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British Society of
Endovascular Therapy

Annual Meeting 2018

Thursday 21st – Friday 22nd June
Tortworth Court Hotel, South Gloucestershire

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Annual Meeting 2018

Thursday 21st – Friday 22nd June
Tortworth Court Hotel, South Gloucestershire

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Thursday 21st June

- 09.00-09.05 **Welcome**
Mike Jenkins, BSET President
-
- 09.05-09.40 **Rouleaux Club Symposium**
*Chairs: Mike Jenkins, BSET President
Kevin Varty, Vascular Society President
Iain Roy, Rouleaux Club President*
- Run through training in vascular surgery from foundation year:
A viable proposition?**
Mark McCarthy
- Is the endovascular curriculum in the UK in line with the rest of the world?**
Keith Jones
- How we train vascular surgeons in Sweden**
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Iain Roy
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- 09.40-10.20 **Abstract Session 1** 6 papers 6 (4+2) minutes
Chairs: Rick Gibbs and Chris Twine
- 09.40-09.46 **Loco-regional versus general anaesthesia for elective endovascular aneurysm repair: Results of a cohort study and a meta-analysis**
Carlo Ciniselli¹, Shahin Hajibandeh¹, Shahab Hajibandeh¹, Kelvin Adasonla¹, Stavros A. Antoniou¹, Janet Barrie², Manmohan Madan¹, George A. Antoniou¹
¹Department of Vascular & Endovascular Surgery The Royal Oldham Hospital, Pennine Acute Hospitals NHS Trust, Manchester
²Department of Anaesthesia The Royal Oldham Hospital, Pennine Acute Hospitals NHS Trust, Manchester
- 09.46-09.52 **The true graft related endoleak detection rate of contrast enhanced ultrasound: A prospective single UK centre study of the predictive values of contrast enhanced ultrasound compared to time-resolved computer tomography angiography in the detection and characterisation of graft related endoleaks in high risk endovascular aneurysm repair surveillance patients**
Iain Roy^{1,2}, Tze Chan¹, Rao Vallabhaneni^{1,2}
¹Liverpool Vascular & Endovascular Service, Liverpool
²Institute of Ageing and Chronic Disease, University of Liverpool, Liverpool
- 09.52-09.58 **Endovascular aneurysm sealing with chimney grafts – outcomes from the first 77 cases at a single institution**
Kate Stenson, Jorg De Bruin, Ian Loftus, Peter Holt
St George's Vascular Institute, London
- 09.58-10.04 **EVAR use for ruptured abdominal aortic aneurysm: a European comparison**
Joanna Manson¹, Cristina Alzate^{1,2}, Michael Jenkins¹
¹St Mary's Vascular Unit, London
²Hospital Donostia, San Sebastian, Spain
- 10.04-10.10 **Outcomes and reintervention rates of physician modified fenestrated endografts for managing the ruptured or symptomatic aortic aneurysm**
Aminder Singh, Sebastian Mafeld, Robin Williams, James McCaslin
Northern Vascular Centre, Newcastle upon Tyne
- 10.10-10.16 **Endovascular repair of primary mycotic thoracoabdominal aortic aneurysms**
Massimo Vezzosi¹, Maciej Juszcak¹, Andrew Woodhouse², Martin Claridge¹, Donald Adam¹
¹Birmingham Complex Aortic Team, Heart of England NHS Foundation Trust, Birmingham
²Department of Infectious Diseases, Heart of England NHS Foundation Trust, Birmingham
-
- 10.20-10.40 **Guest Lecture (15 + 5)**
Chairs: Rick Gibbs and Chris Twine
Stroke in TEVAR: What are the mechanisms and how to prevent?
Tilo Kölbel
-
- 10.40-11.10 **Coffee**
-
- 11.10-11.30 **Quick Fire Debate**
Chairs: Hany Zayed and James McCaslin
Endovascular treatment of crural lesions is not durable: Surgery is the answer
For: Sophie Renton / Against: Andrej Schmidt
-
- 11.30-11.40 **The Paper That Changed My Practice (4 + 2)**
Chairs: Hany Zayed and James McCaslin
Tilo Kölbel
-
- 11.40-12.00 **Society Sponsor: W.L. Gore & Associates**
Chairs: Patrick Chong and Ian Nordon
Early experience with the new GORE® TAG® Conformable Thoracic Stent Graft with ACTIVE CONTROL System as part of the complex aortic programme at UHCW
Asif Mahmood
-

- 12.00-12.20 **Guest Lecture (15 + 5)**
Chairs: Patrick Chong and Ian Nordon
The future of distal endovascular revascularisation
 Andrej Schmidt
-
- 12.20-13.30 **Lunch**
-
- 13.30-13.50 **Quick Fire Debate (7 + 7 + 6)**
Chairs: Rachel Bell and Donald Adam
The dangers of oversizing in TEVAR for aortic dissection are over-rated: Undersizing is more dangerous!
 For: Tilo Kölbel / Against: Ian Loftus
-
- 13.50-14.05 **The Paper That Changed My Practice (4 + 2)**
Chairs: Rachel Bell and Donald Adam
Anders Wanhainen, Andrej Schmidt
-
- 14.05-14.25 **Society Sponsor: Cook Medical**
Chairs: Paddy Coughlin and Rao Vallabhaneni
Cook Zenith T-Branch – an update
 Bijan Modarai
-
- 14.25-15.20 **Abstract Session 2 9 papers 6 (4 + 2) minutes**
Chairs: Paddy Coughlin and Rao Vallabhaneni
- 14.25-14.31 **Ultrasound guidance for arterial access**
 Lina Kanapeckaite, Sanjay Kumar, Mohammad Daneshi, Stella Vig, Ranjeet Brar
Croydon University Hospital, London
- 14.31-14.37 **Open Axillary Access for complex endovascular aortic repair: A UK tertiary centre experience**
 Sandip Nandhra, Craig Nesbitt, G Priona, Rob Williams, James McCaslin, Mike Clarke, Mike Wyatt
Freeman Hospital, Newcastle
- 14.37-14.43 **Short stay EVAR is safe and cost-effective**
 Sarah Shaw, Ryan Preece, Katherine Stenson, Jorg Debruin, Ian Loftus, Peter Holt, Benjamin Patterson
St George's Vascular Institute, St George's University Hospitals NHS Foundation Trust, London

- 14.43-14.49 **Establishing complex endovascular aneurysm repair (EVAR) in Scotland. An 8-year experience of fenestrated and branched EVAR**
 Anne Burdess¹, Przemyslaw Orawiec², Raj Bhat², Murray Flett³
¹*Akademiska Sjukhuset, Uppsala, Sweden*
²*Ninewells Hospital, Dundee*
³*Ninewells, Dundee*
- 14.49-14.55 **Does percutaneous access decrease groin complications in elective infrarenal EVAR?**
 Nadeem A Mughal¹, Eleanor R Atkins², Ayoola Awopetu¹, Simon Kreckler¹
¹*Addenbrooke's Hospital, Cambridge*
²*Pennine Acute Hospitals NHS Trust, Oldham*
- 14.55-15.01 **Graft migration patterns following endovascular infra-renal aneurysm repairs**
 Ammar Adel Abdullah, Mihaela Constantinescu, Su-Lin Lee, Celia Riga, Colin Bicknell
Imperial College, London
- 15.01-15.07 **The financial impact of aortic graft infection repair**
 Muzzafer Chaudery, Ashish Patel, Oliver Lyons, George Gradinariu, Nicholas Price, Morad Sallam, Rachel Bell
Department of Vascular Surgery, Guy's & St Thomas' NHS Foundation Trust, London
- 15.07-15.13 **Short-stay EVAR: Which patients are suitable?**
 Ryan Preece, Sarah Shaw, Joseph Wiltshire, Kate Stenson, James Budge, Jorg De Bruin, Ian Loftus, Peter Holt, Benjamin Patterson
St George's Hospital, London
- 15.13-15.19 **Ferumoxylol-enhanced Magnetic Resonance Angiography (FeMRA) – optimal dosing and feasibility**
 Alex Vesey¹, Martin Hennessy², Sokratis Stoumpos³, Aleksandra Radjenovic³, David Kingsmore³, Patrick Mark³, Giles Roditi³
¹*University of Edinburgh, Edinburgh*
²*NHS Glasgow and Clyde, Glasgow*
³*University of Glasgow, Glasgow*
-
- 15.20-15.40 **Society Sponsor: Medtronic**
Chairs: Mike Jenkins and Rachel Bell
NICE recommendations on AAA
 1. A brief industry response based on ABHI perspective
 2. A summary of the joint industry sponsored cost analysis
 3. A BSET survey of members present
-
- 15.40 - 16.00 **NICE recommendations on AAA**
Chairs: Mike Jenkins and Rachel Bell
Discussion
-

- 16.00-16.25 **Tea**
-
- 16.25-16.45 **Quick Fire Debate (7 + 7 + 6)**
Chairs: Colin Bicknell and Rob Williams
Angioplasty/stenting of the deep veins is the latest fad – it won't last
 For: Paul Hayes / Against: Alun Davies
-
- 16.45-16.55 **Gold Sponsor Presentation: Endologix**
Chairs: Colin Bicknell and Rob Williams
Outcomes of Endovascular Aneurysm Repair using the Ovation stent graft system in Adverse Anatomy
 Ray Ashleigh
-
- 16.55-17.55 **Abstract Session 3: Aortic Prize 6 papers 9 (6 + 3) minutes**
Chairs: Bijan Modarai; Tilo Kölbel; Anders Wanhainen
- 16.55-17.04 **Anaesthesia technique and outcomes following endovascular aneurysm repair of ruptured abdominal aortic aneurysm**
 Ronelle Mouton¹, George Dovell^{2,3}, Chris Rogers⁴, Rosie Harris⁴, Robert Hinchliffe^{2,3}
¹*Department of Anaesthesia, Southmead Hospital, Bristol*
²*Bristol, Bath and Weston Vascular Network, Bristol*
³*NIHR Bristol BRC, University of Bristol, Bristol*
⁴*Bristol Surgical Trials Centre, Bristol*
- 17.04-17.13 **Outcomes in patients turned down for aortic surgery: An important indicator of responsible patient selection**
 Amy Sharkey, Ashish Patel, Jun Cho, Jayna Patel, Tommaso Donati, Becky Sandford, Sanjay Patel, Lukla Biasi, Said Abisi, Stephen Black, Michael Dialynas, Morad Sallam, Hany Zayed, Rachel Bell, Mark Tyrrell, Bijan Modarai
Academic Department of Vascular Surgery, School of Cardiovascular Medicine and Sciences, King's College London, BHF Centre of Research Excellence & NIHR Biomedical Research Centre at King's Health Partners, St Thomas' Hospital, London
- 17.13-17.22 **The Impact of Endovascular Aneurysm Repair on Long-Term Renal Function**
 Edmund R Charles¹, Dennis Lui¹, Jonathan Delf¹, Robert D Sayers², Matthew Bown², David Sidloff², Athanasios Saratzis²
¹*Leicester Vascular Institute, Leicester*
²*NIHR Leicester Biomedical Research Centre, Leicester*
- 17.22-17.31 **Endovascular repair of acute thoracoabdominal aortic aneurysms with surgeon-modified fenestrated endografts**
 Maciej Juszcak, Massimo Vezzosi, Martin Claridge, Donald Adam
Birmingham Complex Aortic Team, Heart of England NHS Foundation Trust, Birmingham

