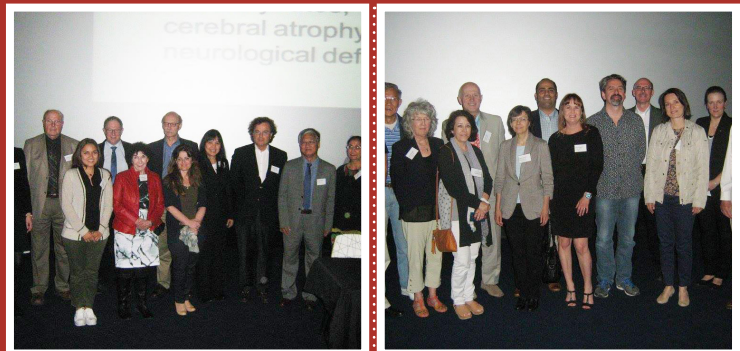


POSTERS

Abstracts



3rd Edition of World Congress & Exhibition on

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May 24-25, 2018 | London, UK

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Andrzej Polanczyk et al., J Vasc Endovasc Therapy 2018, Volume 3
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ESTIMATION OF HEMODYNAMICS IN HUMAN AND ARTIFICIAL VESSELS WITH ARTIFICIAL CIRCULATORY MODEL

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³Jagiellonian University, Poland

Introduction: A dedicated *ex vivo* computer controlled circulatory bioengineering reactor was designed and constructed to monitor the real time vascular tissue response under various physiological conditions.

Methods: We designed and build dedicated artificial circulatory model (ACM) for computational projection of vessel structure under different flow conditions. Next, we analyzed flow through iliac arteries and silicon tubes supplied with the homemade fluid that mimic blood. Using ACM we analyzed mechanical behavior of vessels such as change of diameter and wall displacement. Accuracy of data collected with ACM was verified with medical data gathered from patients before an operation and reconstructed with 2D-speckle-tracking-technique (2DSTT).

Results: The analysis of spatial configuration for silicon tubes indicated approximately 57% lower change of diameter compared to the iliac arteries. Meanwhile we observed approximately 2.3-fold decrease in wall displacement for the silicon tubes compared to the iliac arteries. Moreover, there were no significant changes between experimental results and medical data.

Conclusions: The approach presented in the manuscript may become a useful tool to introduce different types and spatial configurations of vessels for different hemodynamic conditions. By utilizing an *ex vivo* perfusion system in which ejection volume and frequency of pulsation can be varied independently, we have shown different mechanical response of tissue vascular grafts and silicon tubes.

Recent Publications

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prosthesis placed in abdominal aortic aneurysms. PLoS One doi: 10.1371/journal.pone.0182717.

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Biography

Andrzej Polanczyk is a Researcher and a Team Leader at the Lodz University of Technology (Poland). He earned a PhD in Medical Engineering in 2013. He participated in scientific grants in which he build the installation to simulate the blood flow through the abdominal section of the aorta. Recently he received a grant funded by the National Centre for Research and Development. His research areas comprise biomedical, chemical and, environmental engineering.

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Rezende A N C A et al., J Vasc Endovasc Therapy 2018, Volume 3
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INTERNAL CAROTID ARTERY ANEURYSM OPEN REPAIR WITHOUT MANDIBULAR SUBLUXATION: A CASE REPORT

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Extracranial carotid artery aneurysms (ECCAs) are rare, with an estimated incidence of less than 1%. They can have different etiologies: atherosclerotic (main etiology), dysplastic, infectious, inflammatory and post-traumatic. The diagnosis can be made by CT-angiogram, but the gold-standard is digital subtraction angiography. Their treatment, not yet been well established, can be open repair, which is a safe surgical option with low prevalence of complications (mostly cerebral ischemia) endovascular repair, or conservative. Most open repairs require submandibular subluxation, because of the site of the aneurysm. We describe the case of a 61-year-old white woman with a cervical bulging, pulsatile at the physical exam, and occipital headache. CT angiogram showed: signs of dissection of right vertebral artery and a fusiform aneurysm dilatation of the left internal carotid artery. Since patient had two different types of lesions in two different artery sites, the possibility of fibromuscular dysplasia was considered as a differential diagnosis. Since the kinking made endovascular repair unfavorable to be done, open repair was opted and an aneurysm resection was carried out, with primary end-to-end anastomosis of the internal carotid artery with the internal carotid artery. During the surgical procedure, it was noticed that, because of the location and kinking of the aneurysm, the mandibular subluxation wasn't necessary (an uncommon feature for this type of surgery). The products of the biopsy specimen were cultured and analyzed histo and anatomopathologically which subsequently excluded the possibility of FMD.

