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British Society of
Endovascular Therapy

Annual Meeting 2019

Thursday 27th – Friday 28th June
Tortworth Court Hotel, South Gloucestershire

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Thursday 27th June

09.00 – 09.40 **Welcome & Rouleaux Club Symposium**
Chairs: Rachel Bell & Olivia McBride

The Future of Vascular training – an IR trainee's perspective
Greg Makris

The Future of Vascular training – a Vascular trainee's perspective
Phil Stather

Vascular Training in the Netherlands and Training for the Future
Barend Mees

09.40 – 09.50 **BSET Fellowship Report**
Chairs: Rachel Bell & Rick Gibbs
BSET Endovascular Training Fellowship: Dave Bosanquet
BSET Fellowship 2020: Rick Gibbs

09.50 - 10.35 **Abstract Session 1** 6 papers 6 (4+2) minutes
Chairs: Paul Hayes & Chris Twine

09.50 – 09.56 **An endovascular approach is safe and effective in the treatment of abdominal aortic aneurysms detected by the National Abdominal Aortic Aneurysm Screening Programme**
Katherine Stenson, Peter Holt, Ian Loftus
St George's Vascular Institute, London

09.57 – 10.03 **How far is too far when there is no landing zone for fenestrated endovascular repair?**
Lydia Hanna[1], Ahmed Fadl[2], Mohammad Hamady[2 3], Michael Jenkins[1]
[1]Imperial Vascular Unit, Imperial College Healthcare NHS Trust, London
[2]Department of Cancer and Surgery, London
[3]Department of Interventional Radiology, Imperial College Healthcare NHS Trust, London

10.04 – 10.10 **Selection of open or endovascular repair for complex aneurysms**
Benjamin Patterson, Ryan Preece, Marina Kefaza, Michael Jenkins
Imperial Vascular Unit, London

10.11 – 10.17 **Percutaneous Endovascular Aneurysm Repair (PEVAR) – A single centre experience over 4 years**
Martin Hossack, Shady Zacki, Matthew Brimfield, Leith Williams, Ragai Makar
South Mersey Arterial (SMART) Centre, Chester

10.18 – 10.24 **Radiation exposure associated with endovascular aortic repair and the lifetime risk of malignancy**

Azeem Alam[1], Richard Harbron[2], Mohamed Abdelhalim[1], Ashish Patel[1], Elizabeth Ainsbury[3], Jonathan Eakins[3], Bijan Modarai[1], Guy's and St Thomas' Vascular Research Collaborative[1]

[1]King's College London, Academic Department of Vascular Surgery, School of Cardiovascular Medicine and Sciences, BHF Centre of Excellence and the Biomedical Research Centre at Guy's & St Thomas' NHS Foundation Trust and King's College London, London

[2]Institute of Health and Society, Newcastle University, Royal Victoria Infirmary, Newcastle-upon-Tyne & NIHR Health Protection Research Unit in Chemical and Radiation Threats and Hazards, Newcastle University, Newcastle

[3]Public Health England Centre for Chemical, Radiological and Environmental Hazards (CRCE), Chilton, Didcot, Oxford

10.25 – 10.31 **Evolution of EVAR stent graft design provides opportunity to reduce peri-operative radiation exposure**

Paul Hayes[1], Jonathan Ghosh[2], Steven Richardson[2], Simon Kreckler[1], David Murray[2]

[1]Cambridge University Hospitals, Cambridge

[2]Manchester University NHS FT, Manchester

10.35 – 10.55 **Guest Lecture**

Chairs: Paul Hayes & Chris Twine

Use of advanced endovascular techniques for salvage of failing aortic stent grafts

Mark Farber

10.55 – 11.30 **Coffee**

11.30 – 11.50 **Quick Fire Debate**

Chairs: Rob Williams & David Shaw

The evidence for raised mortality related to drug eluting technologies suggests we should stop using until further evaluation

For: Chris Twine vs Against: Sanjay Patel

11.50 – 12.10 **Society Sponsor: GORE**

Chairs: Rob Williams & David Shaw

Role of GORE® VIABAHN® VBX Balloon Expandable Endoprosthesis in challenging Aorto-iliac occlusive disease

Hany Zayed

12.10 – 12.30 **BSET Update**

Chairs: Rachel Bell and Rob Williams

NICE Guidelines on AAA: Declan Dunphy, ABHI

BSET-CLEVAR: Colin Bicknell

12.30 – 13.45 **Lunch**

13.45 – 14.05 **Guest Lecture**

Chairs: Bijan Modarai and Rachel Bell

Strategies for achieving a uniluminal aorta after type B aortic dissection
Germano Melissano

14.05 – 14.35 **Case Discussion**

Moderator: Bijan Modarai

Expert Panel: Mark Farber, Germano Melissano, Barend Mees, David Shaw, Sanjay Patel

14.35 - 14.55 **Society Sponsor: COOK MEDICAL**

Chairs: Germano Melissano and Barend Mees

Neck length: No need to compromise
Martin Claridge

How using ZFEN has helped change my practice by being able to offer a long-term solution for short necks
Mark Farber

14.55 – 16.00 **Abstract Session 2** 9 papers 6 (4 + 2) minutes

Chairs: Murray Flett and Seamus Harrison

14.55 – 15.01 **A pilot study of the use of peripheral nerve blockade for percutaneous revascularisation in patients with critical limb ischemia**
Caitlin MacLeod, Raj Bhat, Callum Grant, Murray Flett, Graeme Guthrie
Ninewells Hospital, Dundee

15.02 – 15.08 **The use of antiplatelets and anticoagulants in patients undergoing endovascular revascularisation for peripheral arterial disease**
Hang Long (Ron) Li[1], Graeme K Ambler[2,3], Chris Twine[2,3], Robert J Hinchliffe[2,3]
[1]University of Bristol, Bristol
[2]Bristol Centre for Surgical Research, University of Bristol, Bristol
[3]North Bristol NHS Trust, Bristol

15.09 – 15.15 **First in man results from a novel device providing real time, quantitative feedback on tissue perfusion during peripheral intervention**
Ayoola Awopetu, Gail Curran, Paul Hayes
Cambridge University Hospitals, Cambridge

15.16 – 15.22 **The relationship between gender and survival to discharge in people undergoing inflow procedures for aorto-iliac disease in the UK National Vascular Registry**
Ruth A Benson[1,2], Andrew W Bradbury[1,3], Daniel Lasserson[4,5]
[1]*Institute of Cardiovascular Sciences, University of Birmingham, Birmingham*
[2]*Department of Vascular Surgery, Russell's Hall Hospital, Birmingham*
[3]*University Department of Vascular Surgery, University Hospitals Birmingham NHS Foundation Trust, Birmingham*
[4]*Department of Ambulatory Care, University Hospitals Birmingham NHS Foundation Trust, Birmingham*
[5]*Institute of Applied Health Research, University of Birmingham, Birmingham*

15.23 – 15.29 **Interwoven nitinol stents vs. drug-eluting stents in the femoro-popliteal segment: two year outcomes in a propensity matched analysis**
Yusuf Kiberu, Athanasios Saratzis, Nung Rudarakanchana, Athanasios Diamantopoulos, Andrea Gaspar, Talia Lea, Hany Zayed
Guy's and St Thomas' Vascular Research Collaborative, London

15.30 – 15.36 **Renal injury is common after aortic intervention; findings from the Midlands Aortic Renal Injury (MARI) cohort study, a Vascular and Endovascular Research Network (VERN) collaboration**
Athanasios Saratzis[1], Ruth Benson[1], Dave Bosanquet[1], Nikesh Dattani[1], Owain Fisher[1], Andrew Batchelder[1], Christopher Imray[2], Matthew Bown[3], VERN Collaborators[1]
[1]*Vascular and Endovascular Research Network, VERN*
[2]*University Hospital Coventry and Warwickshire, Coventry*
[3]*NIHR Leicester Biomedical Research Centre, Leicester*

15.37 – 15.43 **Acute kidney injury in association with acute type B aortic dissection**
Mustafa Musajee, Athanasios Saratzis, Yusuf Kiberu, Morad Sallam, Becky Sandford, Guy's and St. Thomas' Vascular Research Collaborative
Guy's and St Thomas' NHS Trust, London

15.44 – 15.50 **Frailty factors and outcomes in vascular surgery: A systematic review and meta-analysis**
John Houghton[1,2], Andrew Nickinson[1,2], Alastair Morton[3], Sarah Nduwayo[1,2], Coral Pepper[4], Tanya Payne[1], Harjeet Rayt[2], Laura Gray[5], Simon Conroy[5], Victoria Haunton[1], Rob Sayers[1,2]
[1]*Department of Cardiovascular Sciences, University of Leicester, Leicester*
[2]*Leicester Vascular Institute, University Hospitals of Leicester NHS Trust, Leicester*
[3]*Sherwood Forest Hospitals NHS Foundation Trust, Mansfield*
[4]*Library Service, University Hospitals of Leicester NHS Trust, Leicester*
[5]*Department of Health Sciences, University of Leicester, Leicester*

15.51 – 15.58 **Assessing digital and e-health literacy amongst patients attending vascular surgery clinic; a questionnaire study**
Viknesh Sounderajah[1,2], Soma Farag[1], Guy Martin[1,2], Amish Acharya[1,2], Muzaffar Anwar[1,2], Hutan Ashrafian[1], Sheraz Markar[1], Celia Riga[1,2], Colin Bicknell[1,2]
[1]Department of Surgery and Cancer, Imperial College London, London
[2]Imperial Vascular Unit, Imperial College Healthcare NHS Trust, London

16.00 – 16.30 **Tea**

16.30 – 16.40 **Vascular and Endovascular Research Network**
Chairs: Paul Bevis and Simon Neequaye
Dr Athanasios Saratzis

16.40 – 17.10 **Trauma Session**
Chairs: Paul Bevis and Simon Neequaye
How to train for trauma surgery in 2019: Ross Davenport
Aortic Interventions for trauma: Mark Edwards
Endovascular strategies for treatment of solid organs after trauma: Martin Griffiths

17.10 – 18.10 **Aortic Prize Abstract Session** 6 papers 9 (6 + 3) minutes
Chairs: Paul Bevis, Mark Farber and Germano Melissano