- 17.31-17.40 **Gender differences in the rates of repair of emergency abdominal aortic aneurysm**
 Ahmed Aber¹, Thaison Tong¹, James Chilcott¹, Ravi Maheswaran¹, Steven M Thomas², Shah Nawaz², Jonathan Michaels¹
¹*ScHARR, University of Sheffield, Sheffield*
²*Sheffield Vascular Institute, Sheffield*
- 17.40-17.49 **Can transcranial magnetic stimulation be used to detect potential spinal cord injury following thoracic endovascular aortic repair (TEVAR)? A preliminary study to characterise baseline motor evoked potentials in vascular disease patients**
 Pawandeep Sarai^{1,2}, Colin Bicknell^{1,2}, Nathalie Courtois², Paul Strutton¹
¹*Imperial College London, London*
²*Imperial College Healthcare NHS Trust, London*
- 17.49-17.58 **Endovascular aneurysm sealing for intact, infrarenal abdominal aortic aneurysm – results from the first 199 cases at a single institution**
 Kate Stenson, Jorg De Bruin, Ian Loftus, Peter Holt
St George's Vascular Institute, London
-
- 18.00-18.10 **The President's Debate**
 Introduced by Bijan Modarai
- Super specialised vascular surgeons are prima donnas – we do not need them**
 For: Kevin Varty / Against: Mike Jenkins

08.30-09.10 **Abstract Session 4: Peripheral Prize** 6 papers 6 (6 + 3) minutes
Chairs: Paul Hayes and Rao Vallabhaneni

08.30-08.39 **Early duplex surveillance following deep venous stenting for the treatment of post-thrombotic syndrome can predict patients at greatest risk for re-intervention**

Adam Gwozdz, Prakash Saha, Justinas Silickas, Taha Kahn, Leonardo Jones, Lawrence Stephenson, Anna Pouncey, Oscar Johnson, Ash Patel, Soundrie Padayachee, Alberto Smith, Stephen Black
Academic Department of Vascular Surgery, Cardiovascular Division, St. Thomas' Hospital, King's College London, London

08.39-08.48 **Validation of the Global Anatomic Staging System (GLASS) using the BASIL-1 best endovascular therapy cohort**

Akio Kodama, Lewis Meecham, Matthew Popplewell, Gareth Bate, Andrew Bradbury
Academic Department of Vascular Surgery, University of Birmingham, Solihull

08.48-08.57 **Use of AngioJet pharmacomechanical thrombectomy during the treatment of iliofemoral deep vein thrombosis, reduces overall dose and exposure to lytic therapy**

Anna Louise Pouncey, Justinas Silickas, Adam M Gwozdz, Prakash Saha, Stephen A Black
Academic Department of Vascular Surgery, Cardiovascular Division, St. Thomas' Hospital, King's College London, London

08.57-09.06 **Changes in microcirculation following percutaneous angioplasty in patients with diabetic foot ulcers**

Danielle Lowry, Alok Tiwari
Queen Elizabeth Hospital, Birmingham

09.06-09.15 **The incidence of Venous Outflow obstruction as a complicating factor of retroperitoneal fibrosis**

Taha Khan¹, Adam Gwozdz², James Budge², Justinas Silickas², Anna Pouncey¹, Oscar Johnson¹, Archie Fernando³, Tim O'Brien³, Stephen Black^{1,2}
¹*Department of Vascular Surgery, Guy's and St Thomas Hospital NHS Foundation Trust, London*
²*Academic Department of Vascular Surgery, Cardiovascular Division, St. Thomas' Hospital, King's College London, London*
³*Department of Urology, Guy's and St Thomas Hospital NHS Foundation Trust, London*

09.15-09.24 **Current methods for assessing peripheral arterial lesions do not predict functional and haemodynamic significance**

Mostafa Albayati¹, Ashish Patel¹, Benjamin Hardy¹, Divaka Perera², Tommaso Donati³, Sanjay Patel³, Lukla Biasi³, Hany Zayed³, Leon Monzon⁴, Narayanan Thulasidasan⁴, Athanasios Diamantopoulos⁴, Alberto Smith¹, Bijan Modarai¹
¹*School of Cardiovascular Medicine and Sciences, King's College London, London*
²*Department of Cardiology, Guy's & St Thomas' NHS Foundation Trust, London*
³*Department of Vascular Surgery, Guy's & St Thomas' NHS Foundation Trust, London*
⁴*Department of Interventional Radiology, Guy's & St Thomas' NHS Foundation Trust, London*

09.25-09.40 **BSET Fellowship Reports**

Chair: Rick Gibbs

RCS Fellowship

Jun Cho (5)

Travel Fellowship Report

Athanasios Saratzis (5)

09.40-09.50 **BSET Update**

Chairs: Mike Jenkins and Rachel Bell

09.50-10.10 **Guest Lecture (15 + 5)**

Chairs: Mike Jenkins and Rachel Bell

Endovascular treatment of the thoracoabdominal aorta:

Up to date techniques and evidence

Anders Wanhainen

10.10-10.20 **Gold Sponsor Presentation: Lombard Medical**

Chairs: Mike Jenkins and Rachel Bell

Altura for day case EVAR

Paul Hayes

10.20-11.00 **Coffee**

11.00-11.20 **Vascular Society Session**

Chairs: Kevin Varty and Sophie Renton

Where are we with GIRFT and Vascular Networks?

Kevin Varty

Looking forward – Provision of Vascular Services 2018 – 2021

Sophie Renton

- 11.20-11.30 **Gold Sponsor Presentation: Terumo Aortic**
Chairs: Paddy Coughlin and Chris Twine
The importance of quick turnaround delivery and versatility of a Fenestrated Anaconda endograft
 Mr Paul Bachoo
-
- 11.30-11.50 **Guest Lecture (15 + 5)**
Chairs: Paddy Coughlin and Chris Twine
Paradigm shifts in venous ulcer treatment
 Alun Davies
-
- 11.50-12.50 **Abstract Session 5 9 papers 6 (4 + 2) minutes**
Chairs: Patrick Chong and Colin Bicknell
- 11.50-11.56 **Potential cost-savings using supervised exercise therapy for intermittent claudication**
 Andrew Duncan, Akhtar Nasim, Harjeet Rayt
University of Leicester, Leicester
- 11.56-12.02 **Iliac limb occlusion after endovascular aneurysm repair: Systematic review and meta-analysis**
 Abeeku Hammond, Vivak Hansrani, Chris Lowe, Imran Imran, Stavros Antoniou, George Antoniou
Department of Vascular & Endovascular Surgery, The Royal Oldham Hospital, Pennine Acute Hospitals NHS Trust, Manchester
- 12.02-12.08 **Contrast-enhanced ultrasonography for the detection of endoleak after endovascular aneurysm repair: A diagnostic test accuracy meta-analysis**
 Djamila Rojoa¹, Dimitrios Kapetanios¹, Nikolaos Kontopodis¹, Dimitrios Mavridis², Richard McWilliams², Athanasios Giannoukas², George Antoniou¹
¹*Royal Oldham Hospital, Manchester*
²*Pennine Acute Trust, Manchester*
- 12.08-12.14 **Endoleaks after Endovascular Aortic Aneurysm Repair**
 Dennis Lui¹, Edmund Charles¹, Jonathan Delf², Benjamin Hobson¹, Athanasios Saratzis³, Robert D Sayers³, Matthew J Bown³, David Sidloff³
¹*Leicester Vascular Institute, Leicester*
²*University of Leicester Hospitals NHS Trust, Leicester*
³*NIHR Leicester Biomedical Research Centre, Leicester*
- 12.14-12.20 **Computational flow dynamics to aid planning of complex aorto-iliac interventions**
 Louis Parker¹, Barry Doyle¹, Paul Norman¹, Lachlan Kelsey¹, Igor Koncar², Janet Powell³
¹*University of Western Australia, Perth, Australia*
²*University of Belgrade, Belgrade, Serbia*
³*Imperial College London, London*

- 12.20-12.26 **Variability in the post-intervention management of patients following bare metal stent (BMS) insertion in the superficial femoral artery (SFA)**
 L Huang¹, C Taylor¹, M Chowdhury¹, C Twine², P Coughlin¹
¹*Addenbrookes Hospital, Cambridge*
²*Royal Gwent Hospital, Newport*
- 12.26-12.32 **Single centre experience with E-ventus BX stent graft in fenestrated endovascular abdominal aortic aneurysm repair (FEVAR)**
 Feras Abdallah, Mark Harrison, David Murray, Ganapathy Ananthakrishnan, Ferdinand Serracino-Inglott
Manchester University NHS Foundation Trust, Manchester
- 12.32-12.38 **Percutaneous access versus open cut-down for endovascular aortic aneurysm repair: An analysis of efficacy and costs**
 Moroke Igue¹, Craig Forrest², Ross McMahon², Puihong Lau², Navin Matthias², Jamshaid Anwar², Ian Cameron², Samuel Miller², Donald Reid², Stephen Kettlewell², Roy Scott², Sandra Montgomery², Tamim Siddiqui², Emma Aitken¹, Alex Vesey³
¹*University of Glasgow, Glasgow*
²*NHS Lanarkshire, East Kilbride*
³*University of Edinburgh, Edinburgh*
- 12.38-12.44 **The impact of undiagnosed airflow obstruction on patients considered for elective aortic aneurysm repair**
 Owain Fisher, Ruth Benson, Edward Parkes, Joanna Shakespeare, Christopher Imray
UHCW, Coventry
-
- 12.45-13.05 **Chee Soong Memorial Lecture**
 Introduced by Mike Jenkins and Rachel Bell
- A safe and sustainable aortic service: Lessons from history**
 Ian Loftus
-
- 13.05-13.15 **Presentation Of Prizes And Close**
-
- 13.15-14.15 **Lunch**

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Abstract Sessions

Abstract Session 1

Loco-regional versus general anaesthesia for elective endovascular aneurysm repair: Results of a cohort study and a meta-analysis

Carlo Ciniselli¹, Shahin Hajibandeh¹, Shahab Hajibandeh¹, Kelvin Adasonla¹, Stavros A. Antoniou¹, Janet Barrie², Manmohan Madan¹, George A. Antoniou¹

¹Department of Vascular & Endovascular Surgery The Royal Oldham Hospital, Pennine Acute Hospitals NHS Trust, Manchester

²Department of Anaesthesia The Royal Oldham Hospital, Pennine Acute Hospitals NHS Trust, Manchester

Background

To investigate whether patients undergoing elective endovascular aneurysm repair (EVAR) with loco-regional anaesthetic techniques have better outcomes than those treated with general anaesthesia (GA).

Methods

We retrospectively evaluated outcomes of EVAR performed with regional anaesthesia or GA over a 5year period. Furthermore, we searched electronic bibliographic sources to identify studies comparing different anaesthetic methods in EVAR. We defined perioperative mortality and morbidity and length of hospital stay as the primary outcome measures. Pooled effect estimates were calculated using fixed-effect or random-effects models. Results are reported as the odds ratio (OR) or mean difference (MD) and 95% confidence interval (CI).