Recent Publications

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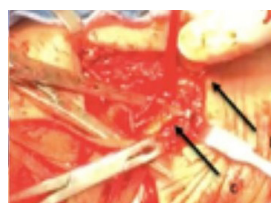


Figure 1: End-to-end anastomosis (c) of the ICA.



Figure 2: Patient's bulging on left cervical area 2 (arrow).

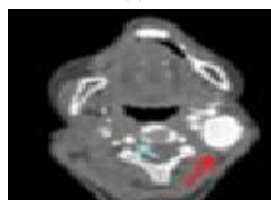


Figure 3: CT angiogram – left anterior carotid aneurysm (red arrow); vertebral artery dissection (blue arrow)..

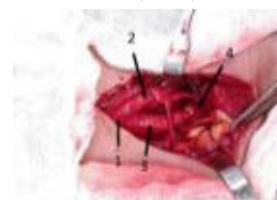


Figure 4: Internal carotid aneurysm shown after dissection (1 = common carotid artery (CCA); 2 = external carotid artery (ECA); 3 = internal carotid artery (ICA); 4 = post anastomotic ICA)

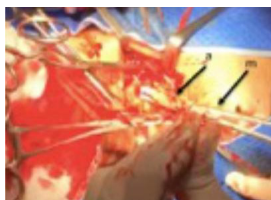


Figure 5: Partial resection of the aneurysm (a - aneurysm; m- metzenbaum)

May 24-25, 2018
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Biography

Rezende A N C A is a vascular resident with an interest in Arterial Pathologies and Surgery. Her main goal is to bring an up to date treatment to her clients. She has built this model after years of experience in research, evaluation, and student orientation in Ipiranga Hospital, Brazil. Her Alma mater is an internationally known university (State University of Campinas - UNICAMP) which introduced her to research.

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Dmytro V. Shcheglov et al., J Vasc Endovasc Therapy 2018, Volume 3
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ENDOVASCULAR TREATMENT OF INTRACRANIAL ANEURYSMS ASSOCIATED WITH ARTERIOVENOUS MALFORMATIONS.

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Arteriovenous malformations (AVM) are frequently associated with cerebral aneurysms (AA), which increase the hemorrhage rate and associated with more unfavorable outcomes. In 91 (21.6%) patients from 421 cases of AVMs, we observed 67 (59,8 %) intranidal AA, 25 (22,3 %) flow-related AA of vessels supplying AVMs, 17 (15,2 %) AA of the circle of Willis origin of an artery supplying to AVM and 3 (2,7 %) AA of remote artery, that wasn't involved to AVM supply. Endovascular treatment with coils, n-butylcyanoacrylate (NBCA), Onyx and Embolin was performed. 112 AA in 91 patients with AVMs were studied. Hemorrhage was happened in 63 patients (69,2 %), seizures in 24 (26,3 %), 4 (4,5 %) patients had other symptoms. 43 (68,2 %) hemorrhages were caused by AVM rupture with intranidal AA, 12 (19,1 %) – by rupture of AA of vessels supplying the AVMs, 7 (11,2 %) – AA of the circle of Willis origin of an artery supplying to the AVM, 1 (1,5 %) – remote AA that was not involved in the AVM supply. AAs were treated during AVM endovascular treatment. 21 AA were coiled and 82 flow-related and intranidal AA were embolized. 8 patients with AVM and 9 associated AA didn't receive any treatment for AA, 2 of them with 3 AA died due to terminal coma after hemorrhage. 3 patients had fusiform AA (were left for observation), 1 patient had proximal flow-related Anterior Communicating Artery microaneurysm with complicated afferent vessels anatomy that was hard to occlude but it regressed after subtotal AVM treatment, 2 patients reject any surgery. All 91 patients had clinical follow-up from 1 month to 12 years. One (0,89 %) hemodynamically related AA regressed during follow-up, and none residual AA rupture during the follow-up. 5 patients with flow-related AA had AA de-novo. The main policy is to treat the symptomatic lesion firstly. AA researching during AVM evaluation should turn it in the therapeutic focus. The method of choice is the simultaneous AA and AVM occlusion. Occlusion of associated AA is critical.