17.10 – 17.19 **Early outcomes of elective and non-elective open and endovascular repair of distal arch, descending thoracic and thoracoabdominal aorta disease**
Maciej Juszczak, David Quinn, Massimo Vezzosi, Hosaam Nasr, Ahmed Ashoub, Paul Clift, Jorge Mascaro, Martin Claridge, Donald Adam
Complex Aortic Team, University Hospitals Birmingham NHS Foundation Trust, Birmingham

17.20 – 17.29 **Short- and long-term outcomes of treatment strategies for isolated penetrating aortic ulcers (PAUs)**
Safa Salim[1,2], Rossella Locci[1,2], Guy Martin[1,2], Rick Gibbs[1,2], Michael Jenkins[1,2], Mohamad Hamady[1,2], Celia Riga[1,2], Colin Bicknell[1,2] on behalf of the Imperial Vascular Unit
[1]Department of Surgery and Cancer, Imperial College London, London
[2]Imperial Vascular Unit, Imperial College Healthcare NHS Trust, London

17.30 – 17.39 **A comparison of reinterventional options following endovascular aneurysm sealing for abdominal aortic aneurysm**
Sarah Shaw[1], Jorg de Bruin[1], Robert Morgan[2], Ian Loftus[1], Peter Holt[1], Katherine Stenson[1]
[1]St George's Vascular Institute, St George's Hospital, London
[2]Department of Interventional Radiology, St George's Hospital, London

17.40 – 17.49 **Predicting recovery from paraplegia after thoracoabdominal aneurysm repair**
Jamie Kelly[1], Ashish Patel[1], Said Abisi[2], Rachel Bell[2], Mark Tyrrell[2], Morad Sallam[2], Marwah Salih[1], Prakash Saha[1], Manuel Mayr[1], Elizabeth Bradbury[1], Phillippa Warren[1], Jun Cho[1], Thomas Booth[1], Alberto Smith[1], Bijan Modarai[1]
[1]Kings College London, London
[2]St Thomas' Hospital, London

17.50 – 17.59 **Carbon-dioxide versus saline flushing of thoracic aortic stents-grafts to reduce vascular brain infarcts: An observational study**
Lydia Hanna[12], Gagandeep Grover[1], Anisha Perera[1], Muzzaffer Chaudhery[3], Ammar Abdullah[12], Abhinav Singh[1], Colin Bicknell[12], Bijan Modarai[3], Mohammad Hamady[14], Richard Gibbs[12]
[1]Imperial Vascular Unit, Imperial College Healthcare NHS Trust, London
[2]Department of Surgery and Cancer, Imperial College, London
[3]Guy's and St Thomas's NHS Foundation Trust, London
[4]Department of Interventional Radiology, Imperial College London

18.00 – 18.09 **Fenestrated and branch endovascular repair for juxtarenal and thoracoabdominal aortic aneurysms: A 12 year experience**
Maciej Juszczak, Massimo Vezzosi, Martin Claridge, Donald Adam
Complex Aortic Team, University Hospitals Birmingham NHS Foundation Trust, Birmingham

18.10 – 18.25 **The Presidents' Debate**
Chair: Paul Hayes
The evidence for endovascular aortic repair is weak, open is best
For: Rachel Bell vs Against: Ian Loftus

19.00 **Drinks Reception**

20.00 **Dinner**

Friday 28th June

08.30 – 08.50 **Guest Lecture**

Chairs: Patrick Coughlin and Ian Nordon

Access considerations for endovascular aortic intervention
Barend Mees

08.50 - 09.50 **Peripheral Prize Abstract Session** 6 papers 9 (6 + 3) minutes

Chairs: Patrick Coughlin and Ian Nordon

08.50 – 08.59 **Current medical management of patients with peripheral arterial disease and potential benefits of risk-factor optimization: A Vascular and Endovascular Research Network (VERN) collaboration**
Athanasios Saratzis[1], Dave Bosanquet[1], Ruth Benson[1], Owain Fisher[1], Brenig Gwilym[1], Nikesh Dattani[1], George Dovell[1], Rachael Forsythe[1], SMART-REACH Collaborators[2], Vascular and Endovascular Research Network Collaborators[1]
[1]Vascular and Endovascular Research Network, VERN
[2]University Medical Center, Utrecht, Netherlands

09.00 – 09.09 **Real world costs and consequences of a failed SFA angioplasty**
Lukasz P Zielinski, Mohammed M Chowdhury, Patrick A Coughlin
Department of Vascular Surgery, Cambridge University Hospitals NHS Foundation Trust, Cambridge

09.10 – 09.19 **Long term patency outcomes in deep venous stenting**
Kemal Kemal, Tristan Lane, Sarah Onida, Mohamed Hifny, Mary Ellis, Joseph Shalhoub, Nicholas Burfitt, Alun H Davies
Academic Section of Vascular Surgery, Imperial College London & Imperial College Healthcare NHS Trust London

09.20 – 09.29 **Hybrid revascularisation for multi-level peripheral vascular disease: 5-year outcomes**
Muzzafer Chaudery[1], Trixie Yap[1], Talia Lea[1], Sanjiban Mandal[1], Syed Zaidi[1], Iulia Bujoreanu[1], Hany Zayed[1], Ashish Patel[1,2], St Thomas' Hospital Vascular Research Collaborative[1]
[1]Guy's & St Thomas' NHS Foundation Trust, London
[2]King's College London, London

09.30 – 09.39 **A novel vascular limb salvage clinic for the management of critical limb threatening ischaemia and diabetic foot disease: Our first year results**
Andrew Nickinson[1], Jivka Dimitrova[2], Lauren Rate[2], Svetlana Dubkova[2], Hannah Lines[2], Tanya Payne[1], Rob Sayers[1], Robert Davies[2]
[1]University of Leicester, Leicester
[2]University Hospitals of Leicester NHS Foundation Trust, Leicester

09.40 – 09.49 **Revascularise at all costs: Are the costs of revascularisation justified in avoiding amputation in a cash-strapped health service?**
Daniel Urriza Rodriguez[1], Dominic Howard[1,2]
[1]Department of Vascular Surgery, John Radcliffe Hospital, Oxford
[2]Nuffield Department of Surgical Sciences, University of Oxford, Oxford

09.50 – 10.00 **Gold Sponsor Presentation: MEDTRONIC**
Chairs: Patrick Coughlin and Ian Nordon
Significance of sac regression and drivers of EVAR outcomes
Rob Fisher

10.00 – 10.20 **Guest Lecture**
Chairs: Rick Gibbs and Rao Vallabhaneni
Cost effectiveness of acute DVT treatment
Steve Black

10.20 – 10.30 **Gold Sponsor Presentation: ENDOLOGIX**
Chairs: Rick Gibbs and Rao Vallabhaneni
AAA – time to focus on durability
Matt Thompson

10.30 – 10.50 **Vascular Society Session**
Chairs: Rick Gibbs and Rao Vallabhaneni
Vascular Society perspective on the NICE AAA guidelines: Ian Loftus
Vascular Society Quality Improvement Programme for Lower Limb Ischaemia: Rob Fisher

10.50– 11.20 **Coffee**

11.20 – 11.30 **Gold Sponsor Presentation: CRYOLIFE**
Chairs: James McCaslin and Patrick Chong
Inner Branched EVAR: expanding the solutions for aortic disease
Said Abisi

11.30 - 11.50 **Quick Fire Debate**
Chairs: James McCaslin and Patrick Chong
Radically new endovascular technologies should not be used outside of clinical trials that require ethical approval
For: Germano Melissano vs Against: Mark Farber

11.50 – 12.00 **Gold Sponsor Presentation: TERUMO AORTIC**

Chairs: James McCaslin and Patrick Chong

How to treat the entire aortic arch effectively and safely, whilst being on label at all times: RELAY Pro

Celia Riga

12.00 – 12.20 **Guest Lecture**

Chairs: Bijan Modarai and Sanjay Patel

Contemporary techniques for lower limb endovascular revascularisation

David Shaw

12.20 – 13.05 **Abstract Session 5** 6 papers 6 (4 + 2) minutes

Chairs: Bijan Modarai and Sanjay Patel

12.20 – 12.26 **Single centre operative and midterm outcomes of the custom-made fenestrated Anaconda stent-graft in the treatment of short neck and juxta-renal aortic aneurysms**

Anisha H Perera[1], Tian Yeong[1], Ashish Patel[2], Adnan Bajwa[1], Marcus Cleanthis[1], Andrew Hatrick[1], David Gerrard[1]

[1]Frimley Park Hospital, Camberley

[2]St Thomas' Hospital, London

12.27 – 12.33 **Meta-analysis and meta-regression analysis of outcomes of endovascular repair for ruptured abdominal aortic aneurysm**

Kerry Burke[1], Nikos Kontopodis[2], Nikos Galanakis[3], Stavros Antoniou[4], Dimitrios Tsetis[3], Christos Ioannou[2], Frank Veith[5,6], Janet Powell[7], George Antoniou[1,8]

[1]Department of Vascular and Endovascular Surgery, The Royal Oldham Hospital, Manchester

[2]Vascular Surgery Unit, Department of Cardiothoracic and Vascular Surgery, University Hospital of Heraklion, Heraklion, Greece

[3]Interventional Radiology Unit, Department of Radiology, University Hospital of Heraklion, Heraklion, Greece

[4]Department of Surgery, School of Medicine, European University Cyprus, Nicosia, Cyprus

[5]Department of Surgery, New York University Langone Medical Center, New York, USA

[6]Department of Vascular Surgery, Cleveland Clinic, Ohio, USA

[7]Vascular Surgery Research Group, Imperial College London, London

[8]Division of Cardiovascular Sciences, School of Medical Sciences, University of Manchester, Manchester

12.34 – 12.40 **The impact of fenestrated aortic repair on renal function; a UK tertiary centre experience**

Sandip Nandhra, Luke Boylan, Matthew Thomas, Craig Nesbitt, Rob Williams, James McCaslin

Freeman Hospital, Newcastle

12.41 – 12.47 **Endovascular versus medical management for uncomplicated acute and subacute type B aortic dissection**

Martin Hossack[1], Shaneel Patel[1], Ivancarmine Gambardella[2], Simon Neequaye[1], George A. Antoniou[34] Francesco Torella[1]

[1]Liverpool Vascular and Endovascular Service, Royal Liverpool University Hospital, Liverpool

[2]Weill Cornell Medicine, New York Presbyterian Hospitals, New York, USA

[3]Department of Vascular and Endovascular Surgery, The Royal Oldham Hospital, Pennine Acute Hospitals NHS Trust, Manchester

[4]Division of Cardiovascular Sciences, School of Medical Sciences, University of Manchester, Manchester

12.48 – 12.54 **Using the ovation stent graft for hostile infra-renal aortic aneurysm necks: A single centre experience**

Emmanouil Katsogridakis, Theodoros Spachos, Ansy Egun, Mohammed Banihani

Royal Preston Hospital, Preston

12.55 – 13.01 **The frozen elephant trunk to facilitate endovascular repair of thoraco-abdominal aortic pathology**

Enrico Mancuso[1], Pedro Catarino[2], Andrew Winterbottom[3], Manjit Gohel[1], Paul Hayes[1], Seamus Harrison[1]

[1]Addenbrooke's Hospital, Department of Vascular Surgery, Cambridge

[2]Royal Papworth Hospital, Department of Cardiac Surgery, Cambridge

[3]Addenbrooke's Hospital, Radiology Department, Cambridge

13.05 – 13.25 **Chee Soong Memorial Lecture**

Introduced by Rachel Bell

Implantable Vascular surgical devices and prostheses: Can we learn anything from the orthopaedic surgeons?