Results

355 patients underwent EVAR over the study period (RA, 215 patients; GA 140 patients). Perioperative mortality was significantly lower in the RA group (0.5% versus 4.3%, $P=0.017$). No difference was found in perioperative morbidity ($P=0.370$), LOS ($P=0.146$), postoperative destination ($P=0.799$), reoperation ($P=0.355$) or readmission within 30 days ($P=0.846$). Meta-analysis of data on 15,472 patients from 15 observational studies found a significantly lower perioperative mortality and morbidity in patients treated with loco-regional anaesthetic techniques than those treated with GA. Our sub-group analysis demonstrated that both local anaesthesia (LA) ($P=0.003$) and RA ($P<0.0001$) were associated with a significantly shorter LOS compared to GA

Conclusions

Local and regional anaesthetic techniques may be advantageous over GA in elective EVAR. Considering the current level of evidence, LA or RA should be considered in selected patients. Further clinical research is required to provide high level evidence on the optimal anaesthetic technique in EVAR.

The true graft related endoleak detection rate of contrast enhanced ultrasound:

A prospective single UK centre study of the predictive values of contrast enhanced ultrasound compared to time-resolved computer tomography angiography in the detection and characterisation of graft related endoleaks in high risk endovascular aneurysm repair surveillance patients

Iain Roy^{1,2}, Tze Chan¹, Rao Vallabhaneni^{1,2}

¹Liverpool Vascular & Endovascular Service, Liverpool

²Institute of Ageing and Chronic Disease, University of Liverpool, Liverpool

Arterial Phase CT Angiography (CTA) is the commonest reference standard in studies to define predictive values of surveillance modalities. This approach has methodological limitations when investigating Contrast Enhanced Ultrasound (CEUS).

CTA captures a single "snapshot" of an endoleak, so may totally/partially fail to define an endoleak and flow directionality (useful in characterisation). CEUS offers continuous imaging which is more likely to detect an endoleak and can define directionality. This means CTA may fail to characterise an endoleak as accurately as CEUS. Time-resolved CTA (tCTA) overcomes this limitations by performing 7 phases in rapid sequence in place of the single phase in CTA.

We undertook the first prospective study to define the predictive values of CEUS compared to the methodologically superior tCTA.

Methods

30 patients planned to undergo CT investigation of an endoleak or aneurysm expansion were enrolled. Participants underwent tCTA and CEUS on the same day and predictive values for graft related endoleaks along with 95% confidence intervals were calculated, with tCTA as reference standard.

Results

25 endoleaks were detected in the participants on tCTA, 9 Graft Related (Type I & III) & 16 Type II. CEUS predictive values to detect and correctly characterise graft related endoleaks were: Sensitivity 0.55 (0.23-0.88), Specificity 0.90 (0.77-1.00), Positive Predictive Value 0.71 (0.37-1.00) and Negative Predictive Value 0.82 (0.67-0.98).

Conclusions

CEUSs negative predictive value to graft related endoleaks make it an excellent adjunct to duplex ultrasound surveillance, thus reducing the need for adjunctive CTA.

Endovascular aneurysm sealing with chimney grafts – outcomes from the first 77 cases at a single institution

Kate Stenson, Jorg De Bruin, Ian Loftus, Peter Holt
St George's Vascular Institute, London

Background

Chimney grafts are placed parallel to an aortic stent-graft to maintain perfusion through visceral branches. When used in combination with conventional endovascular aneurysm repair (EVAR), there is a significant risk of type 1 endoleak due to “guttering”. In combination with endovascular aneurysm sealing (EVAS), this risk is likely to be reduced due to the fact that the polymer within the endobags conforms to the shape of the chimney stents, whilst maintaining a proximal seal at the aneurysm neck. EVAS with chimney stents (ChEVAS) may therefore represent an alternative to fenestrated EVAR (FEVAR) for the treatment of juxtarenal abdominal aortic aneurysms (AAA).

Methods

Detailed pre-, peri- and postoperative data were collected for each patient undergoing the ChEVAS procedure.

Results

77 patients (82% male) with a mean age of 75.2 years were studied. All patients had juxta- or suprarenal aneurysms. 33 patients were treated with 1 chimney stent, 26 with 2 and 18 with 3. Chimney stent patency is 97.8%. 9.1% of cases have required reintervention. 11.7% of cases have developed type 1a endoleak, 9.1% demonstrated migration of the aortic stents and 2.6% have seen secondary rupture. Aneurysm-related and all-cause mortality are 9.1% and 23.4% respectively.

Conclusion

ChEVAS is an effective treatment for juxtarenal AAA, particularly for those patients with aneurysms unsuitable for FEVAR or those requiring urgent treatment. These data form part of the international, multicentre ASCEND registry, results from which will allow us to determine the long-term efficacy of this new approach.

EVAR use for ruptured abdominal aortic aneurysm: a European comparison

Joanna Manson¹, Cristina Alzate^{1,2}, Michael Jenkins¹
¹*St Mary's Vascular Unit, London*
²*Hospital Donostia, San Sebastian, Spain*

Introduction

Endovascular aneurysm repair (EVAR) has been widely adopted in developed healthcare systems for elective infra-renal abdominal aortic aneurysm (IRAAA) but the use of EVAR for ruptured aneurysms (rAAA) is less well embedded. The objective of this study was to examine EVAR usage in rAAA in the UK and Spain.

Methods

Retrospective analysis of elective and rAAA in the national vascular registries of the UK (2017) and Spain (2014) was conducted. UK units were ranked by volume of elective and rupture caseload.

Results

In both countries, elective IRAAAs were predominantly repaired using EVAR, UK 70% and Spain 62%. This reflected an increase in EVAR use since 2008, UK 57%, Spain 39% ($p < 0.05$). By comparison, fewer rAAAs were repaired using EVAR; UK 27%, Spain 39%. Evaluation of UK units ($n=78$) revealed that 95% used EVAR for >50% of their elective cases. For rAAAs, substantial variability in repair technique was demonstrated; only 17% used EVAR > 50% of the time. Analysis of the top ten centres by rupture volume, identified four centres that used EVAR predominantly (61% EVAR (IQR 56-66)) and six centres who used it infrequently (18% EVAR (17-19)), $p < 0.01$.

Conclusion

EVAR use for elective work is widespread, but there is substantial variability in uptake for rAAA repair. This study suggests that barriers to EVAR use in rAAA should be identified to optimise provision and training opportunities. The reduction in open elective IRAAA experience also has implications for skill acquisition required for open rAAA.

Outcomes and reintervention rates of physician modified fenestrated endografts for managing the ruptured or symptomatic aortic aneurysm

Aminder Singh, Sebastian Mafeld, Robin Williams, James McCaslin
Northern Vascular Centre, Newcastle upon Tyne

Purpose

Fenestrated endovascular aneurysm repair (FEVAR) grafts have a 10-12 week manufacturing time and are generally not available for emergency cases of symptomatic or ruptured aortic aneurysm. In the absence of other alternatives, conventional off-the-shelf stent grafts can be modified by trained operators to treat these complex cases. The study aim is to investigate the outcomes and reintervention rates of physician modified FEVAR.

Methods

A retrospective clinical documentation review of all physician modified FEVAR cases identified from the hospital endovascular database at a single tertiary referral centre between September 1996 and September 2017 was performed.

Results

Eight cases of urgent or emergency FEVAR managed with physician modified grafts were identified. Mean follow up was 44 weeks (range 5-106). One patient died prior to graft implantation. Outcomes for all implanted grafts (7/8 cases) included 100% technical success, 29% rate of endoleak, no procedure related complications, no adverse visceral events, 0% 30-day mortality and 100% one year target vessel patency and freedom from aneurysm related death. There was a 43% (3/7 cases) re-intervention rate including iliac branch extension, covered stent extension and further covered stent insertion.

Conclusion

Modifying EVAR grafts is a highly technical process requiring meticulous planning and extensive elective experience with FEVAR. The current series demonstrates this approach is safe and feasible but operators must be mindful of the higher reintervention rate associated with this technique when compared to elective FEVAR. The authors suggest closer follow up of this group of patients.

Endovascular repair of primary mycotic thoracoabdominal aortic aneurysms

Massimo Vezzosi¹, Maciej Juszcak¹, Andrew Woodhouse², Martin Claridge¹, Donald Adam¹

¹*Birmingham Complex Aortic Team, Heart of England NHS Foundation Trust, Birmingham*

²*Department of Infectious Diseases, Heart of England NHS Foundation Trust, Birmingham*

Objectives

To report the short and medium-term outcome of endovascular repair (EVAR) for primary mycotic thoracoabdominal aortic aneurysms (pmTAAA).

Methods

Interrogation of a prospectively-maintained database identified all patients who underwent EVAR for pmTAAA between October 2011 and August 2017. Early and medium-term outcomes were analysed.

Results

A total of 16 patients (9 men; median age 70.7 years [60.4-81.1]; median diameter 71.5 [50.0, 110.0]) were treated for acute symptomatic (13) or contained ruptured (3) pmTAAA (6 extent I-III, 10 extent IV) using surgeon-modified fenestrated EVAR (SM-FEVAR; 14), t-Branch (1) and chimney-periscope EVAR (CHIMPS; 1). The repair was staged during the same admission in three patients. A total of 57 vessels (median 4.0/patient) were targeted for preservation, two occluded intra-operatively and three more occluded within 30-days. One patient died within 30-days of the procedure from small bowel ischaemia secondary to occlusion of an SMA stent-graft. No patients required renal replacement therapy or developed SCI. Median observed follow-up was 22.1 months [IQR 7.8-42.4]. Estimated overall survival at 12 and 24 months was 87% (95% CI 57%-97%) and 77% (95% CI 44%-92%). Estimated freedom from re-intervention at 12 months was 88% (95% CI 59%-97%) and remained unchanged at 24 months. No patients developed late infective complications.

Conclusions

Endovascular repair for primary mycotic TAAA is associated with very encouraging mid-term outcomes, supporting a need for a paradigm shift in treatment of this otherwise invariably fatal pathology.

Abstract Session 2

Ultrasound guidance for arterial access

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Background

Arterial access site complications during interventional procedures are associated with morbidity and prolonged hospitalisation. We report on the use of ultrasound (US) guidance and access site complication rates in a single centre.

Methods

Data were collected retrospectively from consecutive cases in 2016-2017 undergoing peripheral angiography (PA, N=200) or cardiac catheterisation (CC, N=225). Exclusion criteria: age <18 years. Complication was defined as: haemorrhage, haematoma, arterial dissection, distal arterial supply compromise, pseudoaneurysm, or arterio-venous fistula formation. Major complication was defined as any access site complication requiring transfusion, further invasive intervention or causing a functionally significant neurovascular compromise of the limb.

Results

US guidance was used in 59% of cases in PA, while in CC US was not used at all. All PA procedures used femoral access, in contrast to 19% in CC (81% radial). Baseline characteristics (age, gender, sheath size, anticoagulation level, platelet counts) were not significantly different between subjects undergoing peripheral or cardiac interventions, and between those who had complications and those who did not.

Femoral site complication rate for US-guided access was 0.85%, while no US guidance was associated with a complication rate of 11% ($p=0.0007$). Subgroup analysis for unguided femoral access demonstrated complication rates of 6.5% in peripheral interventions and 20% in coronary, however, the incidence of major complications was similar (1.2% and 4.9%, respectively; $p=0.2719$). There were no major complications in the US-guided femoral access group.

Conclusion

US guidance for arterial access is an independent factor associated with significantly reduced vascular complications, however, US remains underused.

Open axillary access for complex endovascular aortic repair; a UK tertiary centre experience

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Introduction

Complex endovascular aortic repair is frequently performed using concurrent axillary artery access; this can offer a favourable trajectory for the cannulation of the caudally-orientated visceral vessels. However, associated cerebrovascular complications are reported to be between 2 and 15%. Furthermore, it is hypothesised to be greater with right-sided axillary access due arch manipulation across the origins of the cerebral vessels. The experiences of a UK tertiary centre were reviewed to assess the morbidity associated with axillary access.

