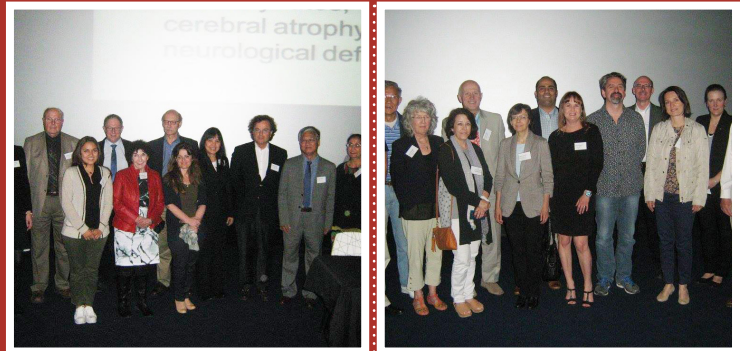


DAY 1

Keynote Forum



3rd Edition of World Congress & Exhibition on

Vascular Surgery

May 24-25, 2018 | London, UK

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Patrick Kelly, J Vasc Endovasc Therapy 2018, Volume 3
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A SINGLE CENTER EXPERIENCE REVISING PREVIOUS ABDOMINAL AND THORACIC AORTIC ANEURYSM REPAIRS WITH A VISCERAL MANIFOLD STENT GRAFT

Patrick Kelly

Sanford Health, USA



Objective: To review the clinical results of the use of investigational visceral manifold for the revision of failed abdominal and thoracic aortic aneurysm repairs.

Methods: A single center patient database was utilized to retrospectively review 25 patients who had a revision procedure using the visceral manifold stent graft system following previous abdominal or thoracic aortic aneurysm repair.

Results: Technical success was achieved in 23 out of 25 patients treated, with 89 of the intended 92 visceral vessels being successfully stented. Two in-hospital deaths were recorded. To date, no device integrity related failures have been observed.

Conclusions: Early- and mid-term results of the use of visceral manifold stent graft system suggest a potentially viable option for the revision of failed aortic aneurysm repairs. However, experience is limited and this approach needs to be studied further before widespread adoption.

Recent Publications

1. Kelly P, Lamichhane S, Anderson J, Vierhout T and Remund T (2017) Polyfluoroethylene topographies determine the adhesion, activation, and foreign giant cell formation of macrophages. *Journal of Biomedical Materials Research Part A*. 105(9):2441-2450.
2. Suess T, Anderson J, Sherman A, Remund T, Pohlson K, Mani G, Gent S and Kelly P (2017) Shear accumulation as a means for evaluating risk of thromboembolic events in novel endovascular stent graft designs. *Journal of Vascular Surgery* 65(6):1813-1819.
3. Anderson J, Lamichhane S, Vierhout T, Sherman A,

Remund T, Pohlson K, Engebretson D and Kelly P. In vitro particulate and in vivo drug retention study of a novel polyethylene oxide formulation for drug-coated balloons. *Journal of Vascular Surgery* 67(5):1537-1545.

4. Lamichhane S, Anderson J, Remund T, Sun H, Larson M, Kelly P and Mani G (2016) Responses of endothelial cells, smooth muscle cells, and platelets dependent on the surface topography of polytetrafluoroethylene. *Journal of Biomedical Materials Research Part A*. 104(9):2291-304.
5. Suess T, Gent S, Remund T and Kelly P (2015) Analysis of stent-graft design for aortic aneurysm repair using computational fluid dynamics. *Journal of Medical Devices* 9(3):030943-1

Biography

Patrick Kelly studied Civil Engineering in the University of Wyoming before attending medical school. He is a Board Certified Vascular Surgeon at Sanford Health. He has pioneered several surgeries including the first complete endovascular aortic arch aneurysm repair in the world. He works with the FDA and the Society for Vascular Surgeons on clinical trials for complex aneurysm repair and recently published a template which guides vascular surgeons through the process of applying for- and conducting-physician-sponsored investigational device studies. He is an active inventor of medical devices with over 180 issued or pending patents. Sanford Health and Medtronic, PLC entered into an exclusive worldwide licensing agreement with the intention of commercializing his technology for repairing thoracoabdominal aortic aneurysms. He has an active PS-IDE clinical trial for this device. His experience and expertise allows him to have valued insight while developing new technologies to better care for patients.