Jonathan Boyle

13.25 – 13.30 **Presentation of Prizes and Close**

13.30 – 14.30 **Lunch**

Abstract Sessions

Abstract Session 1

An endovascular approach is safe and effective in the treatment of abdominal aortic aneurysms detected by the National Abdominal Aortic Aneurysm Screening Programme

Katherine Stenson, Peter Holt, Ian Loftus
St George's Vascular Institute, London

Background
The National Abdominal Aortic Aneurysm Screening Programme (NAAASP) commenced in England in 2009 and completed implementation in 2013. Its aim being to reduce the rate of death due to ruptured aneurysm in men.

Methods
Patients who underwent repair of a screen-detected aneurysm between February 2010 and 2019 were identified from prospectively-kept records held by the local screening programme. Pre, peri- and postoperative details were collected from case notes and online hospital records.

Results
104 men underwent repair of a screen-detected aneurysm. 81 aneurysms were infrarenal, 19 juxta- and suprarenal and 4 thoracoabdominal. The median aneurysm diameter at operation was 59 mm (IQR 57-62). 2 open repairs and 102 endovascular repairs took place, using a variety of stentgrafts. 3 aneurysm-related deaths have occurred during follow-up, with 2 of these being in patients treated with stentgrafts that have subsequently been removed from the market. There were 11 deaths from all causes. 20 patients (19.2%) have required reintervention. 80 cases were elective infrarenal AAA repairs; 79 were endovascular repairs. Of these patients, there were no aneurysm-related deaths or deaths within 30 days. Survival estimates were 100% at 1 year, 86.9% at 5 years and 74.5% at 9 years of follow-up. 14 patients (17.5%) required reintervention. There were no secondary ruptures in patients treated electively for infrarenal aneurysms.

Conclusions
This study shows that an endovascular first approach to the treatment of screen-detected AAA is a safe and effective one.

How far is too far when there is no landing zone for fenestrated endovascular repair?

Lydia Hanna [1 2], Ahmed Fadl[1], Mohammad Hamady[2 3], Michael Jenkins [1 2]
[1] *Imperial Vascular Unit, Imperial College Healthcare NHS Trust , London*
[2] *Department of Cancer and Surgery, London*
[3] *Department of Interventional Radiology, Imperial College Healthcare NHS Trust, London*

Background
Fenestrated endovascular repair for aneurysms affecting the visceral aortic segment can be impossible without a secure proximal landing zone (PLZ) for durable sealing. The use of TEVAR to facilitate a more PLZ in the thoracic aorta for FEVAR may be an acceptable technique but risks spinal cord perfusion problems. We present 10 patients with supra-renal and juxta-renal aneurysms that required TEVAR to facilitate a PLZ for FEVAR.

Methods
A retrospective review of FEVAR cases carried out at a single institution was undertaken to identify those cases where TEVAR was used. Demographic, clinical and procedural data was collected as well as PLZ adverse feature assessment and length of coverage of the aorta on imaging.

Results
A total of 10 patients were identified that needed TEVAR to facilitate landing zone for FEVAR. Median thoracic aorta dimension was 37mm (range, 23-47mm). Median abdominal aorta dimension was 65mm (range, 60-70mm). Reasons for inadequate PLZ include calcification, extensive thrombus and aortic diameter beyond the instructions for use for fenestrated devices. Maximum length of aortic coverage beyond what would have been the PLZ was 22cm. All patients weere managed with a spinal cord protection protocol with 2 patients developing transient neurological deficit.

Conclusion
The use of TEVAR to facilitate landing zone for FEVAR is an acceptable technique but there needs to be a balance between creating a durable proximal landing zone and the subsequent risk of neurological complications with greater aortic coverage.

Selection of open or endovascular repair for complex aneurysms

Benjamin Patterson, Ryan Preece, Marina Kefaza, Michael Jenkins
Imperial Vascular Unit, London

Background
Endovascular repair (ER) has been increasingly adopted in the treatment of complex aneurysms where previously only open repair (OR) was available. We sought to define factors that determine the modality of treatment employed using a retrospective, single centre cohort study.

Methods
Consecutive patients operated on for suprarenal and thoracoabdominal aneurysms (TAAAs) over a 1-year period were identified. Physiological and anatomical data were collected from the clinical records and correspondence. The primary reason for the modality of treatment selected was identified. The Chi-squared test was used to test for differences between groups.

Results
Of 65 patients identified between February 2018 and 2019, 25 OR, 23 ER and 4 hybrid repairs were included. 13 were excluded as they were primarily thoracic or infra-renal cases. There were 19 juxtarenal, 34 extent I-IV TAAAs and 41 were elective. Patients with type IV TAAA underwent more OR (10 vs. 1) and type I-III TAAAs more ER (16 vs. 4 + 4 hybrid). OR patients were more likely to have a good exercise tolerance (OR 4.7;p=0.19), good pulmonary function (OR 7.6;p=0.005) and less likely to have had previous abdominal surgery (OR 3.6;p=0.047). Cardiac and renal status was similar in both groups. Anatomical and physiological reasons were equally cited as reasons for choosing treatment modality (p=0.365).

Conclusion
A complex interplay of anatomical and physiological factors renders conventional risk stratification tools unhelpful in this group and a multidisciplinary approach to assessment is mandated. It is unusual that a single major factor ultimately determines treatment modality.

Percutaneous Endovascular Aneurysm Repair (PEVAR) – A single centre experience over 4 years

Martin Hossack, Shady Zacki, Matthew Brimfield, Leith Williams, Ragai Makar
South Mersey Arterial (SMART) Centre, Chester

Background
Percutaneous EVAR (PEVAR) is thought to reduce groin complications and recovery time. Frequent use of Perclose Proglide devices (Abbott Vascular, Redwood City, Calif) in our institution, prompted an audit of our practice and outcomes. MethodsRetrospective analysis was performed of patients undergoing PEVAR in a single-centre over a 4-year period. Demographic, procedural, biochemical and radiological data were collected. Primary outcome measures were inpatient mortality and reintervention. Secondary outcomes included length of stay (LOS), number of perclose devices used, number of failures and need for adjuncts. Concurrent data was collected on EVAR using open access.

Results
318 patients (88.4% male) underwent an EVAR (86.8% elective) between January 2015 and October 2018, with an average age of 76.9 years and median maximal aortic diameter of 60mm. 99% of elective and 83% of non-elective patients survived to discharge. 5.3% of elective and 13.6% of non-elective PEVARs returned to theatre, most commonly for limb ischaemia. In total 67% (n=399) of access was percutaneous, increasing from 33.1% (n=43) in 2015 to 92% (n=107) in 2018. The median LOS following PEVAR was shorter than with open access (2 vs 3 days). Two Proglides were used in 61% of closures, three in 31%. 10.9% of devices failed, and surgical cutdown was required in 11% of groins.

Conclusions
PEVAR is increasingly the approach of choice in our institution and is associated with a shorter length of stay and fewer groin complications, but there is a significant risk of device failure and need for adjuncts to achieve closure.

Radiation exposure associated with endovascular aortic repair and the lifetime risk of malignancy

Azeem Alam[1], Richard Harbron[2], Mohamed Abdelhalim[1], Ashish Patel[1], Elizabeth Ainsbury[3], Jonathan Eakins[3], Bijan Modarai[1], Guy's and St Thomas' Vascular Research Collaborative[1]

[1]*King's College London, Academic Department of Vascular Surgery, School of Cardiovascular Medicine and Sciences, BHF Centre of Excellence and the Biomedical Research Centre at Guy's & St Thomas' NHS Foundation Trust and King's College London, London*

[2]*Institute of Health and Society, Newcastle University, Royal Victoria Infirmary, Newcastle-upon-Tyne; NIHR Health Protection Research Unit in Chemical and Radiation Threats and Hazards, Newcastle University, Newcastle*

[3]*Public Health England Centre for Chemical, Radiological and Environmental Hazards (CRCE), Oxford*

Background
The risks associated with low dose ionising radiation exposure to patients during endovascular interventions and with lifelong follow-up imaging are unknown. We examined these exposures and estimated the associated malignancy risk.

Methods
Cumulative radiation dose to individual organs after infra-renal endovascular aortic repair (IEVAR), any re-intervention and CT imaging was calculated using PCXMC Monte Carlo Modelling. Input data included, dose area product (DAP), field size, x-ray energy spectra, and beam angle. Lifetime cancer risk was estimated for various organs using the online risk estimation tool RadRAT.

Results
Fifty patients (n=25 male, operated 2016-2018) were included. Their median age was 76 (range: 53-89) years and median body mass index was 27.1 (15.7-38.9). The median DAP per IEVAR was 81.742 (3.771- 994.200) Gycm2. The median cumulative CT dose length product was 1316 (106–4811) mGycm with a median of 2 (1-6) CTs per patient. The cumulative median effective dose was 42.8 (9.8–316.7) mSv. Excess lifetime risk of malignancy per 100,000 persons was: leukaemia 94 (CI 19–224), colon 69 (CI 37–156), kidney 23 (CI 3–58), stomach 17 (CI 2–64), lung 14 (CI 5–27) and liver 10 (CI 1–38).

