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2023

ANNUAL MEETING



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Annual Meeting 2023

Thursday 29th June - Friday 30th June
Tortworth Court Hotel, South Gloucestershire

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Thursday 29th June

09.00 – 09.05	WELCOME <i>Colin Bicknell, BSET President</i>
09.05 – 09.35	ROULEAUX CLUB AND BSIRT SYMPOSIUM
	<i>Chairs: Colin Bicknell, BSET President and Andrew Nickinson, Rouleaux Club Vice President</i>
	Impact of dual consultant operating on vascular training
	<i>Claire Dawkins, Vascular Society Rouleaux Club representative</i>
	Radiation protection among vascular trainees
	<i>Lawrence Ugwumba, ASiT Rouleaux Club representative</i>
	Update on IR training - challenges and opportunities
	<i>Alex Hardman & Katrina Harborne, BSIRT representatives</i>
	Vascular Surgery and Interventional Radiology- How can we cross the bridge from a trainee perspective? <i>Katrina Harborne, BSIRT representative</i>
09.35 – 09.45	BSSET FELLOWSHIP REPORT
	<i>Chairs: Patrick Chong & Paul Bevis</i>
	2022 Travel Fellowship
	<i>Badri Vijaynagar</i>
	2022 Training Fellowship
09.45 – 09.51	ABSTRACT SESSION 1 (4+2 minutes)
	<i>Chairs: Patrick Chong & Paul Bevis</i>
	A contemporary analysis of quality of life in aortic aneurysm repair Jayna Patel^{1,2} , <i>Michelle Carmichael², Ashish Patel^{1,2}, Alberto Smith¹, Bijan Modarai^{1,2}, Said Abisi² and Morad Sallam²</i> ¹ King's College London, London ² Guy's and St Thomas' Hospital, London

09.51 – 09.57	Low-profile vs standard profile fabric stent grafts for fenestrated and branched endovascular aortic aneurysm repair: 5 years single centre experience		
	Khalid Ahmed^{1,2}, Mohamed Elsherif³, Florian Enzmann⁴, Neil Collin¹, Graham Collin¹, Peter Mezes¹, John Hardman¹, Marcus Brooks¹, Paul Bevis¹ ¹Department of Vascular Surgery, Southmead Hospital, North Bristol NHS Trust, Bristol ²University College London, School of Medicine, London ³Department of Vascular Surgery Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield ⁴Department of Vascular Surgery, Medizinische Universität Innsbruck, Innsbruck, Austria		
09.57 – 10.03	Long-term outcomes and durability of Fenestrated Endovascular Aneurysm Repair (FEVAR): A meta-analysis		
	Aurélien Guérault, Aisha Bashir, Bilal Azhar, James Budge, Iain Roy, Ian Loftus, Peter Holt St George's Vascular Institute, London		
10.03 – 10.09	In-situ laser fenestration for complex aortic emergency presentations: A developing unit experience/case series		
	Mina Abdelmalak, Jakub Marczak, Simon Neequaye Liverpool University Hospitals, Liverpool		
10.09 – 10.15	Challenging the controversy surrounding percutaneous brachial artery access related complications: A meta-analysis and systematic review		
	Khuzaima Khan¹, Omobolaji Akano¹, Eiman Amir¹, Joseph Borucki¹, Ahmad Al Thaher², Philip Stather¹, Tariq Ali¹ ¹Norfolk and Norwich University Hospital, Norwich ²University of Oxford, Oxford		
10.15 – 10.35	GUEST LECTURE <i>Chairs: Bijan Modarai and Pete Holt</i> Cutting edge techniques for personalised treatment of Type B dissection Santi Trimarchi, Professor of Vascular Surgery, Milan, Italy		
10.35 – 11.05	COFFEE		
11.05-11.25	QUICK FIRE DEBATE		
	<i>Chairs: Becky Sandford and Athanasios Saratzis</i> Treatment of acute limb ischaemia should be by endovascular methods in all cases.		
	<table border="0"> <tr> <td data-bbox="269 1364 636 1476"> FOR: Narayanan Thulasidasan, Consultant Interventional Radiologist, Guy's and St Thomas' Hospital, London </td> <td data-bbox="636 1364 1004 1476"> AGAINST: Sandip Nandhra, Consultant Vascular Surgeon, Newcastle Hospitals </td> </tr> </table>	FOR: Narayanan Thulasidasan, Consultant Interventional Radiologist, Guy's and St Thomas' Hospital, London	AGAINST: Sandip Nandhra, Consultant Vascular Surgeon, Newcastle Hospitals
FOR: Narayanan Thulasidasan, Consultant Interventional Radiologist, Guy's and St Thomas' Hospital, London	AGAINST: Sandip Nandhra, Consultant Vascular Surgeon, Newcastle Hospitals		