Methods

A retrospective analysis was performed to identify cases of open axillary exposure for complex aortic endovascular repair. Right-sided access was preferentially utilised unless there was arch disease or the left was unavailable. The primary endpoint was clinical cerebrovascular complication and the secondary endpoint was local access complications.

Results

A total of 177 complex endovascular aortic repairs performed between 2009 and 2018 were reviewed.

63 underwent open axillary exposure (44male:19female), with a mean age at intervention of 72.4(8.35 s.d.) years. Right-sided access was performed in 46 cases.

There were no cerebrovascular complications.

5 local complications occurred. Two incidences of haematoma requiring surgical intervention (1 right, 1 left). 2 cases of limited right sided dissection and 1 dissection causing asymptomatic occlusion.

Successful visceral cannulation was achieved in all cases.

Conclusion

This case-series demonstrates that open axillary access is safe. In particular right-sided access does not result in increased clinical cerebrovascular complications. Furthermore, local access complications are minimal.

Short stay EVAR is safe and cost-effective

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Background

Reducing length of stay (LOS) following surgery offers the potential to improve resource utilisation. Endovascular aneurysm repair (EVAR) is now delivered with a very low level of morbidity and as such may be deliverable as a day case or "23 hour stay" intervention. This systematic review aims to search existing literature in order to assess the safety and feasibility of a short-stay EVAR pathway.

Methods

A database search using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines was used for study selection.

Results

569 papers were identified through literature search, of which 31 abstracts were screened. This led to 8 papers being assessed for eligibility. From four suitable studies 220/351 (63%) patients were successfully discharged the same or next day following EVAR. Complications most often occurred within 3 hours of surgery, and major complications requiring ITU admission occurred within 6 hours. Re-admission rates were 0-5% for those discharged early, with no difference in 30-day re-admission. Early discharge led to a statistically significant cost-saving of £13,360 (LOS 4 days) to £9844 (LOS 1 day).

Conclusion

Selected patients can safely undergo EVAR using a short stay pathway. The time frame in which complications occurred suggests a period of monitoring 6 hours post-operatively for low-risk patients would be sufficient. Reducing length of stay after EVAR in the UK from the current median of 3 days to 1.5 days would free 4323 bed days and lead to a saving of £1,800,000- £2,300,000 annually.

Establishing complex endovascular aneurysm repair (EVAR) in Scotland. An 8-year experience of fenestrated and branched EVAR

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Background

Complex EVAR is increasingly utilised to manage juxta-renal and thoraco-abdominal aneurysms, as well as for failed infra-renal EVAR. We developed our practice at a time when complex EVAR was not available in any other Scottish centres. The aim of the study was to assess medium term outcomes and examine how the practice has evolved.

Methods

A retrospective review of a prospectively collected database was performed. All patients who underwent complex EVAR between December 2009 and January 2018 were included.

Results

76 patients underwent complex EVAR. One patient had a 2nd fEVAR 2 years after the first procedure. 72 patients underwent fEVAR and 4 patients underwent bEVAR. Median follow-up was 19 months (range: 2-84). 18 patients were treated in the first 5 years of this study, compared with 58 in the last 3 years. There were 2 perioperative deaths (2.6%). 9 patients (12%) have died during follow-up; with no late aneurysm-related deaths. Operative target vessel perfusion was 99% (230/232) with 2 late target vessel losses (1%). 18 (24%) patients have required re-intervention within the 8-year period.

Conclusion

Our results demonstrate comparable outcomes to the literature: re-interventions are common, but with no late aneurysm-related deaths and very few late target vessel losses.

Our complex EVAR practice has gradually evolved. Annual volume has increased significantly in recent years, with referrals from other centres. This has implications for other units embarking on complex EVAR programs and how volume–outcome can be maintained.

Does percutaneous access decrease groin complications in elective infrarenal EVAR?

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Background

Femoral access for EVAR is typically obtained by open cutdowns. These carry a significant risk of groin complications. Percutaneous access is an alternative strategy. Studies comparing the two reveal a reduction in access complications with these techniques. The aim of this study was to audit groin complication rates post-EVAR in a single vascular centre following both open and percutaneous access.

Methods

A retrospective review of all patients undergoing elective infrarenal EVAR by percutaneous access was conducted. A cohort of consecutive patients undergoing open cutdown was used for comparison. Those with symptomatic aneurysms, redo groins or AUI and crossover were excluded. Inpatient notes, first clinic letters and readmission lists were reviewed to ascertain groin complication rates.

Results

55 percutaneous and 54 open access EVARs were included. Operative time (124 vs. 144 minutes, $p < 0.01$) and length of stay (1.7 vs. 2.9 days, $p < 0.01$) were shorter in the percutaneous group. Inpatient complication rates (10.9% vs. 5.5%) were higher in the percutaneous group but readmissions (0% vs. 7.4%) and outpatient complications (2% vs. 14.5%) were decreased. In total 12.7% of the percutaneous group experienced complications compared to 24.1% of the open group.

Conclusions

Percutaneous EVAR is associated with fewer groin complications and readmissions than open cutdown. A higher inpatient complication rate may relate to the steep learning curve associated with these devices and therefore caution must be exercised with early practice. In addition to improved patient experience, percutaneous EVAR may translate to cost savings due to decreased operative time and hospital stay.

Graft migration patterns following endovascular infra-renal aneurysm repairs

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Introduction

Caudal proximal stent-graft migration after endovascular aneurysm repair (EVAR) may lead to loss of seal and failure. Much of the literature examines migration in early-generation SGs as a binary value and fails to address geometric measurements of migration-patterns over time. Tracking migration-patterns may predict high-risk patients during surveillance and pre-empt intervention.

Method

95 cases of infra-renal EVAR (2008-17) at a single-institution with a minimum of 1 year follow up with CT scans were reviewed. 13 cases (13.5%) were found to migrate a minimum of 5mm, of which three required intervention and are reported in detail. Serial CT-scans were assessed using reconstructed images (Terarecon®) and measured at 5-12 standardised reference points (RP) on the SG. Consecutive neck lengths and diameters for each RP were measured on each scan to calculate three-dimensional migration-distance (from superior mesenteric artery), surface-area migration, SG tilt (change in angle proximal seal-ring) and pattern-migration. Angle between renal artery and the centerline to a designated RP was calculated to determine rotation of the SG. Using MATLAB®, the inferred proximal sealing rings were reconstructed. Patterns of proximal SG migration over time were examined. Data reported as mean (range).

Results

Follow-up of 1284 days (519-3691). Migration distance was 11.3mm (6-28mm), surface-area migration was 775mm² (range: 358-2477mm²), SG tilt was 14.7 degrees (2-34.5), SGs rotated 4.3 degrees (0-22.1). Three distinct time-based migratory-patterns were identified, early, constant and late.

Conclusion

Findings of this study challenge existing perceptions of migration. Further analysis may identify those with higher migratory risk during surveillance who could undergo intervention.

The financial impact of aortic graft infection repair

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Background

Patients presenting with aortic graft infections require a multidisciplinary approach in a tertiary vascular centre. Such complex cases inevitably have higher costs and trusts should be adequately reimbursed. The aim of this study was to analyse the financial impact of aortic graft infection repairs.

Methods

The MAGIC database was interrogated for aortic graft infection repairs performed at one tertiary vascular centre. All patients treated over a 26-month period were included. The costs related to their index inpatient hospital stay were accounted for and include operating theatre time, bovine graft, length of stay in ITU/HDU/wards, transfusions, medications, laboratory tests and radiology tests.

Results

There were 13 males and 3 females aged $69(\pm 7.3)$. The total LOS was 31(18-58) days, costing £17,443(\pm £11,819). The median operating time was 529 (415-609) minutes with operating costs of £3,784(\pm £916). Other costs included medications prescribed £4,408(\pm £5,324), transfusions £1,676(\pm £1,311), radiology £1,310(\pm £1,077) and laboratory tests £522(£323). The total mean costs were £29,435(\pm £16,873) and total reimbursed was £19,815(\pm £11,174) with the hospital incurring a loss of £9,620(\pm £16,459) per case, $p=0.01$.

Conclusions

Management of aortic graft infections in a tertiary centre is associated with a significant financial loss. In light of this study, commissioners should re-evaluate reimbursement for complex surgical procedures to ensure a sustainable delivery of service.

Short-stay EVAR: Which patients are suitable?

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Background

A short-stay EVAR (SS-EVAR) pathway for infrarenal abdominal aortic aneurysms (AAA) is desirable for a number of reasons. This study aimed to develop patient selection criteria for an SS-EVAR pathway and determine if it would be safe.

Methods

Two SS-EVAR selection criteria (conservative and pragmatic) were formulated based upon patient pre-operative comorbidities. A retrospective analysis was undertaken of standard EVARs performed for infrarenal AAA recorded in the national vascular registry database from 2013-2016 at a single tertiary vascular unit. Rates of immediate complications, return to theatre and unplanned readmissions for patients meeting the criteria were assessed.

Results

188 patients were included (92% male, mean age 75.4 ± 7.2 years). 29 (15.4%) met our conservative criteria. Two (6.9%) of these experienced an inpatient complication which were both detected within 24 hours of operation (including one who required a return to theatre) and no patients in this group had an unplanned readmission within 30-days. 110 (58.5%) met our pragmatic criteria and 19 (17.3%) experienced an inpatient complication with 4 (3.6%) of these occurring after 24 hours of operation. 6 (5.5%) of these patients required a return to theatre, however, all of these complications were detected within 24 hours. 2 (1.8%) pragmatic cohort patients required unplanned readmission within 30-days for a femoral pseudoaneurysm and back pain.

Conclusions

With appropriate pathways, patient selection and post-operative safeguards, a 24-hour SS-EVAR appears to be safe and could allow more effective resource utilisation for a specific cohort of patients.

Ferumoxytol-enhanced Magnetic Resonance Angiography (FeMRA) – optimal dosing and feasibility

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Background

Traditional contrast media are problematic in advanced chronic kidney disease. Ultrasmall superparamagnetic particles of iron oxide (ferumoxytol) are safe in chronic kidney disease and have been used for imaging in other settings. They also hold promise for angiography. We tested the feasibility of ferumoxytol enhanced magnetic resonance angiography (FeMRA) in patients with renal failure and performed a dose finding study.

Methods

31 patients with advanced renal failure and a clinical indication for imaging were offered 3T FeMRA. 26 patients had peripheral arterial imaging and were included in the analysis. The remaining 5 had dialysis fistulae imaged. Patients received 4 mg/Kg of Ferumoxytol in divided aliquots and aorto-iliac 3D-FLASH was performed pre-contrast and after every aliquot of Ferumoxytol. Regions of interest (ROI) were placed in the aortic lumen in pre- and post-contrast sequences. Mean ROI signal was recorded and plotted against Ferumoxytol dose. Regression analysis was performed. Qualitative imaging assessment was performed.

Results

Successful imaging was performed in all patients. A parabolic relationship between signal and dose was observed. This predicted peak signal, with signal drop above 3.90 mg/Kg in the aorta. At 2.5 mg/Kg, imaging quality was diagnostic by qualitative assessment. There were no adverse events.

Conclusion

FeMRA holds potential in patients with advanced renal failure. We have demonstrated that although peak signal was obtained at a dose of 3.90 mg/Kg, there was little added signal at doses above 2.5 mg/Kg. Lower doses are more cost-efficient and may reduce side effects of intravenous iron.