Conclusions
Recent reports suggest a raised incidence of malignancy in patients after IEVAR compared with open repair. Our modelling work demonstrates a wide variation in the theoretical excess lifetime risk of cancer after IEVAR. Such tools could be used to identify individuals at particular risk and may inform a novel consideration that impacts treatment choice.

Evolution of EVAR stent graft design provides opportunity to reduce peri-operative radiation exposure

Paul Hayes[1], Jonathan Ghosh[2], Steven Richardson[2], Simon Kreckler[1], David Murray[2]
[1]*Cambridge University Hospitals, Cambridge*
[2]*Manchester University NHS FT, Manchester*

Background
The modular design of older, traditional stent grafts relies on the presence of a single infra-renal uni-body with attached ipsilateral and contralateral limbs. Cannulation of the latter to complete the EVAR can take a variable length of time, introducing uncertainty about procedure duration and the extent of fluoroscopic screening required. Increasingly the dangers of unnecessary radiation to operators, staff and patients are being reported.

Methods
We evaluated operation times and radiation exposure comparing standard infra-renal EVAR devices with the newer Altura system. This is a system with a bifurcated body which does not require contralateral limb cannulation. Data relating to radiation exposure were prospectively collected across 2 teaching hospital sites prospectively between Apr 2016 and Dec 2017, allowing one year for follow up.

Results
Dose area product (cGym2) and screening times (mins) were available for 40 Altura cases, and these data were compared with 136 conventional EVAR devices.
The mean DAP for the Altura cases was 7010, rising to 11018 for conventional bifurcated EVAR cases ($p<0.001$). The screening time for the EVAR cases was 20% higher than for Altura (27.6mins v 22.9mins; $p=0.008$).

Conclusions
The use of Altura was associated with significant reductions in radiation exposure, which is potentially good for patients and the teams treating them.

Abstract Session 2

A pilot study of the use of peripheral nerve blockade for percutaneous revascularisation in patients with critical limb ischaemia

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Background
The use of endovascular treatments for patients with critical limb ischaemia (CLI) continues to develop and expand. Patients with CLI frequently have intractable ischaemic pain that requires significant use of opiate analgesia in an increasingly frail and fragile patient cohort. In many cases this intractable pain excludes prolonged endovascular procedures without general anaesthesia. This pilot study aimed to investigate the potential use of peripheral nerve blockade to facilitate endovascular revascularisation in critical limb ischaemia.

Methods
In conjunction with a vascular anaesthetist with a special interest in peripheral nerve blockade and pain management, a pilot study of patients requiring revascularisation under ultrasound guided peripheral nerve blockade to facilitate percutaneous endovascular reconstruction.

Results
21 patients were included, 12 female, 9 male. The average age was 77 years. 12 patients had previously failed endovascular treatment due to technical reasons or symptoms. The procedures were tolerated in 20/21 patients. Procedure success was recorded in 15 patients 6 technical failures. On follow up 3 patients had undergone major amputation, 2 had minor amputations, and 16 had no amputation. Of the failed cases, only 1 patient required major limb amputation. No complications related to the nerve blocks were observed either peri- or post-operatively. 3 patients were deceased at the censor date.

Conclusion
Peripheral nerve blockade for endovascular treatment is a safe and effective adjunct to allow treatment of critical limb ischaemia in an increasingly frail patient cohort. Investment is required to facilitate use of this adjunct to advanced endovascular procedures.

The use of antiplatelets and anticoagulants in patients undergoing endovascular revascularisation for peripheral arterial disease

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Background
Antiplatelet agents are usually prescribed following endovascular intervention to reduce adverse events and improve patency, but there are no firm guidelines about dose, type or duration of these medications. The aim of this study was to examine the protocols used in randomised controlled trials of peripheral endovascular intervention to assess patterns in practice.

Methods
A systematic review and narrative synthesis was performed, searching MEDLINE, EMBASE and the Cochrane library from inception until November 2017 for randomised controlled trials (RCTs) of endovascular interventions for PAD. Peri-procedural and post-procedural antiplatelet and anticoagulant protocols were recorded and summarised.

Results
103 RCTs of peripheral endovascular intervention were identified. From these, 69 different antiplatelet and/or anticoagulant protocols were identified. Sixty-nine percent of trials failed to clearly specify the antiplatelet and/or anticoagulant medications administered to trial participants. More than 20% of the trials did not specify the peri-procedural drug class. Thirty-one trials specified an intensive post-procedural antiplatelet protocol, with dual antiplatelet therapy in 28/31 cases. Fifty-four trials specified long-term antiplatelet and/or anticoagulant therapy, of which thirty-eight used aspirin. Newer interventions such as drug eluting stent trials had a higher tendency to use more aggressive drug regimens such as dual antiplatelet therapy.

Conclusion
There is significant heterogeneity in the use of antiplatelet and anticoagulant therapy following peripheral endovascular intervention. Future trials should clearly specify antiplatelet and anticoagulant protocols to minimise the risk of confounding of outcomes due to divergent antithrombotic regimes.

First in man results from a novel device providing real time, quantitative feedback on tissue perfusion during peripheral intervention

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Background
Enormous amounts of resource are focused on determining the optimal method employed to improve perfusion to the lower limb. However, little time has been spent on determining how effectively we actually perform the procedure. Although some techniques exist for evaluating skin perfusion or oxygenation, these aren't widely adopted into clinical use because they interfere with clinical workflow or take too long to respond to perfusion changes.

Methods
The IROAD study is a 40-patient trial evaluating changes in tissue perfusion seen during angioplasty or stenting. The device measures changes in photon scatter induced by improvements in capillary blood flow. The device produces real time numerical outputs, evaluating perfusion through the use sensors attached to differing angiosomes of the foot.

Results
Data are currently available for 20 patients, with 11 having critical ischemia and 9 claudication. The device reliably demonstrated significant changes in tissue perfusion within 60s of a clinically significant event (balloon inflation etc). In patients who experienced a clinical improvement in their symptoms, there was a significant improvement in tissue perfusion after the intervention ($p<0.05$). The 2 patients in the study who showed no improvement in their tissue perfusion via the device had negative clinical outcomes.

Conclusions
The novel monitor provided real-time feedback about tissue perfusion, without impacting on clinical workflow, and the device outputs correlated with clinical outcomes.

The relationship between gender and survival to discharge in people undergoing inflow procedures for aorto-iliac disease in the UK National Vascular Registry

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Background
Operative outcomes after lower limb revascularisation are frequently reported to be worse in women when compared to men. This study aimed to determine whether there was a significant relationship between gender and survival to discharge from hospital in people undergoing axillary or aortic based inflow procedures recorded in the National Vascular Registry (NVR).

Methods
This was an analysis of NVR data relating to people over 40 years of age undergoing axillary or aortic-based inflow procedures between January 2014 and December 2016. Following univariate analysis, binary logistic regression was used to identify variables that were significantly associated with survival to discharge from hospital.

Results
1766 inflow procedures were recorded (514 axillary and 1252 aortic) in 1191 men and 575 women. Women were older (p=0.006), had undergone fewer previous interventions (p<0.002), and presented with higher Rutherford scores (p=0.03). Women had a higher prevalence of respiratory disease, but lower rates of IHD and stroke. Survival to discharge was associated with lower Rutherford scores (OR 1.75, 95% CI 0.74-0.412, p=<0.001), IHD (OR 2.1, 1.38-3.29, p=0.001), chronic kidney disease (OR 0.15, 1.15-3.69, p=0.015), elective versus emergency admission (OR 3.35, 1.02-5.53, p=<0.001) and lower age at time of surgery (OR 0.97, 0.95-0.99, p=0.009), but not gender.

Conclusions
Gender itself was not found to be a risk factor for survival to discharge after aorto-iliac revascularisation procedures. Risk factors for reduced survival such as age and higher Rutherford scores were greater in women, suggesting results showing poorer outcomes for women could be addressed by better and earlier diagnosis.

Interwoven nitinol stents vs. drug-eluting stents in the femoro-popliteal segment: two year outcomes in a propensity matched analysis

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Background
Percutaneous Transluminal Angioplasty (PTA) is a common procedure in patients with disease affecting the Femoro-Popliteal segment (F-P). Biomimetic nitinol stents (Supera Peripheral Stent – SPS) and Drug Eluting Stents (DES) were designed to improve the longevity of F-P PTA; however, their performance has not been compared in a pragmatic setting, taking atherosclerotic plaque-characteristics into account.

Methods
296 patients (mean age: 73±11 years, 65 % male, 68% with critical limb ischaemia) undergoing F-P PTA using SPS or DES (2013-2018) were included. Patient and plaque data, including F-P plaque analysis to assess degree of calcification based on computed tomography, were collected; 121 case-matched pairs were created using a propensity score based on patient/plaque characteristics.

Results
During a median 2 year follow-up, 28% of the cohort (32% SPS vs. 24% DES, p=0.07) developed Target Lesion Restenosis (TLR) >50%. Amongst the 121 case-matched pairs, those with SPS vs. DES were not significantly more likely to develop TLR >50% (31% vs. 27%, p=0.34), stent occlusion (13% vs. 12%, p=0.85), have a major amputation (10% vs. 6%, p=0.16), require reintervention (14% vs. 9%, p=0.12), or die (7% vs. 4%, p=0.31). Plaque calcification did not predict restenosis or occlusion in either stent group. The main predictors of restenosis >50% on multivariate analysis were: female sex [Odds Ratio (OR): 2.05, p=0.01], hypertension (OR: 2.10, p=0.04) and previous F-P occlusion (OR: 1.35, p=0.04).

Conclusion
Medium term results following F-P PTA with either SPS or DES are comparable, regardless of plaque calcification and patient characteristics.

Renal injury is common after aortic intervention: Findings from the Midlands Aortic Renal Injury (MARI) cohort study, a Vascular and Endovascular Research Network (VERN) collaboration

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The true incidence of acute kidney injury (AKI) after aortic or open endovascular procedures is unknown, even though AKI is known to be associated with worse outcomes. Current relevant literature suffers from inconsistencies such as lack of uniform AKI reporting.

A prospective cohort study was performed in 11 vascular centres (England and Wales) between September 2017 and December 2018, recruiting patients undergoing open or endovascular aortic surgery. Serum Creatinine (SCr) and urine outputs were measured to define post-operative AKI using Kidney Disease Improving Global Outcomes (KDIGO) criteria. Renal decline at 30 days was calculated using estimated glomerular filtration rate (eGFR) and the MAKE30 composite endpoint (death, new dialysis, >25% eGFR decline).

