expertise, publication history, and past reviews. During the peer review process, reviewers can interact directly or exchange information (e.g., via submission systems or email) with only an editor, which is known as "independent review." No information about the review process or editorial decision process is published on the article page.

SUBMISSION & PEER REVIEW PROCESS

Online Submission
All manuscripts should be submitted online via the journal's website (https://ekjt.org/submission) by the first or corresponding author. Once you have logged into your account, online system will lead you through the submission process in a step-by-step orderly process. Submission instructions are available on the website. In case of any trouble, please contact the editorial office (Email: journal@ekjt.org).

Screening Before Review

All papers, including those invited by the editor, are subject to peer review. KJT only publishes papers that fit its aims and scope, and adhere to the Instructions for Authors. Manuscripts that do not meet these criteria may be returned to the author immediately after submission, without undergoing the review process. Submitted manuscripts are screened for possible plagiarism or duplicate publication by Similarity Check upon arrival. The title page will remain separate from the manuscript throughout the peer review process and will not be sent to the reviewers. It is essential that authors anonymize their manuscripts by removing any identifying information, such as author names or affiliations, before submission to the journal.

Peer Review Process

After screening, a manuscript is sent to the most two relevant reviewers of the field. In addition, if deemed necessary, a review of statistics may be requested. KJT recommends peer reviewers to follow KJT Review Regulations or the COPE Ethical Guidelines for Peer Reviewers (https://publicationethics.org/resources/guidelines-new/cope-ethical-guidelines-peer-reviewers). The journal uses a double-blind peer review process: the reviewers do not know the identity of the authors, and vice versa. An initial decision will normally be made within 4 weeks of receipt of a manuscript. Revised manuscripts must indicate the alterations that have been made in response to the reviewers' comments item by item. Failure to resubmit the revised manuscript within 30 days of the editorial decision is regarded as a withdrawal. After the peer review process, the KJT Editorial Board will make the final determination on whether a manuscript is accepted for publication or not. Once a manuscript has been rejected by KJT, it will not be considered for another round of review as a new submission.

Submission by Editors

Final decisions regarding manuscript publication are made by the editor-in-chief or a designated editor who does not have any relevant conflicts of interest. In the event that an editor has a conflict of interest with a submitted manuscript or with the authors, the manuscript will be handled by one of the other editors who does not have a conflict with the review and who is not at the same institution as the submitting editor. In such circumstances, full masking of the process will be ensured so that the anonymity of the peer reviewers is maintained.

Appeals of Decisions

Any appeal against an editorial decision must be made within 2 weeks of the date of the decision letter. Authors who wish to appeal against a decision should contact the editor-in-chief, explaining in detail the reasons for the appeal. All appeals will be discussed with at least one other associate editor. If consensus cannot be reached thereby, an appeal will be discussed at a full editorial meeting. The process of handling complaints and appeals follows the guidelines of COPE available from (https://publicationethics.org/appeals). KJT does not consider second appeals.

MANUSCRIPT PREPARATION

General Requirements

The entire manuscript should be written in English. Medical terminology should be written based on the most recent edition of *Dorland's Illustrated Medical Dictionary*. The main document with manuscript text and tables should be prepared with an MS-word program.

- The manuscript for a major paper should be organized in the following order: title page, abstract, main text, references, tables, figure legends, and figures.
- The manuscript should be double-spaced on 21.6×27.9-cm (letter size) or 21.0×29.7-cm (A4) paper with 3.0-cm margins at the top, bottom, right, and left margin.
- All manuscript pages should be numbered consecutively, beginning with the abstract as page 1. Neither the authors' names nor their affiliations should appear on the manuscript pages.
- The use of acronyms and abbreviations should be kept to a minimum. Avoid abbreviations in the title of the manuscript. The spelled-out abbreviation followed by the abbreviation in parenthesis should be used on the first use.
- The names of manufacturers of equipment and non-generic drugs should be given.
- Name for microorganism is fully stated at the first appearance (e.g., *Escherichia coli*), then the abbreviation for the genus is used (**e.g.,** *E. coli*). Scientific name of species is italicized. Do not italicize if the calling of a species is not a scientific name (e.g., E. Coli, Papovaviridae, Hepadnavirus, streptococci, coagulase negative staphylococci, Epstein-Barr virus, hepatitis B virus, herpes simplex virus). Gene nomenclature is written in italics, whereas protein product of certain genes is not italicized (e.g., BCR-ABL mutations, HER2 gene, BCRABL kinase domain, HER2-positive).
- P-value from statistical testing is expressed as a uppercase "P".
- When quoting from other sources, a reference number should be cited after the author's name or at the end of the quotation.