Abstract Session 3: Aortic Prize

Anaesthesia technique and outcomes following endovascular aneurysm repair of ruptured abdominal aortic aneurysm

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Background

The post-hoc subgroup analysis of a large randomized controlled trial, alongside a single case series, has suggested a potential benefit from managing ruptured abdominal aortic aneurysms (rAAA) with endovascular repair (EVAR) using local anaesthesia (LA) rather than general anaesthesia (GA). The uptake and outcomes of this technique in everyday clinical practice are as yet unknown.

Methods

A retrospective analysis of the United Kingdom (UK) National Vascular Registry (NVR) was conducted between 1st January 2013 and 31st December 2016. All patients presenting with rAAA that were managed with EVAR were included in the analysis. The primary outcome was in-hospital mortality. Secondary outcomes included the number of centres offering LA EVAR, the length of stay and postoperative complications.

Results

Some 3101 patients with rAAA were managed in 72 hospitals; 2306 open procedures and 795 EVAR (319 LA, 435 GA and 41 regional anaesthesia). Overall, 56/72 hospitals (78%) offered LA EVAR for rAAA. Baseline characteristics and morphology were similar across the three EVAR sub-groups. Patients who had LA EVAR, had a lower in-hospital mortality compared to GA EVAR, 59/319 (18.5%) versus 22/435 (28.0%) and this was unchanged after adjustment for factors known to influence survival (adjusted hazard ratio 0.64, 95%CI 0.46 to 0.88, p=0.006).

Conclusion

The use of local anaesthesia for the endovascular management of rAAA has been widely adopted in the UK. Mortality rates appear lower in those undergoing local versus general anaesthesia.

Outcomes in patients turned down for aortic surgery: An important indicator of responsible patient selection

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Background

Studies reporting the fate of patients deemed unsuitable for aortic aneurysm repair ('turndowns') are sparse. Our aim was to compare outcomes between turndowns and those managed operatively.

Methods

Data were collected on all patients referred to a tertiary referral centre with an aortic aneurysm over an 18-month period beginning April 2016. Kaplan-Meier analysis was used to measure survival and multivariate analysis to determine factors that predicted turned down.

Results

568 patients were considered for intervention; complete data were available for 531 (infra-renal:284, juxta-renal:106, thoracic:41, thoraco-abdominal:100). Mean age was 76.4yrs, and 80.0% were male. 345 patients (73 emergent) were managed operatively (endovascular:272, open:73). 86 [16.2%] patients were turned-down (infra-renal:40, juxta-renal:18, thoracic:5, thoraco-abdominal:23). Median follow-up was 156 (38-343) days. Renal disease, cardiac disease and history of TIA/stroke predicted turndown ($P<0.05$ for all). One-year all-cause mortality for elective open and endovascular procedures was 2.4% and 5.2%, respectively (infra-renal EVAR:0.4%, TEVAR:0.9%, complex endovascular repair:3.9%). One-year aneurysm related and all-cause mortality for those turned down for elective surgery was 7.1% and 21.4%, respectively, with a third of these patients dying from cancer rather than aneurysm rupture.

Conclusions

The short term aneurysm-related mortality in elective turndowns is low, with a significant number of patients succumbing for other reasons. Given the plethora of treatment options available, objective selection of patients who will benefit most from intervention is increasingly important.

The impact of Endovascular Aneurysm Repair on long-term renal function

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Background

Endovascular Aneurysm Repair (EVAR) is associated with superior short-term outcomes compared with open repair; however, concerns have been raised over the impact of EVAR on renal function. Long-term renal outcomes after EVAR remain largely unknown. We therefore aimed to define long-term renal decline following elective EVAR, using estimated Glomerular Filtration Rate (eGFR).

Methods

We used our in-house database of elective EVAR to identify consecutive patients who had been followed-up for more than 5 years. Subsequently, 270 consecutive patients (24 females – 8.6%, mean age: 71 years) who were not previously on Renal Replacement Therapy (RRT) were included; they had undergone elective EVAR between January 2000 and July 2010. We examined pre-operative, post-operative, and most recent eGFR values using the CKD-EPI equation. The primary outcome was change in eGFR at latest follow-up.

Results

Patients were followed-up over a median of 9 years (range: 5-17 years). Their mean eGFR dropped from a pre-operative value of 67 ml/min/1.732 [Standard Deviation (SD): 9.4] to 52 ml/min/1.732 (SD: 7.7), which amounts to a yearly loss of 1.7 units. Overall, 6 patients (2%) required RRT during late follow-up. Patients requiring RRT and those with an eGFR loss exceeding 20% at latest follow-up were more likely to die (Odds Ratio: 2.4 and 3.3 respectively, $p<0.001$).

Conclusion

This analysis, with the longest available follow-up to date, suggests that patients undergoing EVAR have a drop in renal function almost 3 times higher of the expected annual renal decline and that may be associated with mortality.

Endovascular repair of acute thoracoabdominal aortic aneurysms with surgeon-modified fenestrated endografts

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Objectives

To report the short and medium-term outcomes of surgeon-modified fenestrated endovascular repair (SM-FEVAR) for acute thoracoabdominal aortic aneurysms (TAAA).

Methods

A retrospective analysis of consecutive SM-FEVAR for acute TAAA between October 2009 and October 2017 was performed and short and medium-term outcomes were determined.

Results

A total of 44 patients (28 male; median age 71.7 [50.0, 84.6] years) were treated for acute symptomatic (34) or contained ruptured (10) TAAA (diameter 82.5 [50.0, 150.0]; 19 extent I-III, 25 extent IV) with SM-FEVAR. Thirty-six patients underwent SM-FEVAR alone, 7 had adjunct CHIMPS and 2 had bypass. A total of 148 vessels were targeted and 136 were preserved. Ten vessels occluded intra-operatively or within 30-days. 30-day mortality was 20.5% (9 patients; 11.8% for symptomatic and 50% for rupture). 15 patients developed major complications. One (2.3%) patient with rupture developed SCI and died within 30 days. Median observed follow-up was 12.2 months (IQR 2.5-36.5). Estimated overall survival at 12 months was 72% (95%CI 56%-83%) and remained unchanged at 24 months. Estimated freedom from re-intervention at 12 and 24 months was 89% (95% CI 69%-97%) and 80% (95% CI 58%-91%).

Conclusions

SM-FEVAR delivers good early and medium-term outcomes in a challenging group of patients. The skills required for planning, modification and implantation are within the capabilities of a specialist aortic centre and the technique is a valuable addition to the armamentarium providing an off-the-shelf customised solution for acute TAAA which complements the use of t-Branch device.

Gender differences in the rates of repair of emergency abdominal aortic aneurysm

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Aim

We examined gender differences in the rate and type of repair for intact emergency and ruptured abdominal aortic aneurysm (AAA).

Methods

Hospital episode statistic (HES) datasets from April 2002 to February 2015 were obtained. Clinical and administrative codes were used to identify patients who underwent primary definitive repair for ruptured and emergency-intact AAA and patients with AAA diagnosis who died in-hospital without repair. These three groups included all the patients with primary emergency AAA presentation. We examined gender differences between repair rates and type (EVAR versus open) over time.

Results

In total 15,717 patients (83% male) received surgical intervention for ruptured AAA, 10,276 (81% male) for intact AAA and 12,767 (62% male) died in-hospital without attempted repair. The observed odds ratio for no repair for an emergency AAA presentation in men was 0.34 versus 0.9 for women. The adjusted odds ratio was 0.4 for men and 0.53 for women after adjustment for age, deprivation and co-morbidities. EVAR rates for increased over time but were lower for women compared to men; 22% versus 28% for ruptured AAA and 48% versus 50% for emergency intact repair, in the most recent year.

Conclusions

The proportion of patients presenting as an emergency with AAA who do not undergo a repair is higher for women than for men. Although some of this can be explained by differences in age and co-morbidities, the differences persist after case mix adjustment. Reasons for the higher turnaround rate for women warrant further investigation.

Can Transcranial Magnetic Stimulation be used to detect potential spinal cord injury following thoracic endovascular aortic repair (TEVAR)? A preliminary study to characterise baseline motor evoked potentials in vascular disease patients

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Background

Spinal cord injury (SCI) following TEVAR is a devastating complication. Transcranial Magnetic Stimulation (TMS) is a simple, safe and painless alternative to electrical neuromonitoring of the spinal cord and could be used post-operatively. The study aim was to determine the reliability of TMS motor evoked potentials (MEPs) in peripheral vascular disease (PVD) patients. The data is essential for the development of a late SCI TMS management protocol.

Methods

20 healthy controls (mean(±SD) age 28±7.7yrs) and 6 PVD patients (59±14.5yrs, mean VasuQol 4.0) were recruited. Twelve TMS stimuli were given every 10minutes for one hour. MEPs were measured from two upper limb (left brachioradialis (LBR), abductor pollicis brevis (LAPB)) and three lower limb muscles (left vastus lateralis (LVL), tibialis anterior (LTA), adductor hallucis (LAH)). MEP amplitude, latency and variability were calculated and compared using one-way ANOVA.

Results

MEP amplitudes in controls were not, in general, significantly different from those in patients, except for those in LBR - 0.42 vs 0.26mV (control vs patient) (p=0.04); LAPB - 1.91 vs 0.48mV, LVL - 0.31 vs 0.21mV, LTA - 0.67 vs 0.52mV, LAH - 1.07 vs 0.94mV (p>0.05). There were no differences in MEP latencies and variability; a combined muscles coefficient of variation was 0.29 vs 0.44 (p=0.06).

Conclusion

The preliminary data show TMS-induced MEPs appear similar in size, latency and variability in healthy subjects and PVD patients, although data collection is ongoing. They provide evidence that TMS may be a reliable tool with which to monitor for SCI development following TEVAR.

Endovascular aneurysm sealing for intact, infrarenal abdominal aortic aneurysm – results from the first 199 cases at a single institution

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Background

Endovascular aneurysm sealing (EVAS) was conceived as a new paradigm in the treatment of abdominal aortic aneurysm (AAA). Two aortic stent grafts are surrounded by polymer-filled endobags, creating a sealing zone in the aortic neck and common iliac arteries, thus providing anatomical fixation within the aortic sac.

Methods

Pre-, intra- and postoperative data were collected and analysed for all patients undergoing EVAS at a single institution for unruptured, infrarenal AAA, since between March 2013 and December 2017.

Results

199 patients (87.3% male) with a mean age of 75.2 years were studied. Two thirds of patients were graded ASA 4 (American Society of Anesthesiologists). The average aortic diameter was 64 mm. 45.7% of cases adhered to the original instructions for use (IFU) and 17.1% adhered to the revised IFU of 2016. 21.6% of cases have required reintervention. Type 1a endoleak was seen in 17.6% of cases, type 1b in 4.0% and type 2 in 2.0%. Migration of the aortic stent was seen in 15.6% of cases and rupture in 6.0%. Aneurysm-related and all-cause mortality are 5.0% and 26.1% respectively. Adherence to IFU is associated with significantly fewer cases of type 1a endoleak (P=0.003) and aneurysm-related death (P=0.023).