A total of 300 patients (mean age: 71 years, SD: 4 years; 27 females, 9%) were included, who underwent: infrarenal endovascular aneurysm repair (EVAR) 139 patients, fenestrated EVAR (fEVAR) 30, branched EVAR (bEVAR) 7, infrarenal open aneurysm repair (OAR) 98, juxtarenal OAR 26. Overall, 24% developed stage 1 AKI, 2.7% stage 2 AKI and 1% needed transient filtration before discharge. AKI proportion per intervention were: infrarenal EVAR 18%; fEVAR 27%; bEVAR 71%; infrarenal OAR 41%; juxtarenal OAR 63%. Age, baseline eGFR and ischaemic heart disease were the main predictors of AKI for infrarenal EVAR and OAR. Overall, 24% developed the MAKE30 endpoint.

AKI and short term renal decline after aortic intervention are very common. Age, baseline renal function and pre-existing cardiovascular disease are the main risk-factors. Research should now focus on AKI prevention in this high-risk group.

Acute kidney injury in association with acute type B aortic dissection

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Introduction
Acute Kidney Injury (AKI) following acute type B aortic dissection (AAD) may be associated with increased in-hospital and late mortality. Currently available evidence consists of small series using inconsistent non-validated AKI reporting criteria. This study examined the proportion of patients with AAD who develop AKI and detected associations with outcomes.

Methods
Consecutive patients with AAD referred to a tertiary referral centre between January 2014-December 2018 were included. Clinical and biochemical data during in-hospital stay were recorded. AKI was defined according to the "Kidney Disease Improving Global Outcomes" (KDIGO) criteria, as recommended by National Institute for Health and Care (NICE) guidance.

Results
A total of 96 patients were included (median age: 65 years; 31% female). Forty (41%) patients developed AKI, 19 had stage-1 AKI (20%), 15 stage-2 (16%), and 6 stage-3 (6%). A total of 3 patients required renal replacement therapy during their inpatient stay. Those with AKI had a longer stay in-hospital (17.5 days vs 9.5 days, P<0.001) and a 7-fold higher likelihood of death after 30 days (15% vs. 1.8%, p=0.02). The increased mortality was evident irrespective of stage (stage 1 AKI mortality at 30 days vs no AKI 17% vs. 2%, p=0.04).

Conclusions
This study, using contemporary validated AKI reporting criteria, has shown that AKI is very common after AAD and that it is associated with worse short-term outcomes. Further work to understand the mechanisms of renal injury is warranted in order to guide management strategies in this setting.

Frailty factors and outcomes in vascular surgery: A systematic review and meta-analysis

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Background
Increasing evidence shows negative impacts of frailty on outcomes in vascular surgery patients. Review aims were to describe and critique tools used to assess frailty in vascular patients, and investigate its associations with patient factors and outcomes.

Methods
Systematic review and meta-analysis of studies reporting frailty in vascular patients (PROSPERO registration: CRD42018116253) searching Medline, Embase, CINAHL, PsychINFO and Scopus. Quality of included studies was assessed using Newcastle-Ottawa scores (NOS) and quality of evidence assessed using GRADE criteria. Associations of frailty with patient factors were investigated by difference in means (MD) or expressed as risk ratios (RR), and associations with outcomes expressed as odds ratios (OR) or hazard ratios (HR). Data were pooled using random effects models.

Results
Fifty-three studies (>160,000 patients) were included in the review and only 8 (15%) were both good quality (NOS ≥7) and used a well-validated frailty measure. Eighteen studies (62,976 patients) provided data for the meta-analysis. Frailty was associated with increased age (MD 4.05 years; 95% confidence interval [CI] 3.35, 4.75), female sex (RR 1.32; 95%CI 1.14, 1.54), and lower body-mass index (MD -1.81; 95%CI -2.94, -0.68). Frailty was associated with 30-day mortality (adjusted [A]OR 2.77; 95%CI 2.01-3.81), post-operative complications (AOR 2.16; 95%CI 1.55, 3.02) and long-term mortality (HR 1.87; 95%CI 1.29, 2.72). Sarcopenia alone was not associated with any outcomes. Quality of evidence was moderate to very low.

Conclusion
Frailty, but not sarcopenia, is associated with worse outcome in vascular patients. Few studies use well validated frailty assessment tools, and prospective research using such tools is required.

Assessing digital and e-health literacy amongst patients attending vascular surgery clinic; a questionnaire study

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Objective
Despite a shift to communicate health information to patients through digital platforms, there has been no assessment of the digital and e-health literacy of vasculopathic patients. This questionnaire study aims to assess such literacy in this patient cohort.

Methods
A multi-questionnaire study of consecutive patients attending vascular surgery clinics at a London tertiary centre was undertaken. The questionnaires consisted of a baseline demographic survey and two validated tools; the Mobile Device Proficiency Questionnaire (MDPQ-16) and the eHealth Literacy Scale (eHEALS).

Results
75 arterial and 25 venous patients completed the survey (mean age 60 years; 53% male). 85% owned a smartphone, however, only 44% "strongly agreed" that they possess the skills to use a mobile device effectively. This correlated with age ($r=-0.516$, $p<0.05$) and level of education ($r=0.247$, $p<0.05$) but not gender ($p=0.154$). 41% stated they could use 'app' and 'picture-based' modalities (e.g. WhatsApp), whereas 65% preferred SMS. When asked for the optimal method of transfer of health information, patients ranked SMS and "secure e-mail" as high as a formal consultation with a clinician. Regarding e-health literacy; 60% stated that they perceive digital health resources to be useful in guiding their own health choices, however, only 40% stated they were confident in distinguishing between high- and low-quality digital health resources themselves.

Conclusion
The drive to incorporate digital health into healthcare is highly appreciated by patients. There is, however, a lack of digital and e-health literacy amongst a vasculopathic cohort. This requires consideration upon incorporation of such technology into care pathways.

Abstract Session 3: Aortic Prize

Early outcomes of elective and non-elective open and endovascular repair of distal arch, descending thoracic and thoracoabdominal aorta disease

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Objectives
The proposed national service specification for thoracic aortic disease stipulates that designated supraregional aortic centres must offer elective and non-elective open (OR) and endovascular (EVAR) treatments for all aortic segments.

Methods
Interrogation of prospectively-maintained cardiothoracic and vascular surgical databases identified consecutive patients who underwent OR and EVAR for aortic disease involving the distal arch, descending thoracic (DTA) and thoracoabdominal aorta (TAA) in a single institution between January 2012 and December 2018.

Results
A total of 647 patients were treated (450 elective, 120 urgent, 77 emergency) for disease affecting the distal arch/DTA (n=287) or TAA (n=360; 212 extent I-III, 148 extent IV) by OR (n=172; 91 arch with frozen elephant trunk, 81 DTA/TAA), standard thoracic EVAR (n=116) or complex EVAR (n=359; 33 arch with DTA/TAA, 326 TAA alone). The 30-day mortality for elective repair was 4% (n=18): OR 10.7% (13/121), standard thoracic EVAR 1.9% (1/52), complex EVAR 1.4% (4/277). The 30-day mortality for non-elective repair was 15.7% (n=31): OR 7.8% (4/51), standard thoracic EVAR 17.2% (11/64), complex EVAR 19.5% (16/82).

Conclusions
In a high-volume aortic centre, a multi-disciplinary approach is associated with good early outcomes in patients presenting with distal arch, descending thoracic and thoracoabdominal aortic disease.

Short- and long-term outcomes of treatment strategies for isolated penetrating aortic ulcers (PAUs)

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Background
The optimum management of isolated PAUs with no associated intramural haematoma (IMH) or aortic dissection (AD), is not clear. We evaluate the short- and long-term outcomes in isolated PAU patients to better inform management strategies.

Methods
Electronic records and CT imaging were retrospectively reviewed to identify 40 patients with isolated PAUs (excluding IMH/AD), managed in a surveillance programme or undergoing surgery (39%-arch ulcers; 45%-thoracic; 16%-abdominal). Conservative and surgical groups were analysed separately. Primary outcomes included mortality, PAU progression and interventional complications.

Results
Overall long-term mortality was 30% (mean follow up=3.86 years, range 0.10-11.02 years) with no significant difference between conservative and surgically managed groups (p=0.53).
68% (n=27) asymptomatic patients were initially managed conservatively; they had significantly smaller PAU depths compared to those undergoing initial surgical repair (n=13) and fewer PAUs were aneurysmal ($p<0.05$, Mann-Whitney U test). Three patients were converted from conservative to surgical management at a mean 4.2 years (range 1.6-8.7 years), primarily due to aneurysmal change. No aortic deaths were documented. For those undergoing intervention there were 15/16 endovascular and 6/16 urgent procedures. 2/15 endovascular cases involved supra-aortic debranching, 7/15 utilised scalloped/fenestrated/chimney stents. 1/16 died in-hospital following repair. 30-day reintervention rate was 5/16; all for type I /III endoleaks, predominantly during complicated arch repairs. 5/16 died during follow up (mean 4.5 years, range 0.19-8.39 years)–1/16 aortic related.

Conclusion
Isolated, asymptomatic, small PAUs may be safely managed conservatively with regular surveillance, rarely progressing. Those with high-risk features or progress with aneurysmal change require complex strategies for successful treatment.

A comparison of reinterventional options following endovascular aneurysm sealing for abdominal aortic aneurysm

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Background
Despite initial positive outcomes endovascular aneurysm sealing (EVAS) with the Nellix device has been associated with mid-term therapeutic failure. Reinterventions are complex, with no consensus on the optimal treatment of therapeutic failure.

Methods
A retrospective cohort study including all cases whereby reintervention was undertaken following EVAS at a single centre. Outcomes of reintervention were compared by indication and treatment modality undertaken.

Results
69 patients underwent 96 reinterventions, with the initial intervention at a median of 1.98 years. This represented 23.4% (69/295) of EVAS cases undertaken from 2013 onwards. Indications for re-intervention were variable, and often presented as a combination. When analysing for therapeutic failure (migration, sac expansion, type1a endoleak, type1b endoleak and rupture) treatment success was defined by resolution with no need for further intervention. Explantation had the highest success rate (12/13, 92%) followed by Nellix-in-Nellix application (16/24, 66%), proximal and/or distal graft extension (9/12, 64%) and embolization (9/27, 33%). Intervention for early signs of therapeutic failure i.e. migration alone was associated with increased treatment success.