Recent Publications

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Biography

Dmitry Scheglov has extensive experience in endovascular treatment of cerebral vascular pathology, in particular, aneurysms and malformations. Personal experience is more than 3000 operated patients with arterial aneurysms, arteriovenous malformations of the brain and spinal cord, ca-

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rotid-cavernous fistulas, stenotic lesions of the head and neck arteries. In 2009 he defended his dissertation for the PhD in Medical Sciences - "Endovascular treatment of intracranial aneurysm in early hemorrhage periods complicated with angiospasm." In 2014 - defended his thesis for the degree of Doctor of Medicine - "Diagnostics and endovascular treatment of intracranial arterial aneurysms.". He is the author of more than 200 published

scientific works. His scientific activities linked to the development of endovascular neuroradiology in Ukraine. D. Scheglov was the first in Ukraine, who used stents and coils for cerebral aneurysm occlusion (2002) and first, who included liquid assets (including ONYX et al.) in treatment process of other cerebral vascular pathology (AVM).

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POSSIBLE PREDICTORS OF AORTIC DISSECTION AT A DIAMETER LESS THAN 55 MM

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Introduction: Given the high mortality rate in patients with type A aortic dissection, predictive tools to identify patients at increased risk of aortic dissection, when the diameter of ascending aorta is still under the threshold of 55 mm, are needed to assist clinicians for optimal intervention and to help patients raise their alert.

Method: We evaluated 528 consecutive patients of acute type A aortic dissection (AAAD) admitted to Fuwai Hospital, Beijing, China between 2009 and 2013. Univariate testing followed by multivariate logistic regression analysis was performed to identify independent predictors of AAAD at a diameter less than 55 mm. A simplified scoring system for predicting aortic dissection at a smaller diameter was then established based on the results of the multivariate analysis.

Results: Of the 528 AAAD patients, 375 (71%) were with a diameter less than 55 mm at the level of ascending aorta. A total of 25 variables as regard with demographic characteristics, clinical features and imaging were investigated. Logistic regression identified the following presenting variables as predictors of AD at a diameter less than 55 mm: age \geq 50 years (OR, 0.41; 95% CI, 0.26 to 0.65; P<0.01), hypertension (OR, 2.02; 95% CI, 1.20 to 3.40; P=0.01), history of aortic valve replacement (OR, 0.05; 95% CI, 0.01 to 0.42; P=0.01), history of catheterization (OR, 7.45; 95% CI, 1.26 to 44.21; P=0.03), hepatic cyst (OR, 2.69; 95% CI, 1.30 to 5.60; P=0.01), renal cyst (OR, 3.62; 95% CI, 1.85 to 7.08; P<0.01), bovine arch (OR, 6.39; 95% CI, 1.47 to 27.90; P=0.02), BAV (OR, 0.19; 95% CI, 0.04 to 0.95; P=0.04). Area under the receiver operating curve (ROC) was 0.73. Hosmer-Lemeshow statistic, P=0.28.

Conclusion: Patients with age <50 years, hypertension, a history of catheterization, hepatic cyst, renal cyst, or bovine arch were more likely to develop aortic dissection at a smaller diameter.

Recent Publications

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of 63 cases. The Heart Surgery Forum 13(1):E1-6.

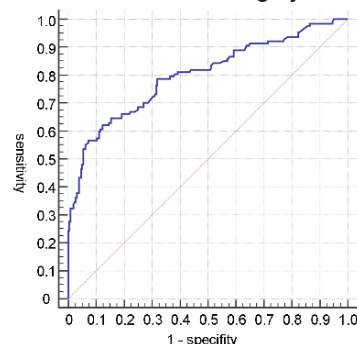


Figure 1: ROC curve to evaluate the predictive power of the multivariate analysis.

2. Sun X, Zhang L, Yu C, Qian X and Chang Q (2014) One-stage repair of extensive aortic aneurysms: mid-term results with total or subtotal aortic replacement. Interactive Cardiovascular & Thoracic Surgery 18(3):278-82.
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4. Liu P, Qian C, Qian X, Sun X, Yu C, Tian C, et al. (2016) Early and mid-term results after hybrid total arch repair of DeBakey type I dissection without deep hypothermic circulatory arrest. Interactive Cardiovascular & Thoracic Surgery 23(4):608.