- The title page and manuscript should be provided as separate files and the manuscript should be anonymized for double-blind peer review. Please make sure that any identifying information, such as authors' names or affiliations, is removed from your manuscript before submission. Authors should use the third person to refer to an article that the authors have previously published. Authors should make sure that figures and tables do not contain any reference to author affiliations. If the manuscript includes any identifying information, it may be returned to the author immediately after submission without review.

The preparation of manuscripts varies based on the publication type, which may include original articles, special articles, reviews, case reports, study protocols, correspondences, letters to the editor, editorials, and symposium presentations. Other types of manuscripts may be considered upon negotiation with the Editorial Board.

Cover Letters

The cover letter should inform the editor that the submitted material or any portions thereof have not been published previously or are not under consideration for publication elsewhere. It should state any potential conflict of interest that could influence the authors' interpretation of the data, such as financial support from or connections to pharmaceutical companies, political pressure from interest groups, or academically related issues. Information about posting of a preprint server and a link to the preprint also should be included.

Manuscript Type Size Limit & Format

Table 1 shows the recommended maximums of manuscripts according to publication type; however, these requirements are negotiable with the editor.

Table 1. Recommended maximums for articles submitted to KJT

Type of article	Abstract (word)	Text (word)[a)]	References	Tables & Figures
Original article	Structured, 250	3,500	30	6
Special article	200	NL	NL	NL
Review	200	6,000	200	NL
Case report	200	1,500	15	6
Study protocol	200	3,500	30	6
Editorial	-	800	10	2
Letter to the editor	-	500	5	2
Symposium presentation	-	1,500	10	2

NL, no limits.
[a)]Includes abstract and main text only.

Manuscript Types

- Original articles should present important scientific discoveries related to transplantation, rigorously tested using the scientific method, and with practical implications. Organize the manuscript in the following order: title page, abstract (including keywords), introduction, methods, results, discussion, references, tables, figure legends, and figures. Manuscripts should not exceed 3,500 words, include no more than 6 tables/figures, and reference no more than 30.
- Special articles cover topics of significant importance to the field of transplantation, such as practice guidelines or national policies. The length of the manuscript is not limited, but the author may be advised to shorten it during the review process if it is deemed excessively long.
- Review articles should provide a concise summary and critical analysis of the current literature on topics relevant to the scope of the journal. Both solicited and unsolicited reviews are welcome. The manuscript should be organized in the following sequence: title page, abstract and keywords, introduction, main text, conclusion, references, tables, figure legends, and figures. The abstract should be unstructured and no longer than 200 words. The main text, excluding references, tables, and figures, should not exceed 6,000 words, and the total number of tables and figures should not exceed 10. References should not exceed 200.
- Case reports will be published in exceptional circumstances where they illustrate a rare occurrence of clinical significance. They should address issues important to medical researchers and preferably include helpful illustrations. The manuscript should include a title page, abstract with keywords, main text (introduction, case report, discussion), references, tables, figure legends, and figures. The unstructured abstract should be limited to 200 words, with no more than six figures or tables and no more than 15 references. Authors should follow the CARE guidelines (https://www.care-statement.org) and upload a completed checklist during initial submission. Case reports also require ethics statements which include IRB approval or waiver (including approval number) and informed consent.
- Study protocols should describe planned or ongoing research studies, and should be submitted at an early stage of the study. Protocols reporting completed data will not be considered. It is recommended that authors follow standard reporting formats such as SPIRIT and PRISMA. For more information, visit the EQUATOR Network website (https://www.equator-network.org/).

- Letters to the editor come in two types. The first type is correspondence that may include comments on a previously published article. If the correspondence is in response to a published article in KJT, the Editor-in-Chief may invite the authors of the cited article to write a reply. The second type is a brief, definitive scientific or clinical observation that is supported by data and can be adequately conveyed in this abbreviated format. Manuscript limitations are 1,000 words, 2 tables/figures, and 5 references.
- Editorials are invited comments on a recently accepted manuscript, published subject, or event. They offer a broader perspective, balanced interpretation, and provide a link to further questions. The length of the text should not exceed 800 words. Editorials may include up to two figures, including tables, and up to 10 references.
- Symposium presentations provide a concise summary of annual meetings on topics related to transplantation, highlighting their relevance and significance to the field. The manuscript should be timely, structured with an overview that puts the meeting into context and should not be a simple account of the proceedings. The reader should be able to understand the overall impact and direction of the meeting. The manuscript should not exceed 1,500 words and should include no more than 2 tables/figures and 10 references.