Conclusions
Complications following EVAS are challenging to detect and difficult to treat, often associated with multiple reinterventions. Early signs of therapeutic failure were associated with improved treatment outcomes, advocating early intervention. Where patient morbidity allowed, explantation appeared to offer the most durable form of treatment, conversely embolization offered the lowest chances of resolution.

Predicting recovery from paraplegia after thoracoabdominal aneurysm repair

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Introduction
Spinal cord ischaemia (SCI) is perhaps the most feared complication post-thoracoabdominal aortic aneurysm (TAAA) repair. We examined cellular and proteomic changes in cerebrospinal fluid (CSF) and related these to neurological outcome.

Methodology
Patients undergoing TAAA repair with CSF drainage were recruited. CSF was collected pre-operatively and 24-hourly until drain removal. Daily neurological examinations were performed. CSF cell/protein content was characterised by flow cytometry and tandem-mass-tag labelled proteomics respectively.

Results
CSF was analysed from 52 patients (age: 70.27 +/-11.4 years; 66% male; Crawford Type I (10.8%) II (29.2%), III (26.2%), IV (30.8%), V (3.1%); open (n=9), total endovascular (n=43). 12 patients developed SCI; 5 remaining permanently-paraplegic. All permanently paraplegic patients had undergone endovascular repair. CSF from Permanently-paraplegics contained more CD45+ leucocytes ($P<0.0001$). Levels of ADVS1, a regulator of blood/spinal cord barrier integrity, was >7-fold higher in permanently-paraplegic CSF versus recovered patients ($P=0.0008$). Patients with CSF ADVS1 >15ng/ml predicted permanent paraplegia with a specificity of 100%, and were more likely to have pathological spinal cord swelling on T2-weighted MRI ($P<0.05$).

Conclusion
The present study is the largest analysis of CSF post-TAAA repair in-man. Our results suggest that permanent paraplegia is associated with shedding of ADVS1 from parenchymal cord into CSF and a breakdown of blood/spinal-cord barrier. This breakdown allows the migration of oedema/leucocytes into the cord and may explain the pathogenesis of irreversible paraplegia after TAAA repair. The CSF signature we have described may prove useful in predicting prognosis after SCI and identifies ADVS1 as a potential therapeutic target.

Carbon-dioxide versus saline flushing of thoracic aortic stents-grafts to reduce vascular brain infarcts: An observational study

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Background
Vascular brain infarcts (VBI) formerly known as 'silent' cerebral infarction detected on neuroimaging have been shown to occur in up to 70% following thoracic endovascular aortic repair (TEVAR). Inadequately de-aired delivery devices following standard saline flushing may contribute to cerebral embolization during TEVAR. Carbon-Dioxide (CO2) is heavier than air and has been shown to effectively displace air from the surgical field in cardiac surgery.

Methods
A prospective observational study was conducted between 2015 and 2018 at two tertiary vascular units in London comparing the rate of VBI in patients undergoing TEVAR with standard saline versus CO2 flushing. All patients suitable for TEVAR with no adjunctive revascularisation procedures for all aortic pathology were eligible. In the first half of the study period consecutive patients underwent TEVAR with standard saline flushing according to IFU (TEVAR-S group). In the second half of the study period consecutive patients underwent TEVAR with 100% CO2 flushing at 2.8bar for 1-minute (TEVAR-CO2 group). TEVAR-S patients were randomly selected and compared to the TEVAR-CO2 group.

Results
Pre and post-operative diffusion-weighted MRI was performed in 57 patients undergoing TEVAR. Total VBI rate was 61% (35/57). In 25 TEVAR-S patients the VBI rate was 56% (14/25) versus 25% (4/16) in 16 TEVAR-CO2 patients. Median number of lesions in TEVAR-S group was 1 (range 0-5) versus 0 (range 0-3) in TEVAR-CO2 (p=0.044).

Conclusions
CO2 flushing of TEVAR stent-grafts resulted in significant reduction in VBI following TEVAR. A multi-centre randomised controlled trial is currently underway to validate these findings.

Fenestrated and branch endovascular repair for juxtarenal and thoracoabdominal aortic aneurysms: A 12 year experience

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Objectives
To report the medium-term outcome of elective fenestrated and branch endovascular repair (FEVAR-BEVAR) for juxtarenal (JRAAA) and thoracoabdominal aortic aneurysms (TAAA).

Methods
Interrogation of a prospectively-maintained database identified consecutive patients who underwent elective FEVAR-BEVAR for JRAAA and TAAA in a single institution between August 2006 and February 2019.

Results
A total of 518 patients [427 men; median age 74 years (IQR 69, 79), median aneurysm diameter 65 mm (IQR 60,75)] with JRAAA (n=244) and TAAA (n=274; 148 extent I-III, 126 extent IV) underwent FEVAR (n=418) or BEVAR (n=100) with a proximal supracoeliac (SC) sealing zone (zone 5 and above) in 361 (69.7%) patients and infracoeliac (IC) sealing zone (zone 6 and below) in 157. A total of 1932 vessels (mean 3.7/pt) were targeted for preservation. The 30-day mortality was 1.9% (n=10). Estimated 1- and 3-year survival for the entire cohort was 93% and 80%, respectively. There was no difference in 3-year survival for SC compared with IC sealing zones: 78% vs. 84% (p=0.84). Patients treated with proximal SC sealing zones and > 4 target vessels (n=285) had better 3-year survival than those with < 3 target vessels (n=76): 81.1% vs. 69.8% (p=0.019).

Conclusions
Elective FEVAR-BEVAR for JRAAA and TAAA is associated with low peri-operative mortality and good medium-term survival. In patients treated with SC sealing zones, a lower number of target vessels was associated with inferior medium-term survival. This group of patients may have more advanced atherosclerosis and could benefit from more intensive pre-operative assessment and risk factor modification.

Abstract Session 4: Peripheral Prize

Current medical management of patients with peripheral arterial disease and potential benefits of risk-factor optimization: A Vascular and Endovascular Research Network (VERN) collaboration

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Background
Previous research suggests patients with Peripheral Arterial Disease (PAD) are not offered adequate risk-factor modification, despite their high cardiovascular risk. We aimed to assess the cardiovascular profiles of patients with PAD in the UK and quantify the survival benefits of target-based risk-factor modification.

Methods
The Vascular and Endovascular Research Network (VERN) prospectively collected cardiovascular profiles of patients with PAD from ten UK vascular centres (April – June 2018) to assess practice against UK and European goal-directed BMT guidelines. Risk and benefits of risk-factor control were estimated using the SMART-REACH model, a validated cardiovascular prediction tool for patients with PAD.

Results
Overall, 440 patients (mean age: 70±11 years, 24% female) were included. Mean cholesterol (4.3±1.2 mmol/L) and LDL (2.7±1.1 mmol/L) levels were above recommended levels; 319 (73%) patients were hypertensive and 343 (78%) were smokers. Only 12% of patients were prescribed high-dose statin therapy and 39% an antithrombotic agent. The median risk of a major cardiovascular event over 10-years was 53% [Interquartile Range (IQR): 44-62%]. Controlling all modifiable cardiovascular risk-factors based on UK and European guidance targets (LDL<2mmol/L, SBP<140mmHg, smoking cessation, antiplatelet therapy) would lead to an absolute risk reduction of the median 10-year cardiovascular risk by 29% (range: 20-38%) with 6.3 cardiovascular disease-free years gained (range: 4.0-9.3 years).

Conclusion
The medical management of patients with PAD is suboptimal nationally. Controlling modifiable risk-factors to guideline-based targets confers a large therapy-benefit from both a 10-year and a lifetime perspective.

Real world costs and consequences of a failed SFA angioplasty

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Introduction
Debate surrounds the optimal management of SFA disease. Randomised trial data rarely reflects real world findings, specifically the consequences to the patient of angioplasty failure.

Methods
We reviewed a consecutive series of 159 patients (94 men, median age 72 years) undergoing solely SFA angioplasty between 01/01/2015 and 31/12/2106. Patient pre-angioplasty demographics and 2-year post-PTA follow up data were collated, including hospital attendances (inpatient / outpatient), further imaging (including radiation exposure) and revascularisation attempts. We defined "failed angioplasty" as presence of clinical symptoms with radiological evidence of significant restenosis following an initial successful primary angioplasty.

Results
Fifty-six patients represented with a failed angioplasty (median time of 4 months post index PTA). In this group, failure of index angioplasty resulted in a further 196 restenosis-related clinic visits and a total of 548 bed days of inpatient stay. This group underwent a further 162 scans (19 CTa, 136 duplex, 1 MRA, 6 formal angiograms) and required a further 39 endovascular revascularisation procedures and 15 infrainguinal bypass procedures. These interventions and investigations corresponded to overall effective radiation dose across all patients of 206.74mSv. Of the cohort of 103 patients who did not have a "failed angioplasty", they required 109 clinic visits, 23 further scans (total radiation dose 6.42mSv) and 36 bed days of inpatient admission.

Conclusion
Failed angioplasty results in significant additional consequences for patients and healthcare systems. Further work should focus on refining decision making, providing the right procedure to the right patient at the right time.

Long term patency outcomes in deep venous stenting

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Background
Deep venous stenting has become more popular over the past few years with the advent of dedicated venous stents. Stenting is now commonly used in the treatment of May Thurner syndrome or in patients with post thrombotic syndrome to alleviate venous obstruction. Re-intervention rates for stent thrombosis or stenosis can be high and are a big concern with regards to this treatment. The aim of this study was to assess stent patency and re-intervention rates in patients who had undergone lower limb deep venous stenting in a tertiary vascular unit. In addition, a comparative analysis of stent patency for acute and chronic occlusions was performed.

Methods
This was a retrospective single centre study of prospectively collected data. All patients who underwent stenting (with dedicated venous stents) for acute and chronic deep venous disease between November 2011 and June 2018 were included in the study. During the post-stent surveillance programme, duplex ultrasound was used to assess stent patency.