Conclusion

Results with this device have not borne out the initial optimism regarding near-universal morphological applicability. Experience has shown that morphological considerations remain of great importance, as evidenced by the better results when adherent to IFU. This device has allowed the treatment of patients who may not have been treatable using conventional devices

Abstract Session 4: Peripheral Prize

Early duplex surveillance following deep venous stenting for the treatment of post-thrombotic syndrome can predict patients at greatest risk for re-intervention

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Background

Endovascular treatment of post-thrombotic syndrome using nitinol venous stents is associated with symptomatic improvement, but ~40% require re-intervention. We examined whether ultrasound surveillance was sensitive for re-intervention, and whether it was possible to predict patients at greatest risk of re-intervention.

Methods

Stent patency was assessed between 2012-2017 using duplex ultrasonography 24hrs, 2wks, 6wks, 3mths, 6mths, 1yr and yearly post-intervention. Maximum in-stent stenosis was calculated, with re-interventions performed when stent diameter reduction was >50%. Patient demographics were collected to determine which factors were associated with re-intervention.

Results

Cumulative patency was 167/194 (86%). However, 79 (41%) patients required re-intervention to maintain patency, of which 40/79 (51%) occurred within 3wks of their procedure. Stenting across the inguinal ligament was associated with a higher risk of early re-intervention (HR 1.817; $p=0.048$, 95% CI [1.005-3.285]). Re-interventions immediately followed surveillance in 70/79 (87%) cases, and this was driven by scan results rather than symptom change. At 6wks, maximum in-stent stenosis <30% was a strong predictor of being low risk for re-intervention at 6mths (HR 0.038; $p=0.003$, 95% CI [0.004-0.322]). Conversely, maximum in-stent stenosis between 30-50% at 6wks was associated with a higher risk of re-intervention at 6mths (HR 29.90; $p=0.002$, 95% CI [3.519-253.989]).

Conclusions

Ultrasound surveillance should occur at frequent intervals up to 3wks post deep venous stenting. Surveillance at 6wks could be used to differentiate between patients that require further surveillance before 6mths. These may include patients with maximum in-stent stenosis between 30-50% at 6wks and patients with stents crossing the inguinal ligament.

Validation of the Global Anatomic Staging System (GLASS) using the BASIL-1 best endovascular therapy cohort

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Background

Global Anatomic Staging System (GLASS) is a new anatomical staging system proposed in the Global Vascular Guidelines (GVG) on Chronic Limb Threatening Ischaemia (CTLI) that aims to correlate the angiographic pattern of disease with immediate technical failure (ITF) and clinical outcomes following infra-inguinal endovascular revascularisation. We aimed to clarify the relationship between GLASS, ITF and clinical outcomes in the Bypass versus Angioplasty in Severe Ischaemia of the Leg (BASIL-1) trial.

Methods

We examined the relationship between ITF, amputation free survival (AFS), limb salvage (LS), and major adverse limb events (MALE) in 213 patients (43% diabetes) who underwent angioplasty ($n = 159$, femoro-popliteal [FP] only; $n = 54$, infra-popliteal [IP] \pm FP) as their first revascularisation procedure in BASIL-1 and in whom baseline angiograms were available for GLASS staging.

Results

There were 43, 54, and 116 patients in GLASS stage I, II, and III respectively. GLASS stage and diabetes were predictors of ITF, which occurred in 22% of patients. In the FP only group, GLASS stage III was associated with significantly worse AFS (vs stage I, $p=0.04$), LS (vs stage II, $p=0.03$) and MALE (vs stage I, $p=0.05$). There was no relationship between these outcomes and GLASS in the IP \pm FP group.

Conclusion

This is the first study to attempt to validate GLASS in a cohort of CTI patients undergoing infra-inguinal revascularisation and suggests GLASS may be a useful predictor of ITF and longer-term clinical outcomes so allowing better choice of initial revascularisation procedure and stratification of patients.

Use of AngioJet pharmacomechanical thrombectomy during the treatment of iliofemoral deep vein thrombosis, reduces overall dose and exposure to lytic therapy

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Background

Use of catheter-directed thrombolysis (CDT) for the treatment of acute iliofemoral deep vein thrombosis, may reduce the incidence of post-thrombotic syndrome, but carries the risk of major haemorrhage. We aim to assess whether addition of pharmacomechanical AngioJet thrombectomy, can minimise exposure to potentially dangerous lytic agents, while maintaining a beneficial patient outcome.

Methods

A retrospective analysis of all cases of acute ilio-femoral DVT presenting to a tertiary centre between 2011 and 2017. Outcome measures included lysis duration, dose of lytic therapy, complication rate, incidence of post-thrombotic syndrome, and venous patency.

Results

81 patients were treated with CDT versus 70 with AngioJet thrombectomy. A decrease in lysis duration, (40hrs (95%CI:34-46) vs. 53hrs (95%CI:49-58) $p=0.0001$) and in lytic dose ((49mg (95%CI:42-55) vs. 57mg (95%CI:52-61) $p=0.007$)) were observed with use of AngioJet. Reduction was greatest for cases initially treated with Power PulseTM AngioJet thrombectomy ((27hrs (95%CI:20-34) and 42 mg (95%CI:34-50)($n=24$)). Incidence of haemoglobinuria was increased following AngioJet thrombectomy (18.6% v. 3.7%). One major bleed was observed following CDT. Villalta scores at 6mths and 1yr, were comparable ($p=0.28$). Primary-assisted and secondary patency was greater amongst patients initially treated with AngioJet versus CDT alone ($n=64$, $p=0.029$). Use of Power PulseTM AngioJet thrombectomy did not confer an advantage when used following 48hrs of unsuccessful CDT ($n=10$, $p=0.001$).

Conclusion

Early use of adjuvant AngioJet thrombectomy can reduce overall dose and exposure to lysis during treatment of iliofemoral DVT, without compromise to patient outcome.

Changes in microcirculation following percutaneous angioplasty in patients with diabetic foot ulcers

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Diabetic foot disease is a condition with increasing worldwide prevalence. Diabetes mellitus (DM) affects the regulation of vascular tone and response to trauma of the skins microcirculation, increasing the risk of ulceration. How microcirculatory function changes following percutaneous angioplasty (PA) and during ulcer healing is poorly understood. This pilot study aims to examine this.

Patients with DM and active foot ulceration were recruited from diabetic foot clinics into one of two cohorts. Group One (G1) had significant peripheral arterial disease (PAD) requiring PA and group Two (G2) had no significant PAD. At recruitment and prior to the procedure the patients pedal microcirculation was examined using laser Doppler fluxmetry. The main parameter examined was time to maximum flux (TtM) following a three-minute occlusion of the affected limb. These measurements were repeated monthly until the ulcer healed.

Nine patients were recruited to G1 and fourteen to G2. Six patients had healed by the end of the study in both groups. In G1, there was a reduction in the TtM following PA. At last visit, on the study toe, TtM had significantly reduced from 210.5s (72.18-231) to 50.71s (27.38-105.18, $p=0.046$) in those who healed. In G2, on both the study toe and dorsum, there was an increase in TtM (study toe, 13.40s (6.33-73.85) to 64.43 (22.05-114.20), $p=0.028$).

PA appears to be related to significant improvement in microvascular reactivity. The increase in TtM in patients without PAD may be related to a reduction in inflammation following healing. A higher powered study is required.

The incidence of venous outflow obstruction as a complicating factor of Retroperitoneal Fibrosis

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Background

Iliocaval compression in retroperitoneal fibrosis (RPF) can result in lower limb swelling, discomfort, skin changes or tissue loss. If there are significant symptoms then intervention is often indicated. This study reports a tertiary centre's experience of managing patients with iliocaval disease in RPF.

Methods

A retrospective analysis of all patients presenting to a tertiary unit (from January 2013 to January 2018) with a diagnosis of RPF was performed from computerised records. Data was analysed for demographics, interventions, stent patency and procedural complications.

Results

A total of 213 patients with RPF were identified of which 18/213 (8.4%) had iliocaval occlusion as a consequence. The median age of the 18 patients was 60 years (range 47-83 years) of which 11/18 (61%) were male. Seven (39%) have undergone IVC reconstruction. A double barrel technique with Veniti Vici™ stents was used in 5/6 patients and Sinus XL™ was used if the stent extended into the supra-hepatic IVC in 2/6. The occlusion was successfully crossed in 6/7 (86%). One year primary, primary-assisted and secondary patency are 67%, 100% and 100% with a median follow up of 15 months (range: 2 months to 27 months). Significant symptomatic improvement was noted in all patients who underwent treatment with resolution of swelling in all and complete resolution of back pain in 2/7.

Conclusion

IVC involvement is a rare but significant complication of RPF. IVC reconstruction is technically feasible and can lead to significant symptomatic improvement with acceptable patency in these patients.

Current methods for assessing peripheral arterial lesions do not predict functional and haemodynamic significance

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Background

Peripheral arterial disease (PAD) is treated using visual estimation of lesion severity by CT angiography (CTA) and haemodynamic significance on duplex ultrasound (DU). In coronaries, Fractional Flow Reserve (FFR) assesses the functional severity of lesions to inform revascularisation. We related FFR to current standards for assessing peripheral arterial lesions.

Methods

Patients with short distance claudication (IC) and critical limb ischaemia (CLI) underwent CTA and DU. Four blinded specialists determined likelihood of lesion significance on CTAs. During angioplasty/stenting, 0.014" dual-sensor guidewires (ComboWire XT®, Phillips-Volcano) were used to measure resting trans-stenotic pressure (Pd/Pa) and FFR by provoking hyperaemia with intra-arterial adenosine. Quantitative Vessel Analysis (Innova IGS, GE Healthcare) was used to analyse %diameter stenosis on intra-operative angiograms (IA DS%).

Results

51 (iliac:22, femoral:29) stenoses in 41 patients with IC (n=30, 59%) and CLI (n=21, 41%) were evaluated. Specialists agreed on haemodynamic significance in only 47% of lesions, with large inter-observer variability ($k=0.298$ [95% CI, 0.11-0.48]; $p<0.005$). The median IA DS% was 61% (IQR 48-75%). Pre-treatment median Pd/Pa and FFR were 0.91 (IQR 0.78-0.97) and 0.70 (IQR 0.52-0.87), respectively. DU ($R^2=0.25$; $p<0.05$) and IA DS% ($R^2=0.15$; $p<0.04$) correlated poorly with FFR. Measuring FFR unmasked haemodynamic significance in 68% of lesions. The FFR improved significantly after angioplasty/stenting [0.91 (0.80-1.00), $P<0.0001$].

Conclusions

FFR may better indicate the functional significance of lower limb lesions than current tools. Clinical trials will determine whether FFR will become, as it has in the coronary circulation, the gold standard for making treatment decisions.

Abstract Session 5

Potential cost-savings using Supervised Exercise Therapy for intermittent claudication

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Background

Supervised Exercise Therapy (SET) has been shown to be both effective at improving symptoms and quality of life in patients with intermittent claudication. Although being proven to be cost effective, safe and recommended in many national guidelines, uptake remains poor. We aimed to review the treatment of patients with intermittent claudication at a tertiary referral centre, and the potential cost savings with the implementation of a SET programme.

Methods

353 patients with intermittent claudication were identified from new vascular outpatient referrals made over a 12-month period to a single tertiary centre. Their demographics, the investigations they underwent and the proportion undergoing angioplasty were recorded. The cost of SET was taken from NICE guidelines, and costs of treatment from the national tariff.

Results

Of the 353 patients identified, 71% were male, with a mean age of 68.8 years. 14.4% of these patients underwent angioplasty with a median wait of three months; 3.68% directly from clinic, 10.76% underwent additional investigations and clinic reviews. The cost of treating these patients was £139,593. The use of a SET programme could potentially save £93,513 per year.