Thursday 29th June

11.25 – 11.40	SOCIETY SPONSOR: MEDTRONIC
	<i>Chairs: Becky Sandford and Athanasios Saratzis</i>
	How can we improve TEVAR performance with computational modelling?
	<i>Santi Trimarchi, Professor of Vascular Surgery, Milan, Italy</i>
11.40 – 12.05	CUTTING EDGE IMAGING AND RADIATION PROTECTION
	<i>Chairs: Martin Claridge and Katharine Lewis</i>
	The European Society for Vascular Surgery radiation protection guidelines
	<i>Ashish Patel, Consultant Vascular Surgeon, Guy's and St Thomas' Hospital, London</i>
	The ARIA trial
	<i>James Budge, Academic Clinical Lecturer, St George's Hospital, London</i>
	Is x-ray free endovascular intervention a pipe dream??
	<i>Bijan Modarai, Professor of Vascular Surgery, Guy's and St Thomas' Hospital, London</i>
12.05 – 12.20	SOCIETY SPONSOR: COOK MEDICAL
	<i>Chairs: Martin Claridge and Katharine Lewis</i>
	Managing aortic disease requires more than just products
	<i>Heather Garnett, Regional Business Manager, UK North & Ireland, Cook Medical, Vascular Division</i>
12.20 – 13.35	LUNCH
13.35 – 13.55	GUEST LECTURE
	<i>Chairs: James McCaslin and Hos Nasr</i>
	Where will the next innovations in aortic endovascular repair be?
	<i>Tim Resch, Professor of Vascular Surgery, Copenhagen, Denmark</i>

13.55 – 14.35	INNOVATIONS IN LOWER LIMB
	<i>Chairs: James McCaslin and Hos Nasr</i>
	The role of IVUS in modern management of peripheral arterial disease
	<i>Ashish Patel, Consultant Vascular Surgeon, Guy's and St Thomas' Hospital</i>
	Update on drug coated balloons
	<i>Narayanan Thulasidasan, Consultant Interventional Radiologist, Guy's and St Thomas' Hospital, London</i>
	CERAB: from experimental to established therapy
	<i>Barend Mees, Consultant Endovascular Surgeon, Maastricht</i>
	Acute DVT: Time to go lysis free?
	<i>Emma Wilton, Consultant Vascular Surgeon, Oxford University Hospitals</i>
14.35 – 15.11	ABSTRACT SESSION 2 (4 + 2 minutes)
	<i>Chairs: Paul Moxey and Simon Neequaye</i>
14.35 – 14.41	Compliance with Instructions for Use does not predict endograft failure as assessed by post EVAR sac regression
	<i>Bilal Azhar, James Budge, Aurélien Guérout, Barnaby Farquharson, William Selway, Iain Roy, Ian Loftus, Peter Holt St Georges Vascular Institute, London</i>
14.41 – 14.47	Can common femoral artery waveform analysis reliably predict significant disease of the ipsilateral iliac artery: A systematic review and meta-analysis
	<i>Ismay Fabre¹, Mohammed Kabis², Brenig Gwilym³, Rhodri Thomas², Kate Bryant², Richard White², David Bosanquet^{1,2} ¹Royal Gwent Hospital, Newport ²Cardiff and Vale University Healthboard, Cardiff ³Morriston Hospital, Swansea</i>
14.47 – 14.53	The multi-modality approach to the acute abdominal aortic aneurysm
	<i>Helena Smith, Baker Ghoneim, Massimo Vezzosi, Hosaam Nasr, Martin Claridge, Maciej Juszcak, Donald Adam Birmingham Heartlands Hospital, Birmingham</i>