Title Page

The title page should contain the manuscript's title, a list of authors with their affiliations, the name and contact information of the corresponding author, and a running title (50 characters maximum, including spaces). The corresponding author's contact information must include their name, address, and email. Any information that requires disclosure, such as funding sources, potential conflicts of interest should also be included under the "Article Information" section, which will appear at the end of the published article. Below are items that should be included under "Article Information".

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- Funding: All sources of funding applicable to the study should be stated here explicitly. All original articles, editorials, reviews, and new technology articles must state sources of funding for this study.
- Acknowledgments: All contributors who do not meet the criteria for authorship as defined above should be listed in an additional contribution section. Examples of those who might be acknowledged include a person who provided purely technical help, writing assistance, or a department chair who provided only general support. Authors should disclose whether they had any writing assistance and identify the entity that paid for this assistance.

Abstract & Keywords

Structured abstracts, labeled "Background," "Methods," "Results," and "Conclusions," should be included if applicable. For original articles, the length should be less than 250 words, while for special articles, review articles, case reports, and study protocols, the length should be less than 200 words. Abstracts are not required for editorials, letters, or symposium presentations. To be used as index terms, up to five keywords should be listed immediately after the abstract. It is strongly recommended to use keywords within the Medical Subject Headings (MeSH) in Medline (https://meshb.nlm.nih.gov/search).

Highlights

All papers must include 3-5 short sentences that provide a concise summary of the most significant findings or implications of the study. These highlights should be limited to 100 words or fewer, including spaces, and placed in the manuscript file.

Main Text

The main text of the paper may have separate Introduction, Methods, Results, and Discussion sections.

- Introduction: Concisely state the specific purpose or research objective of, or hypothesis tested by, the study or observation. Cite only directly pertinent references, and do not include data or conclusions from the work being reported.
- Methods
  - Ethical statements: All articles using clinical samples or data and those involving human/animal subjects must include information on the IRB/IACUC approval or waiver and informed consent; otherwise, manuscripts may be returned to the corresponding author for clarification. An example is shown as the following: "We conducted this study in compliance with the principles of the Declaration of Helsinki. The study's protocol was reviewed and approved by the Institutional Review Board of OO (No. OO). Written informed consent was obtained. / Informed consent was waived."
  - Study design: Whether it is a descriptive analysis, randomized controlled study, cohort study, or meta-analysis, the study design type should be provided.
  - Sex and gender reporting: Authors should ensure correct use of the terms sex (when reporting biological factors) and gender (identity, psychosocial, or cultural factors), and, unless inappropriate, report the sex and/or gender of study participants, the sex of animals or cells, and describe the methods used to determine sex and/or gender. If the study was done involving an exclusive population, for example in only one sex, authors should justify why, except in obvious cases (e.g., prostate cancer). Authors should define how they determined race or ethnicity and justify their relevance.
- Results: The results should be presented in logical sequence in the text, tables and figures, giving the main or most important findings first. Do not repeat all the data in the tables or figures in the text; emphasize or summarize only the most important observations. The results should not include material appropriate to the discussion.
- Discussion: Observations pertaining to the results of research and other related materials should be interpreted for your readers. Emphasize new and important observations; do not merely repeat the contents of the results. Explain the meaning of the observed opinion along with its limits, and within the limits of the research results connect the conclusion to the purpose of the research. In a concluding paragraph, summarize the result and its meaning.

References

When citing references in the text, use Arabic numerals in brackets (e.g., [1], [2,3], [4-6]), numbered in the order they appear in the text. In the References section, list the references in numerical order, according to their appearance in the text. If there are 6 or fewer authors, list all of their names. If there are more than 6 authors, list the first 6 followed by "et al." For articles published online but not yet assigned an issue or page numbers, include the DOI. Do not include references to unpublished material in the References section; instead, note them within the text and include the individual's name, location, and date of communication. Journal titles should be abbreviated according to the style used in Medline. For other types of references, follow the guidelines in Citing Medicine: The NLM Style Guide for Authors, Editors, and Publishers (http://www.nlm.nih.gov/citingmedicine).

- Examples of KJT references style
  - Journal articles

1. Lee S, Kim KW, Kwon HJ, Lee J, Song GW, Lee SG. Impact of the preoperative skeletal muscle index on early remnant liver regeneration in living donors after liver transplantation. Korean J Transplant 2022;36:259-66.
2. Lee-Riddle GS, Samstein B. Evaluation and management of the living donor recipient. Liver Transpl 2023 Feb 8 [Epub]. https://doi.org/10.1097/LVT.0000000000000096
3. Badal SS, Danesh FR. New insights into molecular mechanisms of diabetic kidney disease. Am J Kidney Dis 2014:63(2 Suppl 2):S63-83.