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COMPARISON OF RESULTS BETWEEN CAROTID ENDARTERECTOMY VERSUS CAROTID ARTERY STENTING USING PROPENSITY SCORE MATCHING ANALYSIS

Dong Ik Kim

Sungkyunkwan University, South Korea

Objective: Debate about carotid endarterectomy (CEA) and carotid stenting (CAS) efficacies continues despite many reports. The aim of this study was to evaluate the early outcomes and restenosis rate of CEA versus CAS using propensity score matching (PSM).

Methods: Retrospective review of database was conducted for the patients who underwent CEA or CAS between January 2002 and December 2015 at a single institute. We investigated the 30-day incidence of a major adverse clinical event (MACE; defined as stroke, transient ischemic attack, myocardial infarction or death) and procedure related complication, restenosis rate during the follow up period. PSM were used to create a balanced group of CEA and CAS patient who were matched for following factors: age, gender, hypertension, diabetes, dyslipidemia, smoking, atrial fibrillation, previous percutaneous coronary intervention or coronary artery bypass grafting, valvular heart disease, contralateral carotid occlusion, degree of carotid stenosis, and symptomatic status. Comparisons of outcomes in this matched group of patients were performed using logistic regression analysis and log rank test.

Results: Among total 1184 patients (654 CEA and 530 CAS), matched groups of 452 CEA and 452 CAS were created after PSM. Within the propensity-matched group, the CAS group was showed higher 30-day incidence of MACE (7.5% vs. 2.4%; OR [odds ratio] 3.261; 95% CI [confidence interval], 1.634-6.509; $p=0.001$) but lower incidence of procedure related complication (1.5% vs. 5.3%; OR, 0.199; CI, 0.075-0.528; $p=0.001$). The CAS group showed higher restenosis rate (1.5% vs. 1.0% at 12 months, 5.4% vs. 1.2% at 24 months; $p=0.008$) than CEA group during the mean 49.1 months follow up period (range, 1-180 months).

Conclusion: In this study based on propensity score matching analysis, CEA showed lower 30-day incidence of major adverse clinical event and restenosis rate during the follow up period than CAS for revascularization of carotid artery stenosis.

Recent Publications

1. Kyu Hyun Han and Dong Ik Kim (2016) Enhancement of angiogenic effects by hypoxia-preconditioned human umbilical cord derived mesenchymal stem cells in a mouse ischemic limb model. *Cell Biology International* 40(1):27-35.
2. Ae Kyeong Kim and Dong Ik Kim (2016) Inhibitory effects of mesenchymal stem cells in intimal hyperplasia after balloon angioplasty. *Journal of Vascular Surgery* 63(2):510-517.
3. Seon Hee Heo and Dong Ik Kim (2015) Early results of clinical application of autologous whole bone marrow stem cell transplantation for critical limb ischemia in patients with Buerger's disease. *Scientific Report* 21:19690.
4. Keun Myoung Park and Dong Ik Kim (2015) Factors affecting anatomical changes after endovascular abdominal aortic aneurysm repair. *Thoracic and Cardiovascular Surgery* 63(2):139-45.
5. Seung Won Shin, Dong Ik Kim and Soong Ho Um (2014) A fluorescence color-encoded lipid-supported polymeric particle. *Colloids and Surface B: Biointerfaces* 122:840-845.



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Biography

Dong Ik Kim is a Vascular Surgeon and currently holds the position of Chief of Vascular Surgery, Samsung Medical Center, Professor of Sungkyunkwan University School of Medicine, President of Korean Society for Diabetic Foot, Congress President of Diabetic Limb Salvage in Asia, President of Korean Society for Stem Cell Research, Chairman of the Board of Directors of Korean Society for Vascular Surgery. Also, he served as Congress President of 2015 Seoul UIP, President of Asian Venous Forum, President of Korean Society for

Phlebology and Editor-in-Chief of *International Journal of Stem Cells*. He is a member of the American College of Surgeons, Asian Society for Vascular Surgery and many of International Societies. He has been studied in the field of stem cells for angiogenesis, tissue engineering, carotid surgery and vascular malformation. He published more than 150 international articles and about 100 domestic articles. He also published six numbers of medical textbooks as a Chief Editor.