Biography

Cun Tao Yu is one of the most famous cardiovascular surgeons in China. He is especially good at all kinds of operation of large vessels and has completed over 1500 operations such as total arch replacement and thoracoabdominal aortic replacement. Jin Lin Wu is his doctoral candidate.

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ATORVASTATIN ENHANCES PARACRINE PROANGIOGENIC ACTIVITY OF HEMATOPOIETIC STEM/PROGENITOR DERIVED CELLS IN VITRO BUT NOT IN VIVO

Witold N Nowak, Hevidar Taha, Joanna Markiewicz, Neli Kachamakova Trojanowska, Urszula Florczyk Soluch, Jozef Dulak and Alicja Jozkowicz Jagiellonian University, Poland

Circulating proangiogenic cells (PACs), were described as bone marrow-derived cells that can contribute to angiogenesis and even de novo blood vessel formation. Number and function of PACs are impaired in patients with diabetes or cardiovascular diseases. Both diseases can be accompanied by decreased levels of heme oxygenase-1 (HMOX1), cytoprotective, heme-degrading enzyme, which is crucial for PAC function in mouse models. Therefore, our study aimed to check whether pharmacological enhancement of HMOX1 expression in hematopoietic stem/progenitor (HSPC) derived PAC cells would improve their paracrine proangiogenic activity. We used GCSF-mobilized CD34+ cells, FACS-sorted from a healthy donor PBMCs. Sorted cells were CD45dimCD90-CD105-CD181- and predominantly CD133+ and CD11b-. CD34+ cells after six days in culture were stimulated with atorvastatin, acetylsalicylic acid, sulforaphane, resveratrol or metformin for 48 h. Conditioned media from such cells were then used to stimulate human aortic endothelial cells (HAoEC) to enhance tube-like structure formation in Matrigel assay. The only stimulant that enhanced PAC paracrine angiogenic activity was atorvastatin. On the other hand, the only one that induced heme oxygenase-1 expression was sulforaphane, a known activator of HMOX1 inducer – NRF2. Moreover, none of the stimulants changed the levels of 30 cytokines and growth factors tested with the multiplex test. Then, we used atorvastatin-stimulated cells or conditioned media from them in the Matrigel plug in vivo angiogenic assay. Neither atorvastatin alone in control media nor conditioned media nor AT-stimulated cells affected numbers of endothelial cells in the plug or plug's vascularization. Concluding, atorvastatin can enhance the paracrine angiogenic activity of human CD34+ HSPC-derived PAC cells in vitro, but the effect was not observed in vivo. Moreover, the enhancement of HMOX1 expression with sulforaphane does not influence PAC proangiogenic action *in vitro*.

Recent Publications

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Biography

Witold N Nowak is a Biochemist and Molecular Biologist. He has expertise in isolation and characterization of human and mouse progenitor cells. In collaboration with Jagiellonian University Medical College, he showed changes in populations of circulating stem and progenitor cells in patients with type

2 diabetes and its complications or in patients with intermittent claudication subjected to treadmill training. His recent interests focus on the regulation of cellular metabolism in aging blood vessels and during the atherosclerosis progression.

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CAROTID ENDARTERECTOMY UNDER LOCAL ANAESTHESIA: REVIEW OF PRACTICE AND PERI-OPERATIVE OUTCOMES

Sanjay Singh, Asghar Butt and Peter LeeChong

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Background: Carotid artery stenosis accounts for approximately 10% of all ischemic strokes, causing significant morbidity and mortality. The use of local anaesthesia rather than general anaesthesia might lower the risk of a stroke during or after surgery. We investigated peri-operative outcomes of carotid endarterectomy (CEA) done under local anaesthesia at our unit.

Methods: Consecutive patients from a single vascular unit with symptomatic carotid stenosis undergoing CEA under local anaesthesia between January 2016 and October 2017 identified from a prospective maintained vascular database were included in the study.