Conclusion

Access to Supervised Exercise Therapy (SET) programmes remains poor across the United Kingdom. Greater use of SET could reduce the need to perform angioplasty in intermittent claudication, increased opportunities to ensure best medical therapy and lead to improved quality of life, whilst reducing costs for treating patients with intermittent claudication.

Iliac limb occlusion after endovascular aneurysm repair: Systematic review and meta-analysis

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We aimed at finding the incidence, interventions and outcomes of iliac limb occlusion after EVAR.

We performed a systematic review that conformed to the PRISMA guidelines using a registered protocol (CRD42017064375). We considered studies reporting patients with iliac limb occlusion after EVAR. We interrogated electronic information and bibliographic reference lists using free text and controlled vocabulary searches. Proportional meta-analysis of outcomes applying a random-effects model was conducted.

13 studies reporting a total of 5454 patients that underwent EVAR over a period spanning from 1995 to 2014 identified. The overall incidence of iliac limb occlusion was 4.6% (95% CI 4.1-5.2). 44% (95% CI 36-52) had an acute presentation. 48% (95% CI 41-56) presented within 30 days of EVAR. 17% (95% CI 13-23) underwent endovascular treatment, 8% (95% CI 5-13) received hybrid procedures, and 61% (95% CI 54-67) had open surgery. The 30-day mortality was 0.036 (95% CI 0.018-0.070; heterogeneity: $P=0.999$, $I^2=0\%$). The rate of limb loss within 30 days and during follow up was 0.031 (95% CI 0.015-0.063; heterogeneity: $P=0.999$, $I^2=0\%$) and 0.045 (95% CI 0.024-0.083; heterogeneity: $P=0.978$, $I^2=0\%$), respectively. Re-intervention was undertaken in 0.080 (95% CI 0.048-0.130; heterogeneity $P=0.919$, $I^2=0\%$) over a follow up ranging from seven to 39 months. Mortality during follow up was 0.056 (95% CI 0.031-0.099; heterogeneity: $P=0.866$, $I^2=0\%$).

Iliac limb occlusion occurs in a small proportion of patients. Half of the patients present early. There is insufficient evidence to suggest superiority of surgery over endovascular/hybrid repair. A considerable number of patients will require re-intervention.

Contrast-enhanced ultrasonography for the detection of endoleak after endovascular aneurysm repair: A diagnostic test accuracy meta-analysis

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Background

Duplex ultrasonography is being increasingly used for endovascular aneurysm repair (EVAR) surveillance to obviate the risks and costs associated with computed tomography angiography (CTA). Contrast agents in ultrasound surveillance have been introduced to increase the diagnostic accuracy in detection of endoleak. We investigated the diagnostic accuracy of contrast-enhanced ultrasonography (CEUS) for detection of endoleak after EVAR.

Methods

We searched electronic bibliographic databases for original articles comparing concurrent CEUS and CTA for detection of endoleak after EVAR. Methodological quality was assessed using the QUADAS-2 tool. We used a mixed-effects logistic regression model to estimate summary sensitivity and specificity and developed hierarchical summary receiver operating characteristics curves and calculated the area under curve (AUC).

Results

We identified 26 studies reporting a total of 2638 paired scans in 2217 patients. The major risk of bias of the selected studies pertained to blinding for the index test and the reference standard. The pooled sensitivity and specificity of CEUS for all endoleaks was 0.94 (95% confidence interval [CI] 0.89 to 0.97) and 0.93 (95% CI 0.89 to 0.96), respectively. The AUC was 0.98 (95% CI 0.93-0.99). The summary estimate of sensitivity and specificity for type I/III endoleaks was 0.97 (95% CI 0.8 to 1.00) and 1.00 (95% CI 0.99 to 1.00), respectively. The AUC was 1.00 (95% CI 0.99 to 1.00).

Conclusions

CEUS has a high sensitivity in detection of endoleaks after EVAR. The role of CEUS alone or in combination with other imaging modalities in EVAR surveillance remains to be defined.

Endoleaks after Endovascular Aortic Aneurysm Repair

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Background

Endoleaks continue to be the Achilles' heel of EVAR, and are the most common indication for secondary intervention. This study describes the timing of endoleaks in a large, contemporary cohort.

Methods

769 consecutive patients who underwent endovascular AAA repair in a high volume single centre were recorded prospectively between January 2008 and December 2016 including co-morbidities and all-cause mortality. All patients were reviewed for endoleaks at standardised intervals with colour duplex ultrasound scans and, where uncertain, CT angiogram or contrast-enhanced ultrasound. Cox-proportional hazards modelling and survival analysis was performed to predict freedom from endoleak and associations with mortality, with censoring occurring at each patient's last known alive date.

Results

A total of 107 patients (13.9%) developed type II endoleaks during a median follow-up of 3.8 years. 1-, 3-, 6-, and 12-month endoleak-free survival was 96.9%, 91.1%, 86.7%, 82.8% respectively. Median length of freedom from endoleak was 17.2 months (range 0 – 66.2 months). No co-morbidity differences were seen in those who developed an endoleak ($p=0.20$) and type II endoleak was not associated with mortality ($p=0.08$). Type I endoleaks occurred in 11 patients (1.4%), with three occurring immediately post-op, and eight at a mean time of 25.3 months. One patient developed a type III endoleak at 12.6 months. No aneurysm-related mortality occurred in patients with type I, II or III endoleaks.

Conclusions

Endoleaks occur within a wide timeframe post EVAR, and often after one year. This data reinforces the need for long-term surveillance to prevent post-EVAR complications including rupture.

Computational flow dynamics to aid planning of complex aorto-iliac interventions

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Aims

Vascular interventions in complex aorto-iliac disease may have clinically relevant haemodynamic consequences that are difficult to predict. Optimal treatment strategies in these cases are rarely clear. This study uses state-of-the-art computational modelling techniques to simulate a complex case of aortic-iliac disease involving both aortic dissection and a common iliac artery aneurysm. The haemodynamic outcomes of a range of interventions are assessed and quantified.

Methods & Results

Using a patient-specific pre-operative three dimensional reconstruction from routine computed tomography, eight viable surgical interventions, two theoretical methods of dissection patching and one best medical treatment were implemented using computer modelling. These scenarios were then compared with the post-operative reconstruction after endovascular treatment of the iliac aneurysm with a stent-graft. Of all simulated surgical interventions, a femorofemoral bypass of the iliac aneurysm proved most effective as it simultaneously treated the iliac aneurysm and helped alleviate conditions in the aortic dissection. Furthermore, simulated closure of the distal aortic re-entry tear reduced likelihood of future aortic expansion by a reduction in adverse haemodynamics and blood pressure.

Conclusion

Computational modelling to plan surgical interventions and predict post-operative outcomes in aortic disease enables case-specific evidence for the optimum treatment strategy and could be a useful clinical tool.

Variability in the post-intervention management of patients following bare metal stent (BMS) insertion in the superficial femoral artery (SFA)

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Background

Bare metal stent (BMS) insertion within the superficial femoral artery (SFA) is increasingly used. This study determined variability of post intervention antiplatelet (AP) therapy and duplex surveillance (DUS).

Methods

Double stranded study: (1) systematic review of prospective studies reporting on the treatment of SFA with BMS (2) questionnaire based survey of vascular practitioners (VPs) to assess practice in the real world.

Results

(1) 74 studies (11609 patients). Surveillance strategies were stated in 70 studies, 63 used routine DUS. One performed imaging at 3 years post stent, 4 used angiography and 2 DUS if symptomatic. The most common time points for DUS were <1/12 (15), 1/12 (26), 3/12 (21), 6/12 (53) and 12/12 (57).

28 studies reported on use of loading dose of AP therapy. Maintenance AP therapy was reported in 57 papers and predominantly (43) comprised of dual AP therapy – aspirin lifelong and clopidogrel for a mean of 2.97 months.

(2) 67 replies completed. 54 VPs undertook DUS after stent insertion with over 50% stating it should be for ≥ 2 years. Variation was seen in frequency but most would scan at least every 6 months. 49 VPs stating they would reintervene on asymptomatic stenoses.

39 VPs gave a loading dose of AP agent at the time of BMS insertion. 52 VPs used dual AP therapy post stent insertion of variable duration (34% 3 months / 19% 6 months).

Conclusion

Marked variation exists in the management of patients post BMS insertion. Future direction is needed to streamline management algorithms.

Single centre experience with E-ventus BX stent graft in fenestrated endovascular abdominal aortic aneurysm repair (FEVAR)

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Background

Fenestrated stent-graft has become an established treatment for short neck abdominal aortic aneurysm. All the published literature uses the Advanta (Atrium) between the fenestration and visceral vessels. In 2014, lack of its availability led us to use a different brand, E-ventus (Jotec) for which we present our experience with.

Methods

A retrospective review of the outcome of E-ventus stent-graft used in patients with aneurysm repair utilizing Zenith fenestrated-grafts in a single centre from 2014 to 2017. Outcome measured included ease of insertion, type 3 endoleak, patency and renal impairment.

Results

E-ventus was used in 35 patients with a total of 97 stent-grafts deployed. 53, 28 and 16 stents were inserted in renal, superior mesenteric (SMA) and coeliac arteries respectively. Two coeliac stents occluded on follow up. Another two renal stents fractured one year later and one developed type 3 endoleak. These were treated percutaneously by placement of Atrium stent-grafts. E-ventus with shorter length has advantage over Atrium when stenting coeliac or SMA vessels where their first branch is very close to the origin.

There was no renal impairment. Two patients developed type 3 endoleak, both were corrected with further stenting. One E-ventus stent was deployed in the renal artery and migrated distally and treated by placement of a larger diameter bridging stent.

Conclusions

The use of E-ventus stent-graft in FEVAR appears to be safe and efficient with favourable patency rate. Its small length makes it preferable when there is an early branch of a visceral artery required to be preserved.

Percutaneous access versus open cut-down for endovascular aortic aneurysm repair: An analysis of efficacy and costs

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Introduction

When compared to endovascular aortic aneurysm repair via open cut-down (oEVAR) it is likely that percutaneous EVAR (pEVAR) reduces length of stay and groin complications. Indeed, pEVAR is now routine in many units. However, a recent meta-analysis, with significant limitations, controverts this hypothesis. In light of recent advances in the technology available, we aimed to re-evaluate the efficacy and relative costs of pEVAR versus oEVAR.

Methods

This was a retrospective analysis of all EVARs performed in a single centre between 2007 and 2017. There were no exclusions. We compared the hospital length of stay (primary outcome) and rate of groin complications (secondary outcome) associated with oEVAR versus pEVAR. We undertook per protocol and intention to treat analyses to reduce bias. Based on national tariffs and published estimates of treatment costs, we estimated the relative financial impacts of both approaches.

Results

249 cases were analysed. Groups were balanced in terms of age and relevant co-morbidity. On both the intention to treat and per protocol analyses, pEVAR was associated with fewer groin complications (odds ratio 0.42 [95% confidence interval 0.20-0.92, p=0.03], NNT=11, intention to treat) and a reduced length of stay (median 2 versus 3 days, p=0.0003, intention to treat). There was a net cost saving of £496 per patient associated with pEVAR.

Conclusion

pEVAR is associated with better outcomes and lower cost. In suitable cases, pEVAR should be the preferred technique.