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A COMBINATION OF PENILE VENOUS STRIPPING, CORPOROPLASTY AND VARICOCELECTOMY FOR PATIENTS WITH ERECTILE DYSFUNCTION, PENILE DYSMORPHOLOGY AND VARICOCELE UNDER ACUPUNCTURE-AIDED AMBULATORY LOCAL ANESTHESIA

Geng Long Hsu

Hsu's Andrology, Taiwan

We have refined penile venous stripping, penile corporoplasty and varicocelectomy for patients with erectile dysfunction, penile dysmorphism and varicocele since 1999. From June 2010 to March 2016, a total of 128 men, aged from 28 to 68 years, consulted us with erectile dysfunction, penile deviation, and a varicocele. Among these, 87 males (the surgical group) underwent a combination of penile venous stripping, corporoplasty and varicocelectomy, while 41 were assigned to the control group without surgery. The abridged five-item version of the International Index of Erectile Function (IIEF-5), a dual cavernosography, and a life quality rating were used to assess patients. Under an acupuncture-aided pure local anesthesia on an ambulatory basis, these surgeries were performed. In the surgical group, the preoperative IIEF-5 and the life quality rating was 9.7 ± 2.1 and $26.7 \pm 3.6\%$, which was increased postoperatively to 22.6 ± 2.3 and $82.6 \pm 5.2\%$ respectively (both $p < 0.001$). Two men reported one and two children fertility postoperatively although their initial chief complaints were just impotence and penile curvature preoperatively. In the control group, the corresponding preoperative IIEF-5 and life quality rating was 9.8 ± 2.3 and $27.4 \pm 3.7\%$ respectively which changed to 8.9 ± 2.4 and $20.9 \pm 6.3\%$ respectively (latter $p < 0.01$). The difference between the two groups ($p < 0.001$) and within the group ($p < 0.01$) was significant. A satisfactory penile shape was achieved in 79 (90.8%) patients with eight men (9.0%) complaining of mild deviation of the penis ($< 10^\circ$). Cavernosogram showed an ideal milieu of the corpora cavernosa for retaining intracavernous fluid which

was particularly evidenced by significant stronger radiopacity of penile crura than that of the femoral cortex. A combination of penile venous stripping, corporoplasty and varicocelectomy provides a novel solution for restoring erectile function, penile morphologic reconstruction and fertility enhancement with negligible morbidity. Being assisted with acupuncture management outpatient basis is sustainable.

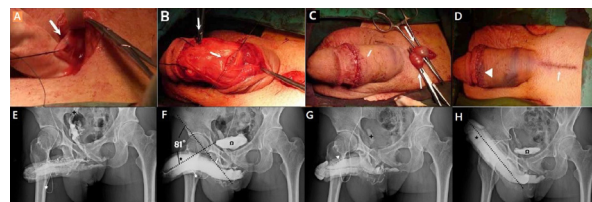


Figure 1: Photos and imaging of a combination of penile venous stripping, corporoplasty and varicocelectomy. A) A circumferential skin incision was initiated. The visibility of the deep dorsal vein could be enhanced by a milking pressure applied on the sinusoids. It was managed and likewise, the cavernosal veins were treated till the infrapubic angle. B) Either a modified Nesbit procedure or a placation was made to the excessive tunica. C) Bilateral spermatic cords were hooked out via the pubic longitudinal wound. D) Once the vascular surgery was performed, both circumferential and pubic longitudinal wounds were fashioned. E) The venous distribution provided a blueprint for penile venous stripping. F) A postoperative cavernosogram showed penile dysmorphism. G) Cavernosogram was performed immediately postoperative. H) Ideal penile morphology and ability of intracorporeal retention were reached

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Recent Publications

1. Hsu G L, Huang Y P, Tsai M H, Chang H C, Liu S P, Molodsky E and Hsu M C Y (2013) The venous drainage of the corpora cavernosa in the human penis. *Arab Journal Urology* 11: 384-391.
2. Hsu G L, Molodsky E, Liu S P, Chang H C, Hsieh C H and Hsu C Y (2013) Reconstructive surgery for idealizing penile shape and erectile functional restoration on patients with penile dysmorphism and erectile dysfunction. *Arab Journal Urology* 11:375-383.
3. Hsu G L, Hill J W, Chen H S and Huang S J (2014) Novel pilot films providing dispensable information in pharmaco-cavernosography. *Translation Andrology and Urology* 4:398-405.
4. Hsieh C H, Huang Y P, Tsai M H, Chen H S, Huang P C, Lin C W and Hsu G L (2015) Tunical outer layer plays an essential role in penile veno-occlusive mechanism evidenced from electrocautery effects to the corpora cavernosa in defrosted human cadavers. *Urology* 86:1129-1136.
5. Hsieh C H, Tai H C, Hsu G L, Chen C C and Hsu C Y (2016) Herb formula enhances treatment of impotent patients after penile venous stripping, a randomized clinical trial. *Andrologia* 48:754-760