Results: Seventy-nine patients, who had CEA between January 2016 and October 2017, were included in the study. Amaurosis fugax was the index event in 10% of patients (n=8), TIA in 46% (n=36), minor stroke in 39% (n=31), other symptoms in 40% (n=3) and asymptomatic in 1.0% (n=1). There were 65% (n=51) male and 35% (n=28) female patients with a mean age of 74 years. Pre-operative risk factors were age more than 80 years old (26.5%), arterial hypertension (51.8%), hypercholesterolemia (83.5%), current smoking (20%), ex smoking (55%), stenosis \geq 90% (31.6%). Majority of the patients were referred by stroke physicians (91%). Operative procedure suture with prosthesis patch was 96.3%, direct suture 2.5% and eversion 1.2%. Readmission within 30 days of procedure was 3 (3.7%) patients. Repeat TIA were seen in 4 (5%) patients which recovered and no major stroke seen. There was no cranial nerve injury and mortality in our study.

Conclusion: Our evidence suggests that carotid endarterectomy can be safely performed under local anaesthesia and can be an effective alternative to general anaesthesia for carotid stenosis.

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Biography

Sanjay Singh has expertise and passion in Vascular and Endovascular Surgery. He has done complex aortic endovascular fellowship and is a Vascular Consultant working in United Kingdom. His open and contextual surgical techniques are based on researched and practiced models which help create new pathways for innovation. He has achieved this aptitude after years of experience in research and teaching in university hospitals and institutions. The ever-responsive and adapting field of endovascular surgery has improved the survival rates of high risk patients.

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FEMORAL TUNNELED HEMODIALYSIS CATHETER AS A PERMANENT ACCESS FOR HEMODIALYSIS PATIENTS

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Objective: to evaluate the efficiency of the hemodialysis catheter in the femoral tunnel as durable access for patients with hemodialysis.

Introduction: Vascular access (VA) continues to be the keystone in cases requiring hemodialysis (HD). When the choices of arterial venous fistula, grafts, and thoracic central catheters are depleted, the case's life becomes at risk. The extra options are limited to transplantation, peritoneal dialysis, insertion of the trans lumbar and femoral catheter. The Last may, in lots of cases, be the best choice. We present our experience at the Matarya Teaching Hospital with 17 cases where all vascular accesses was depleted and no transplant or peritoneal dialysis could be performed. Therefore, we chose the femoral tunnel catheter (FTC) as VA durable and unique. The median follow-up period was 10 months (2-14 months). The median age of cases was 55 (40-70) years. In ten cases, a Permcath (Hickman access system, BARD) and the other seven are inserted (DURAFLOW, from AngioDynamics). All cases received warfarin after passing LMWH to prevent thrombosis of the catheter. All catheters were functional for 2 months. The mean blood flow was 230 ml / min (200-260 ml / min). Two cases died at 5 and 12 months respectively with a functional catheter due to causes not directly related to the FTC. In a patient, the site of the catheter was changed to 5 months due to an accidental catheter slipping. A catheter has been changed because the flow has become inadequate after 8 months. No patient had deep vein thrombosis. In one patient, the catheter was operated for 14 months after insertion. We conclude that the femoral catheter in the tunnel is a stable option in cases with depleted VA.

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5. Joynt GM, Kew J, Gomersall CD, et al. Deep venous thrombosis caused by femoral venous catheters in critically ill adult patients. *Chest* 2000; 117:178-83. [PUBMED] [FULLTEXT].

Biography

Assem is a junior consultant vascular surgeon in Matarya Teaching Hospital; Cairo; Egypt. one of the big vascular centres in Egypt. He has a fair experience in both open and endovascular procedures. MSC.MRCS. & M.D.

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ENDOVASCULAR MANAGEMENT OF MYCOTIC ABDOMINAL AORTIC ANEURYSM SECONDARY TO STREPTOCOCCAL PNEUMONIAE

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Mycotic abdominal aortic aneurysm (MAAA) is a rare but life-threatening condition with an incidence of about 0.65-2% of all aortic aneurysms. MAAA have poor prognosis as they have tendency to grow rapidly and rupture and the patients often have severe comorbidities and coexisting septic conditions. Conventional surgical treatment is open surgery but is associated with high morbidity and mortality and can be very demanding or even impossible. Endovascular aneurysm repair (EVAR) is a less invasive but controversial alternative to conventional open repair of MAAA. A major disadvantage of EVAR is that the infected tissue, including the aneurysm itself, is not resected, which may facilitate reinfection, recurrent sepsis, and infection of the endoprosthesis. **Methodology:** Three cases of MAAA are described; all treated with endovascular stent graft with variable configurations (2 cases treated with EVAR and 1 with surgeon modified Fenestrated EVAR). The clinical diagnosis of MAAA, was made by clinical presentation, results of hematologic tests and culture, and CT findings. All cases grew streptococcus pneumoniae on blood culture. All patients underwent successful placement of stent grafts for their aneurysms. All patients were given antibiotics preoperatively and postoperatively, initially with broad-spectrum antibiotics intravenously and later, when discharged from the hospital, oral treatment guided by culture results, when available. Antibiotic therapy was administered after consultation with infectious disease specialists. No 30-day postoperative mortality was observed. **Conclusion:** Our short- term review shows that repair of MAAA can be accomplished with endovascular repair. This may be a safer alternative to open repair particularly in patients who are not suitable for conventional open repair.