The impact of undiagnosed airflow obstruction on patients considered for elective aortic aneurysm repair

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Background

There is good data to show that patients with chronic obstructive airway disease (COPD) have poorer outcomes and high rates of adverse events following abdominal aortic aneurysm (AAA) repair. A lack of diagnosis potentially prevents pre-operative optimisation and may negatively impact on treatment decisions and post-operative outcomes.

Methods

A prospective database of all patients referred for cardiopulmonary exercise testing (CPET) prior to consideration for AAA repair was examined. Airway obstruction was defined using a FEV1/FVC ratio of < -1.64 . Electronic records were interrogated for decisions on surgical intervention, post-operative complications and all-cause survival.

Results

Data for 316 patients was available between 2008-2017. Diagnosis of COPD was found in 46% of patients with evidence of airflow obstruction. Presence of airway obstruction failed to correlate with length of stay, 30-day morbidity or mortality regardless of modality of repair. Presence of objective airway obstruction was higher in the 'turn down' group ($p \leq 0.05$ vs EVAR and open repair). Survival in the turn down group was shorter than the operative group (49 vs 38 months $p < 0.05$).

Conclusions

CPET is effective for screening patients for respiratory disease prior to major vascular surgery. Early recognition ensures patients have the opportunity to be optimised pre-operatively. The links between poor respiratory function and high turn down rates suggest some patients are being denied opportunities to improve their respiratory function and either become eligible for surgery or increase their non-operative survival. For those patients with undiagnosed airway obstruction, CPET should provide opportunity for referral to respiratory services.

Posters

Posters

Poster number 1

Utilising a 4f sheath first approach in the percutaneous management of lower limb peripheral vascular disease

Alok Tiwari, University Hospitals Birmingham

Poster number 2

Local and National Experience of Spinal Drainage in Complex TEVAR: is it time for UK guidelines?

Huw Davies, UHCW

Poster number 3

Systematic review and meta-analysis of very urgent carotid intervention for symptomatic carotid disease

David Milgrom, Royal Liverpool University Hospital

Poster number 4

An audit of totally percutaneous EVAR (pEVAR) for Abdominal Aortic Aneurysm

Przemysław Orawiec, Ninewells Hospital and Medical School

Poster number 5

Outcomes in type-B aortic dissection: A time for change in the management of Acute Aortic Syndrome (AAS) and the development of a trainee led UK-AAS registry

Matthew Popplewell, University Hospital of Coventry & Warwickshire

Poster number 6

The use of 18-Fluorine Fluorodeoxyglucose Positron Emission Tomography (18F-FDG PET) scan for the detection of vascular prosthetic graft infections (VPGI): A diagnostic test accuracy meta-analysis

Djamila Rojoo, Royal Oldham Hospital

Poster number 7

Decision making for Abdominal Aortic Aneurysms in women

Andrew Duncan, University of Leicester

Poster number 8

Single centre experience with the Aptus Heli-FX EndoAnchor System in the management of aortic aneurysms

Nicholas Greaves, Royal Liverpool & Broadgreen University Hospitals Trust

Poster number 9

Surgeon Modified Stent graft, Feasible endovascular bailout in emergency!

Alex Rodway, Brighton and Sussex University Hospitals

Poster number 10

Onyx Syndrome Post embolization for Type II endoleak!

Alex Rodway, Brighton and Sussex University Hospitals

Poster number 11

Meta-analysis and trial sequential analysis of local versus general anaesthesia for carotid endarterectomy

Djamila Rojoo, The Royal Oldham Hospital

Poster number 12

The introduction and evolution of an innovative endovascular device for venous arterialisation: A systematic analysis of current practice

Rachael Morley, Bristol Centre for Surgical Research

Poster number 13

Carotid–Subclavian Bypass (CSB) – Is Routine Trans-Cranial Doppler (TCD) Indicated to Reduce Neurological Adverse Events?

Huw Davies, UHCW

Poster number 14

Emergency embolization of ruptured renal artery aneurysm

Yen Ming Chan, Aberdeen Royal Infirmary

Poster number 15

Open versus endovascular intervention for chronic mesenteric ischaemia: A systematic review

Abhilash Sudarsanam, Basildon University Hospital

Poster number 16

Endobag separation- An ominous sign after endovascular aneurysm sealing with the Nellix device

Sadia Tasleem, The Royal Oldham Hospital

Poster number 17

Type A aortic dissection with visceral malperfusion; should malperfusion be treated prior to central aortic repair? A systematic review and summary of best evidence

Joe Wiltshire, St George's Vascular Institute

Poster number 18

Exploring Factors Influencing Outcome in Thoracic Endovascular Aortic Repair [TEVAR]

Ian Nordon, University of Southampton

Poster number 19

Evaluation of the Utility of Endovascular Sealing for Aortic Aneurysmal Disease

Maclyn Augustine, University of Southampton

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A global pioneer in medical breakthroughs, **Cook Medical** is committed to creating effective solutions that benefit millions of patients worldwide. Today, we combine medical devices, drugs, biologic grafts and cell therapies across more than 16,000 products serving more than 40 medical specialties. Founded in 1963 by a visionary who put patient needs and ethical business practices first, Cook is a family-owned company that has created more than 10,000 jobs worldwide. For more information, visit www.cookmedical.eu

Cordis, a Cardinal Health company, is a leader in the development and manufacture of interventional vascular technology with more than 50-year history of delivering pioneering products to treat millions of patients worldwide. Together, Cordis and Cardinal Health have the opportunity to better serve our customers and improve patient care by strengthening our product portfolio, enhancing our overall service model and business innovation, and building on our established customer relationships.

We look forward to meeting with you to discuss the broad Cordis endovascular portfolio along with the INCRAFT® AAA Stent Graft System. www.cordis.com/emea

Endologix offers personalized AAA care for each patient with options to treat even the most challenging anatomies on IFU. Our portfolio is designed to improve outcomes and solve key challenges like access, bifurcation preservation and aneurysm sealing. We are committed to physician collaboration for solutions that revolutionize aortic care for life.

Gectinge is a global provider of innovative solutions for operating rooms, intensive-care units, sterilization departments and for life science companies and institutions. Our extensive portfolio of trusted products, solutions and consulting services have been brought together under one single brand – Gectinge. With brands like Maquet, Lancer, Atrium, Pulsion, Datascope, Steritec and Stericool – just to name a few – we are now a global market leader in many healthcare and life science segments. Based on our first-hand experience and close partnerships with clinical experts, healthcare professionals and medtech specialists, we are improving every-day life for people, today and tomorrow.

At **Gore Medical**, we have provided creative therapeutic solutions to complex medical problems for 40 years. During that time, 40 million innovative Gore Medical Devices have been implanted, saving and improving the quality of lives worldwide. Our extensive family of products includes vascular grafts, endovascular and interventional devices, surgical meshes for hernia and soft tissue reconstruction, staple line reinforcement materials, and sutures for use in vascular, cardiac, and general surgery. We are one of a select few companies to appear on all of the U.S. "100 Best Companies to Work For" lists since the rankings debuted in 1984. For several years now, we have also been voted one of the best workplaces in Europe and have been ranked on top workplace lists in France, Germany, Great Britain, Italy and Sweden. For more information, visit goremedical.com/eu.

Penumbra, Inc., headquartered in Alameda, California (USA), is a global healthcare company focused on interventional therapies that designs, develops, manufactures and markets innovative devices. The company has a broad portfolio of products that addresses challenging medical conditions and significant clinical needs across two major markets, neuro and peripheral vascular.

Terumo has combined **Bolton Medical** and **Vascutek** to power a dedicated approach focused on aortic innovation. Our integrated company will seamlessly weave together an enhanced range of high quality products and specific services, expertise and technologies to enable the clinician to meet the unique needs of each patient and transform the treatment of aortic disease for us all.

At **Terumo Interventional Systems**, we constantly work to refine and perfect our products so that Vascular Surgeons and Interventional Radiologists can do more. That is why we support great thinking that pushes back the boundaries of our field. We are committed to innovation that embraces intricacies and complexities. Our exceptional tools and education programs empower physicians with the confidence they need to perform ever-more challenging procedures and spark progress.

Faculty Bios

Tilo Kölbel is professor of vascular surgery at the university of Hamburg, Germany. He is a board certified in Germany, Sweden and Denmark as specialist in general surgery and vascular surgery. Memberships include the German Society of Vascular Surgery, North German Society of Surgery, European Society of Vascular Surgery, The International Society of Vascular Surgery and International Society of Endovascular Specialists. Tilo Kölbel is reviewer for major North American, European and Asian vascular and interventional radiological journals and is an editorial board member of the Journal of Endovascular Therapy.

Tilo Kölbel has been trained as general surgeon in Berlin, worked as a fellow and later staff member in vascular surgery and interventional radiology from 2004-2009 at Malmö University Hospital in Sweden. He has established endovascular therapies in the department of Vascular Medicine with Prof. Sebastian Debus at the University Heart Center Hamburg since 2009 and is there head of the German Aortic Center since 2012.

Today Tilo Kölbel's main clinical and scientific interest lays in aortic disease with a focus on complex endovascular techniques, aortic dissection, aortic arch interventions and development of new endovascular treatment strategies and devices.

Dr. Andrej Schmidt earned his Degree in Medicine from Freie Universität Berlin, one of the most prominent universities in Germany. He then completed his training as an Angiologist and Cardiologist at the University of Dresden Carl Gustav Carus and the Heart Center at the University of Erlangen. Currently serving as a Chief Senior Physician and Privatdozent at the University of Leipzig, Dr. Schmidt specializes in the treatment of complex peripheral vascular and aortic disease, and is world renowned for his extensive knowledge, research, and novel treatment techniques. He is also the co-founder of the Leipzig Interventional Course (LINC), one of the world's largest and leading courses on endovascular interventions, and travels extensively worldwide to educate physicians on his experience.

Special interests within endovascular treatment of PAOD and aneurysms: New technologies (drug-coated balloons, drug-eluting stents, new stent-designs, atherectomy-devices, guidewires, balloons, new stentgraft-technologies for standard and complex aneurysm-formations of the thoracic and abdominal aorta, carotid stenting).

Anders Wanhainen, MD, PhD, is Professor of Surgery and head of the Vascular Surgical Research Group at Uppsala University, and clinical Chief of the Department of Vascular Surgery, Uppsala University Hospital, Uppsala, Sweden.

Professor Wanhainen is a general and vascular surgeon who specializes in advanced open and endovascular surgery of complex aortic aneurysms and dissections. He has served as president of the Swedish Society for Vascular Surgery and council member of the European Society for Vascular Surgery.

Professor Wanhainen's research interests include epidemiological and clinical aspects of aortic diseases, with special focus on pathophysiology, screening, surgical/endovascular repair, and medical treatment. Other areas of interest are vascular infections, carotid disease, extremity ischemia, radiation and abdominal compartment syndrome. He has authored more than 170 articles in peer-reviewed medical journals and textbooks, and is the supervisor for 20 PhD-students; eleven who completed their PhD. Professor Wanhainen has been PI for several clinical research projects and receives research grants from the Swedish Research Council and the Swedish Heart and Lung Foundation. He was awarded The Linné Foundation Medical Research Award 2007, The Swedish Surgical Society's "Great Surgical Research Prize" in 2011, the Swedish Vascular Award 2008 and 2014.

Uppsala University, founded in 1477, is the oldest university in Scandinavia. Among the University's alumni there are 15 Nobel Prize laureates. Uppsala University Hospital has an uptake of approximately 3 million people for highly specialized vascular surgery, training and research.

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