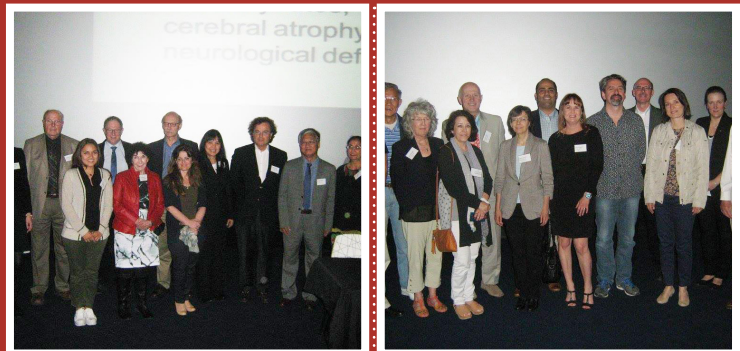
Biography

Geng Long Hsu is a Clinical Professor at China Medical University. He has developed and refined a series of penile reconstructive surgeries, including penile venous surgery, corporoplasty and penile implantation, in tandem with advances in knowledge of the penile venous and tunical anatomy and of erection physiology. In 1993, he was promoted to the first Chair of Urology at Taiwan Adventist Hospital; he held that position until 1997 and then served as Vice-Superintendent of Po-Jen General Hospital until 2001. From 2001 to 2003, he was the Director of Microsurgery Potency Reconstruction at Taipei Medical University Hospital. Afterward, he has established his private practice—Hsu's Andrology which serves as both a clinical practice and research center. In 2012, his latest method of penile venous stripping surgery, administered via local anesthesia on an ambulatory basis, was granted a USPTO patent. He hopes this surgery will be studied and practiced worldwide.

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DAY 2

Keynote Forum



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FROM CHEMICAL ELEMENTS THROUGH MICROMOLECULES TO ENDOTHELIAL CELLS

Ihor Huk

Medical University Vienna, Austria

Through the eyes of biochemist, the body is composed of elements. The biological function of a number of essential elements will be discussed. Carbon-based life depends on two important molecules: oxygen and nitric oxide. Both have been known for more than 200 years, but their biological function was only elucidated at the end of the 20th century. Which of these molecules is the more important for the brain, heart and vessels, and the immune system will be examined. The importance of the amino acid arginine and its presence in foodstuffs will be explained. The influence of some important co-factors controlling the synthesis of nitric oxide from arginine will be presented. Finally, some clinical data relating to vascular and neurological degenerative diseases will be given. The importance of 25OH vitamin D (D3) as an independent risk factor in developing above-mentioned pathologies is soon to be confirmed in scientific publications. The second part of the presentation will deal with the elemental/chemical composition of the human body itself, with some new data given on the effect of elemental deficiencies. Some practical recommendations will be given for every-day life in support of basic cellular function.

Recent Publications

1. Piechota-Polanczyk A, Jozkowicz A, Nowak W, Eilenberg W, Neumayer C, Malinski T, Huk I and Brostjan C (2015): The abdominal aortic aneurysm and intraluminal thrombus: current concepts of development and treatment(review). 2015 Front. Cardiovasc. Med. 2015 Volume 2 Article 19
2. W. Eilenberg, S. Stojkovic, A. Piechota-Polanczyk, C. Kaun, S. Rauscher, M. Gröger, M. Klinger, J. Wojta, C. Neumayer, I. Huk, S. Demyanets. Neutrophil Gelatinase-Associated Lipocalin (NGAL) is associated with symptomatic carotid atherosclerosis and drives pro-inflammatory state in vitro Eur J Vasc Endovasc Surg (2016) 51(5):623-31
3. W. Eilenberg, S. Stojkovic, A. Kaider, N. Kozakowski, C.M. Domenig, C. Burghuber, J. Nanobachvili, K. Huber,



C. Neumayer, I. Huk, J. Wojta, S. Demyanets. NGAL and MMP-9/NGAL as biomarkers of plaque vulnerability and targets of statins in patients with carotid atherosclerosis. Clinical Chemistry and Laboratory Medicine. (2017) June