Recent Publications

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Biography

Sanjay Singh has expertise and passion in vascular and endovascular surgery. He has done complex aortic endovascular fellowship and is a vascular consultant working in United Kingdom. His open and contextual surgical techniques are based on researched and practiced models which help create new pathways for innovation. He has achieved this aptitude after years of experience in research and teaching in University hospitals and institutions. The ever-responsive and adapting field of endovascular surgery has improved the survival rates of high risk patients.

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Abstracts



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EVALUATION OF THE UTILITY OF ENDOVASCULAR SEALING FOR AORTIC ANEURYSMAL DISEASE

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Background: Currently the preferred treatment method for abdominal aortic aneurysm (AAA) is endovascular aneurysm repair (EVAR) due to benefits associated with a minimally invasive procedure over open repair. Limitations of EVAR include limited applicability, higher rates of endoleak and reintervention. A novel technique aiming to overcome these limitations is endovascular sealing (EVAS), using the Nellix device.

Aims: Retrospective service evaluation was performed to: evaluate outcomes of all patients treated with EVAS at Southampton General Hospital (SGH). Explore any difference in outcome between EVAS patients treated within the Nellix instructions for use (IFU) versus those outside it.

Methods: Data including aneurysm morphology and demographics from all patients treated with EVAS at SGH was collected retrospectively from patient records and computed tomography scans. This was utilized for assessment of survival at 30 days and 1 year, and occurrence of aneurysm related complications or reintervention post-EVAS.

Results: 1/26 study patients was female. Mean age and baseline eGFR was 76.9 ± 6 and 62.7 ± 21.4 respectively. 11/26 patients were treated off-IFU. No deaths occurred within 30 days post-operatively. Overall, 5 mortalities occurred by 1 year post-op - none were aneurysm related. 3/5 deaths occurred in patients treated off-IFU. Difference in survival between patients treated within vs. off-IFU was not statistically significant ($p=0.176$; log-rank, $p=0.260$; generalized Wilcoxon). Three patients developed aneurysm related complications, however only one reintervention was performed.

Conclusion: Mortality post-EVAS was higher than expected - may be reflective of high risk patients chosen for a novel technique due to unsuitability for other treatment modalities. Endoleak and reintervention rates are low in line with other centers. Longitudinal studies evaluating long-term outcomes post-EVAS are needed to demonstrate its role in the treatment of AAAs.

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ADVANCES IN HUMAN PENILE ANATOMY, ERECTION PHYSIOLOGY AND ITS CLINICAL APPLICATIONS FOR RESEARCHERS AND PHYSICIANS

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Our chronologically protracted studies substantiate a model of the tunica albuginea of the corpora cavernosa in human penis as a bi-layered structure with a 360° complete inner circular layer and a 300° incomplete outer longitudinal coat (as opposed to just a singly uniform-complete-circular layer) spanning from the bulbospongiosus and ischiocavernosus proximally and extending continuously into the distal ligament within the glans penis. The anatomical location and histology of the human distal ligament invites convincing parallels with the animal Os penis within glans penis and therefore constitutes potential evidence of the evolutionary process. In the corpora cavernosa, a chamber design is responsible for facilitating rigid erections. It is an exclusive milieu to apply Pascal's law in the entire human body. Furthermore, one deep dorsal vein, two cavernosal veins and two pairs of para-arterial veins (as opposed to one single vein) are discovered between Buck's fascia and the tunica albuginea. For investigating its venous factors exclusively, hemodynamic studies have been performed on both fresh and defrosted human

male cadavers. In each case, a rigid erection was unequivocally attainable following venous removal. This clearly has significant ramifications in relation to penile venous-relevant surgeries and its role in treating impotent patients. These newfound insights into penile tunical, venous anatomy and erection physiology were inspired by and in turn enhance clinical applications routinely encountered by researchers, such as vascular physiology, vascular pathophysiology and erection mechanism as a mechanical event, and physicians in particularly surgeons, such as penile morphological reconstruction via autologous venous patched surgery, penile implantation with glans sinusoidal enhancement, penile venous surgery and even penile enhancement surgery in particular the glans penis and penile girth. All are mostly attainable via an acupuncture assisted local anesthesia on an ambulatory basis if the surgeons acknowledge this newfound anatomical knowledge.