  - Books & Reports

4. Sabiston DC. Davis-Christopher's textbook of surgery. 15th ed. WB Saunders; 1997.
5. Dozois RR. Disorders of the anal canal. In: Sabiston DC, Lyerly HK, editors. Textbook of surgery: the biological basis of modern surgical practice. 15th ed. WB Saunders; 1997. p. 1032-44.
6. National Cancer Center, Ministry of Health and Welfare. Cancer facts & figures 2014 in the Republic of Korea. National Cancer Center; 2014.

  - Online sources

7. Korean Network for Organ Sharing (KONOS). 2019 Annual data report [Internet]. KONOS; 2019 [cited 2022 May 1]. Available from: http://konos.go.kr

- Dissertation

8. Kim SY. Health promotion behavior and the quality of life in liver transplant patients [master's thesis]. The Catholic University of Korea; 2009.

- Conference paper

9. Rice AS, Brooks JW. Canabinoids and pain. In: Dostorovsky JO, Carr DB, editors. Proceedings of the 10th World Congress on Pain; 2002 Aug 17-22; San Diego, CA. IASP Press; 2003. p. 437-46.
10. Health and Social Care Information Centre. National Bowel Cancer Audit Progress Report Tripartite Colorectal Meeting. Health and Social Care Information Centre; 2014.

Tables

- Tables should be numbered according to the order of appearance.
- A table title should concisely describe the content of the table so that a reader can understand the table without referring to the text.
- Each table should be clear and concise and must be placed on a separate page with their titles displayed above it.
- Explanatory matter is placed in footnotes below the tabular matter and not included in the heading. All abbreviations are explained in the footnotes.
- Footnotes should be indicated by $^{a), b), c)}$.... in superscript.
- Statistical measures such as standard deviation (SD) or standard error (SE) should be identified.
- In tables, remove internal horizontal or vertical lines. The horizontal line is only used for the title field and the bottom line.

Figures and Figure Legends

- Figures should be submitted as separate files during submission process (do not embed figures into the main body file).
- Preferred formats are TIFF for photographic, raster images, and EPS or line-arts. The following formats may be suitable in selected images: JPEG/PNG/BMP (suitable for images if the original file format is JPEG/PNG/BMP), PPTX (only for diagrams made in PowerPoint file). Contact the editorial office for other formats.
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- In the case of multiple prints bearing the same number, distinguish them by adding alphabet labeling in capital letters, such as A, B, and C (e.g., Fig. 1A).
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For specific study designs, such as randomized controlled trials, studies of diagnostic accuracy, meta-analyses, observational studies, and non-randomized studies, we strongly recommend that authors follow and stick to the reporting guidelines relevant to their specific research design. Authors should upload a completed checklist for the appropriate reporting guideline during original submission. Some reliable sources of reporting guidelines

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FINAL PREPARATION FOR PUBLICATION

Final Version

After the paper has been accepted for publication, the author(s) should submit the final version of the manuscript. The names and affiliations of the authors should be double-checked, and if the originally submitted image files were of poor resolution, higher resolution image files should be submitted at this time. Symbols (e.g., circles, triangles, squares), letters (e.g., words, abbreviations), and numbers should be large enough to be legible on reduction to the journal's column widths. All symbols must be defined in the figure caption. If references, tables, or figures are moved, added, or deleted during the revision process, renumber them to reflect such changes so that all tables, references, and figures are cited in numeric order.

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KJT
KOREAN JOURNAL OF TRANSPLANTATION
pISSN 2671-8790
eISSN 2671-8804

Manuscript Submission Checklist

General Requirements

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☐ Manuscripts should include line numbers.
☐ All pages should be numbered consecutively, starting with the abstract.

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☐ The title page and the rest of the manuscript text are prepared separately in two files (not combined together).
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☐ The acknowledgements section including financial support, conflicts of interest, and author contributions is in title page, not in the manuscript.

Abstract

☐ The abstract does not exceed 250 words (Background, Methods, Results, Conclusions) for original articles and 200 words for special articles, reviews, case reports, and study protocols. Up to 3-6 keywords are listed at the bottom of the abstract.

Main Text

☐ The manuscript is organized according to following sequence: Title page, Abstract and keywords, Main text, References, Tables, Figure legends, and Figures.

Tables and Figures

☐ All tables and figures are numbered in the order of their appearance in a main text.
☐ Tables are included at the end of the manuscript as editable text and not as images.
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As the corresponding author, I declare the following information regarding the specific conflicts of interest of authors of our aforementioned manuscript.

Examples of conflicts of interest include the following: source of funding, paid consultant to sponsor, study investigator funded by sponsor, employee of sponsor, board membership with sponsor, stockholder for mentioned product, any financial relationship to competitors of mentioned product, and others (please specify).

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