Results
Seventy-eight deep venous stents were inserted between November 2011 and June 2018. Ten patients were immediately lost to follow up and were therefore excluded from the analysis. The median age was 41.5 years (range 13-79 years) and twenty-eight procedures were for acute presentations and forty for chronic occlusions. Twenty-two limbs required re-intervention (32%) (thrombolysis, venoplasty and/or additional stent insertion). There was no statistical difference in primary, primary assisted or secondary patency between stents inserted in the acute or chronic setting. The primary patency rate at 12, 24, 48 and 60 months was 84%, 75%, 30% and 30% respectively. The primary assisted patency rates at 12, 24, 48 and 60 months was 91%, 88%, 82% and 82% respectively. The secondary patency rate at 12, 24, 48 and 60 months was 90%, 87%, 82% and 82%.

Conclusion
These results demonstrate good overall secondary patency outcomes in patients who have undergone deep venous stent procedures. Thirty-two per cent of patients required re-intervention; this underlines the importance of stent surveillance for timely identification of these individuals. There was no significant difference in patency outcomes comparing stents sited for acute versus chronic disease.

Hybrid revascularisation for multi-level peripheral vascular disease: 5-year outcomes

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Background
Hybrid surgery (femoral endarterectomy with endovascular revascularisation) is an alternative treatment to reconstructive surgery for multi-level arterial disease. The aim was to analyse outcomes in patients undergoing this procedure.

Methods
Patients undergoing hybrid surgery between 2013-2018 were included. Primary outcomes were major adverse limb events (MALE) and peri-operative adverse cardiovascular events (MACE). Secondary outcomes were post-operative morbidity and target vessel patency.

Results
322 patients, mean age 72±11(sd), 75% males, underwent hybrid surgery (72% electively) for Rutherford III (47%), IV (20%) and V-VI (33%) ischaemia. Median follow up was 15 months. Patients underwent femoral endarterectomy followed by endovascular treatment of their iliac (69%), SFA/crural (27%) or both inflow and outflow vessels (4%). Stenting was required for 88% and 58% of iliac and SFA lesions respectively. The median length of stay was 4 (2-8) days. 13% had a groin complication (bleeding [4%], haematoma [3%] or wound infection [6%]). 1, 2 and 3 year primary patency (>70% stenosis) was 65%, 48% and 41%; primary assisted and secondary patency rates were 96%, 92% and 80% vs 97%, 92% and 89% respectively. MACE and 5-year MALE events occurred in 12% and 11% of patients respectively 1, 2 and 5-year survival and amputation-free survival rates were 88%, 81%, 44% vs 86%, 76%, 38%.

Conclusions
This is the largest hybrid series for multi-level peripheral vascular disease. Strict postoperative surveillance is necessary to maintain acceptable patency rates. It is associated with acceptable MALE and MACE and should be considered for treatment in high-risk patients.

A novel vascular limb salvage clinic for the management of critical limb threatening ischaemia and diabetic foot disease: Our first year results

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Background
Dedicated vascular limb salvage clinics may reduce delays in the management of critical limb threatening ischaemia (CLTI) and diabetic foot disease (DFD). We report the first year outcomes of a nurse-led, vascular limb salvage (VaLS) clinic for assessing patients with suspected CLTI and/or DFD, which aims to revascularise patients within 10 working days of referral, as recommended by the VSGBI's Provision of Vascular Services (POVS) 2018.

Method
Analysis of consecutive patients referred to the VaLS clinic over a 12 month period from inception (February 2018-February 2019). Data was prospectively collected on: a) time from referral to assessment and revascularisation and b) major amputation rates.

Results
Two-hundred and ninety-nine cases (295 patients, median age=73 years, male=205, median follow-up=160 days) with suspected CLTI and/or DFD were assessed over a 12 month period. One-hundred and seventy-five (58.5%) cases occurred in patients with diabetes. General practice (n=133) and loco-regional diabetic foot clinics (n=101) were the leading referral sources. Overall, 128 cases (42.8%) underwent revascularisation following assessment, with primary endovascular being the most common technique (n=105, 82.0%). Median time from referral to assessment was 2.1 [IQR= 1.3-4.1] days and assessment to first revascularisation was 6.1 [4.0-11.0] days. Sixteen major amputations were performed (5.4%) (AKA=6, BKA=10) and 30 patients (10.2%) died during follow-up.

Conclusions
The VaLS clinic has achieved rapid assessment and revascularisation times, facilitating the attainment of the POVS standard. Early major amputation rates are encouraging, however longer follow-up data is required to fully assess this model of care.

Revascularise at all costs: Are the costs of revascularisation justified in avoiding amputation in acash-strapped health service?

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Background
Despite peripheral arterial disease (PAD) affecting over 200 million people worldwide, there is a paucity of published data on costs of PAD on healthcare systems. This study aims to calculate the financial effect of PAD and consider if interventions to avoid major amputations are justified in cash-strapped healthcare systems.

Methods
The Oxford Vascular Study is a large-scale prospective population-based study (92,728 participants) of all vascular events. For this analysis, all patients with first-ever incident of acute limb ischaemia (ALI) and critical limb ischaemia (CLI) episodes were included (2002-2017). Hospital resource usage and institutional data were obtained to calculate mean 10-year healthcare costs.

Results
CLI is the most common acute PAD event type identified; with an incidence of 22/100,000/year compared to ALI at 10/100,000/year. CLI is the most expensive cardiovascular event with a mean 10-year healthcare cost of £44,727. Intervention was a strong independent predictor of long-term costs. Mean 10-year costs for any PAD event was £32,971. Performing one or more angioplasty/stent interventions or one or more bypass procedures increased the costs to £39,648 and £43,839 respectively. This was considerably less than mean costs of a below knee and above knee amputation, £59,130 and £63,150 respectively.

Conclusion
The study provides evidence of the impact of PAD events on healthcare systems. The results justify the approach to revascularise patients presenting with ALI or CLI, when appropriate, on grounds of overall healthcare costs when compared to a primary major amputation.

Abstract Session 5

Single centre operative and midterm outcomes of the custom-made fenestrated anaconda stent-graft in the treatment of short neck and juxta-renal aortic aneurysms

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Background
The custom-made fenestrated Anaconda stent-graft (Vascutek) was introduced in 2010 for treatment of short neck and juxtra-renal aortic aneurysms. We present midterm outcomes from a UK regional vascular unit.

Methods
Analysis of consecutive patients treated with custom-made Anaconda fenestrated endovascular aortic repair (FEVAR) between 2011 and 2018 was performed.

Results
108 patients (median age 78 years, IQR 71-82, 84% male) underwent FEVAR with 293 fenestrations in total; 7% one, 33% two, 40% three, and 20% four vessel fenestrations. Technical success was 97% (two failed renal cannulations and one on-table death following iliac rupture). 30-day mortality was 5.6% (6/108). Median follow up was 12 months (IQR 5-33), with 1, 2, and 5-year survival rates of 89%, 77%, and 39% respectively. Target vessel re-intervention rate was 11% and iliac limb re-intervention rate was 9%. 14% of patients had decline in renal function with post-operative eGFR reduction >25% (6/44 1 and 2 vessel FEVAR, 9/64 3 and 4 vessel FEVAR, p=NS). At follow-up there were no type I, 24 type II (22%) and 3 type III (2.8%) endoleaks detected, with 4 cases (3.7%, 1 type II and 3 type III) requiring re-intervention. In 97% of patients, aneurysm sac size was stable or decreasing. Mean radiation (dose area product mGy.cm2) for 1 and 2 vessel FEVAR was 359,326 versus 554,199 for 3 and 4 vessel FEVAR (p=0.001).

Conclusions
In this large single centre series the fenestrated Anaconda device demonstrates technical and clinical success, with acceptable re-intervention rates and good midterm durability.

Meta-analysis and meta-regression analysis of outcomes of endovascular repair for ruptured abdominal aortic aneurysm

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Background
The role and potential advantages of endovascular aneurysm repair (EVAR) in the management of ruptured abdominal aortic aneurysm (AAA) is controversial. We aimed to assess the perioperative mortality of EVAR versus open surgical repair for ruptured AAA and investigate whether outcomes have improved over the years and whether there is an association between institutional caseload and perioperative mortality.

Methods
We performed a systematic review that conformed to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines using a registered protocol (CRD42018106084). We selected studies reporting perioperative mortality data of EVAR for ruptured AAA. We conducted a proportion meta-analysis of perioperative mortality and obtained summary estimates of odds ratios (ORs) and 95% confidence intervals (CIs) for EVAR versus open surgical repair using random-effects models. Mixed-effects regression models were formed to investigate changes in outcomes over time and with institutional caseload.

Results
We included 109 studies (4 randomized control trials) in quantitative synthesis reporting a total of 183,956 patients (EVAR 33,146; open surgery 150,810). The pooled perioperative mortality of EVAR and open surgical repair was 0.249 (95% CI 0.236 – 0.264) and 0.391 (95% CI 0.377 – 0.404), respectively. EVAR was associated with reduced perioperative mortality compared to open surgery (OR 0.54, 95% CI 0.51 – 0.57, P<0.0001). Meta-regression analysis found decreasing perioperative mortality following EVAR (P=0.0002) and open repair for ruptured AAA over time (P=0.0003), and a significant association between the OR of EVAR versus open surgical repair for perioperative mortality and the median study point, with the OR decreasing over time in favour of EVAR (P=0.0002). Meta-regression also found a significant association between perioperative mortality and institutional case load for open surgical repair (P=0.015) but not for EVAR (P=0.058).

Conclusion
If EVAR can be done, it is a better treatment for ruptured AAA than open repair. The outcomes of both EVAR and open surgical repair have improved, and the difference in perioperative mortality in favour of EVAR has become more pronounced over the years. There is a significant association between perioperative mortality and institutional case load for open surgical repair of ruptured AAA but not for EVAR.

The impact of fenestrated aortic repair on renal function; a UK tertiary centre experience

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Introduction
Renal function, its decline and the presence of acute kidney injury is associated with poor cardiovascular outcomes. It may be a common phenomenon in standard EVAR. The impact of Fenestrated EVAR on renal function in the short and long-term is not fully understood; this study aimed to clarify this.

Methods
A database of FEVAR's performed between 2010 and 2018 was analysed. Creatinine, reciprocal of creatinine (as per the ASTRAD Trial) and eGFR (calculated by the CKD-EPI and MDRD formulae) were assessed. Regression analysis was performed to identify predictive variables.