4. W. Eilenberg, S. Stojkovic, A. Piechota-Polanczyk, A. Kaider, N. Kozakowski, W. Weninger, J. Nanobachvili, J. Wojta, I. Huk, S. Demyanets, C. Neumayer. Neutrophil Gelatinase Associated Lipocalin (NGAL) is elevated in type 2 diabetics with carotid artery stenosis and reduced under metformin treatment. Cardiovascular Diabetology (2017) 16:98
5. Jabłońska A, Neumayer C, Bolliger M, Gollackner B, Klinger M, Paradowska E, Nanobachvili J, Huk I. Analysis of host Toll-like receptor 3 and RIG-I-like receptor gene expression in patients with abdominal aortic aneurysm. J Vasc Surg. 2018 Mar 19. S0741-5214(17)32687-3;

Biography

Ihor Huk is the Chairman of Division of Vascular Surgery since 2013 and Director of Vascular Laboratory since 1994, Department of Surgery Medical University Vienna. He completed his Post-graduate education from University of Chicago, Heidelberg. His expertise in Transplant Surgery: since 1984 - kidney, liver transplantations And Vascular Surgery: clinical, experimental research (SPACE-Study, L-arginine study), Carotid Study (Lancet 2010). His is a member of Austrian Society of Surgery, Austrian Society of Angiology, Austrian Society of Vascular Surgery, Ukrainian Academy of High Education, Ukrainian Academy of Sciences, Member of Senats - Zaporizhzhia Medical, Postgraduate Academy. He has been given Honorary titles of: Professor Honoris Causa Universities Medicinalis Leopoliensis No. 009, University of Lwiw, Ukraine und Med. Universitat in Ternopil, Ukraine. He has more than 320 Scientific publications in German, English and Ukrainian national and international. A comprehensive list of publications of journal articles provides an overview of Prof. Huk's research activities. Concurrently, the expert in vascular surgery also gives many international lectures at the most distinguished vascular surgery and medical conferences.

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THE ROLE OF NEUTROPHILS IN ABDOMINAL AORTIC ANEURYSMS

Christoph Neumayer

Medical University Vienna, Austria

Neutrophil extracellular cells have emerged to be more important in their role of inflammatory responses than phagocytic actions. Recent publications showed neutrophils to be involved in the activation of the IL-1 family and subsequent distribution of neutrophil proteases to the inflammatory site. The abdominal aortic aneurysm (AAA) is considered a chronic inflammatory disease with neutrophils recruited to the aneurysm site and intraluminal thrombus, releasing neutrophil proteases and reactive oxygen species, which contribute to media destruction. D-Dimer and myeloperoxidase, distinctive neutrophil proteases have evolved as potential sensitive AAA markers, supporting the hypothesis of neutrophils to be key players in AAA pathogenesis. During the recruitment of neutrophils to the aneurysm site and intraluminal thrombus, activated neutrophils may undergo the process of NETosis, which involves histone modification by citrullination, allowing the DNA to be condensed and subsequent DNA and sticky traps release into the extracellular space. These NETs are recently discussed to be a potential biomarker in AAA pathogenesis. NETs were found in AAA mouse model and its inhibition prevented AAA development. Furthermore, anti-inflammatory treatment such as metformin in diabetic patients was associated with reduced AAA growth. The potential therapeutic approach of metformin in systemic lupus erythematosus could already be elucidated by reduced inflammatory skin flares through reduced NET formation. In summary, neutrophils, neutrophil proteases and NETs are intensively discussed as potential biomarkers in AAA, this lecture will give an overview of all recent findings on neutrophils and their products in AAA.

Recent Publications

1. Piechota-Polanczyk A, Jozkowicz A, Nowak W, Eilenberg W, Neumayer C, Malinski T, Huk I and Brostjan C (2015): The abdominal aortic aneurysm and intraluminal thrombus: current concepts of development and treatment(review). 2015 Front. Cardiovasc. Med. 2015



Volume 2 Article 19

2. W. Eilenberg, S. Stojkovic, A. Piechota-Polanczyk, C. Kaun, S. Rauscher, M. Gröger, M. Klinger, J. Wojta, C. Neumayer, I. Huk, S. Demyanets. Neutrophil Gelatinase-Associated Lipocalin (NGAL) is associated with symptomatic carotid atherosclerosis and drives pro-inflammatory state in vitro Eur J Vasc Endovasc Surg (2016) 51(5):623-31
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Biography

Prof. Christoph Neumayer is the interim head of the division of Vascular Surgery, Department of Surgery, Medical University Vienna. His main research focus inherits carotid atherosclerosis and the abdominal aortic aneurysm, especially basic research models of AAA in mice and novel therapy options.

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