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STATISTICAL SHAPE ANALYSIS OF THE RIGHT VENTRICULAR OUTFLOW TRACT IN PATIENTS WITH TETRALOGY OF FALLOT

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Tetralogy of Fallot (TOF) is the most common congenital heart disease with >80% of children expected to live beyond the age of 40. However, due to gradual loss of pulmonary valve function after initial surgical repair, resulting in severe pulmonary regurgitation (PR), TOF patients require frequent surgical revisions. To delay open heart surgery, a non-invasive percutaneous pulmonary valve implantation (PPVI) device was first introduced by Bonhoeffer et al. showing satisfactory clinical performance. However, morphology still limits PPVI eligibility. We focus on automatically defining the shape of the right ventricular outflow tract (RVOT) in TOF patients with PR late after surgical repair to assess the variations of anatomy and guide the design of new PPVI devices. TOF patients (n=59, age 25±15 years) referred to our centre for follow-up cardiovascular magnetic resonance imaging (MRI) between August 2007 and April 2017 were retrospectively selected for this study with inclusion criteria: i) steady-state free precession cardiac-gated 3D whole-heart images; ii) moderate to severe PR

(regurgitant fraction (RF) 39±10%); and iii) no metal artefacts. A statistical shape analysis (SSA) framework was used to calculate the principal component (PC) modes of shape variation in the population from unsupervised statistical learning. The first three PC modes accounted for 36% of the variance. Mode 1 was most correlated to BSA ($r=0.66$, $p\leq 0.001$) describing size differences, together with mode 2 ($r=0.47$, Figure 1 - representation of the principal modes of shape $p\leq 0.001$). Mode 2 revealed presence of a highly variation in the population enlarged pulmonary trunk whilst mode 3 described elongation of the vessel and correlated with vessel centerline length ($r=0.57$, $p\leq 0.001$). Mode 3 was inversely correlated with pulmonary RF ($r=-0.43$, $p\leq 0.001$). Advanced image processing and statistical shape analysis of the RVOT in TOF identifies features important to guide the design and optimization of new PPVI devices, benefitting the largest number of patients requiring a new valve.

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EFFICACY AND SAFETY OF DUPLEX-GUIDED POLIDOCANOL FOAM SCLEROTHERAPY FOR VENOUS MALFORMATIONS

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The aim of our study was to report our experience regarding the safety, efficacy of duplex-guided polidocanol (POL) foam sclerotherapy on the overall status of signs and symptoms in patients with venous malformations (VMs). Thirty-seven patients with symptomatic extratruncular VMs were treated with duplex-guided POL foam sclerotherapy using Tessari's method. Twenty-five patients had limited VMs, while twelve had infiltrating VMs. Postsclerotherapy surveillance was done 6 months after the last sclerotherapy session and comprised both clinical and duplex evaluation. Clinical evaluation entailed a patient self-assessment questionnaire using a four-point scale to rate the degree of symptoms improvement as follows: disappeared, decreased, worsened, or recurred. Findings obtained by duplex scanning were divided into four groups: 1) disappeared group; 2) partially recanalized group; 3) totally recanalized group; and 4)

worsened group. There were 20 males and 17 females with mean age of 22.8 ± 5.5 years. There was a significant reduction in the total amount of POL ($P=0.0037$), the number of sclerotherapy sessions was significantly lesser ($P=0.0019$), and treatment success was significantly higher ($P=0.0495$) in patients with limited VMs in comparison to those with infiltrating VMs. No major complications related to sclerotherapy were encountered in both groups. Polidocanol foam sclerotherapy is effective, and safe for treatment of VMs, with high success rate and low risk of major complications. Although associated with relatively high recurrence rate compared with ethanol sclerotherapy, this can be overcome by additional treatment sessions, given the relative simplicity, speed, and safety.

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