Results
133 patients treated with FEVAR were included. Median follow-up was 22 months with a mean AAA diameter of 6.4(1.1) cm and a baseline eGFR of 68.9mL/min/1.73m2. A statistically significant 14% decline was noted at day 3 but this improved over study follow-up with an overall small decline of 10% in renal function at 22months. Further analysis revealed that there was a subsequent significant return towards baseline at 5-year follow-up. Pre-operative serum creatinine and lower haemoglobin correlated with a decline in both short and long-term renal function. Independently, the larger the AAA diameter the greater the decline in day 3 renal function and the longer the duration of procedure the greater the decline in long-term renal function. Highest risk parameters were identified to help predict AKI and long-term renal failure.

Conclusion
Reassuringly FEVAR is associated with only a small decline in renal function. Pre-operative identification of highest risk patients and their optimization may improve renal function outcomes.

Endovascular versus medical management for uncomplicated acute and subacute type B aortic dissection

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Background

Complicated Type B aortic dissections (TBAD) should be managed by an emergent endovascular strategy, provided this is possible. However, the management of uncomplicated Type B aortic dissection (uTBAD) is less clear cut. Our aim was to systematically review the evidence in patients with acute or subacute uTBAD, to see if TEVAR improves early and late all-cause and aorta-related mortality.

Methods

The review was undertaken according to the PRISMA guidelines. We performed an assessment of methodological quality of included studies. The primary outcome measures were early mortality and reintervention, and late all-cause and aorta-related mortality and reintervention. Meta-analysis was performed.

Results

Eight original articles from 6 studies encompassing 14 706 patients (1066 TEVARs) were eligible for inclusion in the meta-analysis. There were no statistically significant differences between TEVAR and BMT with regards to inpatient mortality (RD 0.01, 95% CI -0.01, 0.02, P=0.46), early reintervention with TEVAR (RD 0.02, 95% CI -0.01, 0.04, P=0.19) or surgery (RD 0.00, 95% CI -0.01, 0.01, P=1.00). BMT alone was associated with a significantly lower risk of early stroke (OR 0.64, 95% CI 0.48, 0.85, P=0.002), whereas the risk of late all-cause (HR 1.54, 95% CI 1.27, 1.86, P<.0001) and aorta-related mortality (HR 2.71, 95% CI 1.49, 4.94, P=0.001), was significantly higher than with TEVAR.

Conclusion

In patients presenting with acute/subacute uTBAD, TEVAR with BMT results in reduced late mortality when compared to BMT alone. TEVAR should be considered in all anatomically suitable patients.

Using the ovation stent graft for hostile infra-renal aortic aneurysm necks: A single centre experience

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Background
EVAR remains the mainstay in the management of infrarenal abdominal aortic aneurysms. Despite significant advances, ensuring an adequate proximal seal in cases of a hostile neck remains a considerable challenge, particularly for patients not fit for open repair or when access to complex EVAR is not readily available. We present our experience with the Ovation stent graft.

Methods
A retrospective analysis of prospectively collected data on all elective cases of EVAR undertaken in our centre with the Ovation stent graft between January 2015 and October 2018 is presented. Demographic, procedural, anaesthetic and aneurysm morphology related parameters were collected and analysed.

Results
A total of 71 cases (57 male) were identified, with 21 having a past medical history significant for a previously treated malignancy. Median ASA grade, Revised Cardiac Risk Index (RCRI) and Veteran Specific Activity Questionnaire scores were 3, 2 and 7 respectively, with a mean aerobic threshold level of 11.4 +- 2.4. Average British Aneurysm Repair score, Carlisle score and V-Posum scores were 1.1 +- 0.8, 2.8 +- 1.9 and 2.3+-1.5 respectively. Median length of stay was 3 days. 13 cases of endoleak (Type 1a: 4, Type 1B: 3 and Type 2: 7) were seen, requiring reintervention in 8 cases. Sac shrinkage was observed in 62 cases.

Conclusions
The ovation stent graft can be used safely for patients with hostile infrarenal aneurysm necks not fit for open repair or complex EVAR and is associated with a low re-intervention rate.

The frozen elephant trunk to facilitate endovascular repair of thoraco-abdominal aortic pathology

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Background
Lack of a suitable proximal landing zone in the aortic arch is a barrier to endovascular repair of some thoracoabdominal aneurysms. Here we describe our experience of using the frozen elephant trunk (FET) to overcome this.

Method
Retrospective review over a 7 year timeframe of all elective cases undergone endovascular completion of descending thoracoabdominal pathology following FET in a tertiary complex aortic service.

Results
A total of 18 patients were treated: 14 aneurysms and 4 dissections. We performed 12 thoracic endovascular aortic repairs (TEVAR), 3 complex branched endovascular aneurysm repair (EVAR) and 3 hybrid procedures. Patients were 8 females (44%) and 10 males (56%), average age was 69 (+/- 14) year old. Transapical approach was necessary to provide access in 2 complex EVAR cases. All 3 hybrid cases were staged, of them one underwent revision of the coeliac branch for early thrombosis via re-do laparotomy at same time of 2nd stage TEVAR completion. The early mortality at 30 days was 5% (1/18) and there have been no further deaths at one year (overall median follow-up time was 24 months). One patient developed transient spinal symptoms and one had permanent altered sensation in lower limbs. At one year follow-up all sacs were stable and there were no type 1 or type 3 endoleaks.

Conclusions
Combination of frozen elephant trunk and complex endovascular repair is a feasible option for complex thoraco-abdominal aneurysm without a conventional proximal landing zone. Multidisciplinary teams including vascular surgery, cardiothoracic surgery and interventional radiology are required.

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Posters

Poster No 1

The use of mobile technology to augment exercise therapy for intermittent claudication

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Poster No 2

Atherectomy for peripheral arterial disease

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Poster No 3

Preoperative cardiac stress testing in patients undergoing vascular surgery: preliminary results of a systematic review

Sarah Nduwayo[1], John Houghton[1], Andrew Nickinson[1], Coral Pepper[2], Tanya Payne[1], Greg McMahon[13], Matt Bown[13], Gerry McCann[1], Rob Sayers[13]
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Poster No 4

Screening for popliteal artery aneurysms in patients undergoing non-elective abdominal aortic aneurysms interventions: is it worthwhile?

Andrew Khallaf, Shady Zaki, Monica Boughdady, Hussien Rabee, Ragai Makar
Countess of Chester NHS Foundation Trust, Chester

Poster No 5

An audit of hybrid reconstruction of the iliofemoral segment

Caitlin MacLeod, Morven Allan, Stuart Suttie, Murray Flett, Graeme Guthrie
Ninewells Hospital, Dundee

Poster No 6

Outcomes for patients turned down for treatment following detection of aneurysms by the National Abdominal Aortic Aneurysm Screening Programme

Katherine Stenson, Peter Holt, Ian Loftus
St George's Vascular Institute, London

Poster No 7

Prognostic review and time-to-event data meta-analysis of endovascular aneurysm repair outside versus within instructions for use of aortic endograft devices

Assad Khan[1], George Antoniou[12], Maciej Juszczak[3], Ranjeet Narlawar[4], Stavros Antoniou[5], Miltos Matsagkas[6], Konstantinos Donas[7], Jean-Paul de Vries[8]
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Poster No 8

Effect of low skeletal muscle mass on post-operative survival of patients with abdominal aortic aneurysm: A prognostic factor review and meta-analysis of ime-to-event data

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Poster No 9

Large diameter aortic neck in endovascular aneurysm repair: A prognostic factor review and meta-analysis of time-to-event data

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Poster No 10

Persistent Type II Endoleaks – Does thrombus burden matter?

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Consultant Vascular and Trauma Surgeon,
Brighton and Sussex University NHS Trust

Martin Griffiths
Consultant Vascular and Trauma Surgeon
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Greg Makris
Chair of BSIR Trainees Committee
and Senior Vascular & Interventional Radiology Fellow,
Oxford

Sanjay Patel
Consultant Vascular and Endovascular Surgeon,
Guy's and St Thomas' Hospital, London

David Shaw
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Phil Stather
Past President of Rouleaux Club and ST8 in Vascular Surgery,
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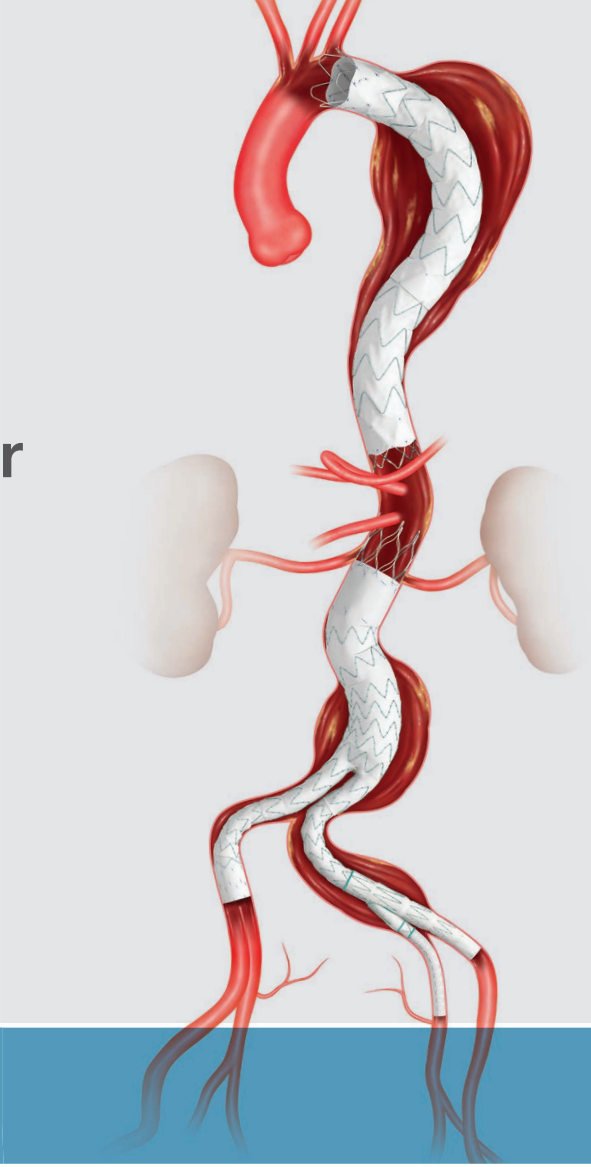

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