14.53 – 14.59	A systematic review: Are biomimetic stents a good option in infra-inguinal peripheral arterial disease? Sarah Jane Messeder^{1,2}, <i>Gabriel López-Peña², Coral Pepper³, Athanasios Saratzis^{1,2}</i> ¹Department of Cardiovascular Sciences, University of Leicester, NIHR Biomedical Research Centre, Leicester ²Leicester Vascular Institute, University Hospitals of Leicester NHS Trust, Leicester ³Library and Information Services, University Hospitals of Leicester NHS Trust, Leicester
14.59 – 15.05	Face, content and construct validity of a low cost and open-source endovascular simulator James Budge, <i>Luis Ribero, Bilal Azhar, William Selway, Barnaby Farquharson, Aurélien Guérout, Iain Roy, Ian Loftus, Peter Holt</i> St Georges Hospital, London
15.05 – 15.11	Use of iliac branched devices for aortoiliac aneurysms – A single unit experience Ummul Contractor, <i>Robert Albania, Neghal Kandiyil, Gregory McMahon</i> Glenfield Hospital, Leicester
15.15 – 15.30	SOCIETY SPONSOR: GORE <i>Chairs: Paul Moxey and Simon Neequaye</i> Bristol experience with GORE® TAG® Conformable Thoracic Stent Graft with ACTIVE CONTROL System <i>Paul Bevis, Consultant Vascular Surgeon, Southmead Hospital, Bristol & Graham Collin, Consultant Interventional Radiologist, Southmead Hospital, Bristol</i>
15.30 – 15.55	TEA
15.55 – 16.25	CONTEMPORARY MANAGEMENT OF TYPE B AORTIC DISSECTION <i>Chairs: Bijan Modarai and Emma Wilton</i> How do I identify and treat the acute complicated <i>Santi Trimarchi, Professor of Vascular Surgery, Milan, Italy</i> Endovascular intervention for “uncomplicated” dissection <i>Colin Bicknell, Consultant Vascular Surgeon, Imperial College NHS Trust</i> Complex endovascular repair of Type B dissection <i>Tim Resch, Professor of Vascular Surgery, Copenhagen, Denmark</i>

Thursday 29th June

16.25 – 16.32	GOLD SPONSOR PRESENTATION: SHOCKWAVE
	<i>Chairs: Dave Bosanquet and Becky Sandford</i>
	IVL: change compliance to change the game in calcified lesions
	<i>Stefano Fazzini, Tor Vergata University Hospital of Rome</i>
16.35 – 16.50	UPDATE ON ENDOVASCULAR TRIALS IN THE UK
	<i>Chairs: Dave Bosanquet and Becky Sandford</i>
	Introduction: Athanasios Saratzis and Colin Bicknell
	<i>EARNEST</i> - Colin Bicknell
	<i>EVOCC</i> - Athanasios Saratzis
	<i>PAEDIS</i> - Athanasios Saratzis
	<i>VEIN</i> - Sarah Onida
	<i>BEST</i> - Matt Machin
16.50 – 17.50	AORTIC PRIZE ABSTRACT SESSION (6 + 3 minutes)
	<i>Chairs: Tim Resch, Barend Mees and Martin Claridge</i>
16.50 – 16.59	Poor survival in women referred for treatment of thoracic aortic aneurysms: Might utilisation of the Aortic Size Index improve outcomes?
	Anna Louise Pouncey¹ , Dhvni Patel ² , Carol Freeman ³ , Priya Sastry ⁴ , Colin Bicknell ¹ , Stephen Large ³ , Linda Sharples ²
	¹ Imperial College London, London
	² London School of Hygiene and Tropical Medicine, London
	³ Royal Papworth NHS Foundation Trust, Cambridge
	⁴ Oxford University Hospitals, Oxford
17.00 – 17.09	Elective fenestrated EVAR offers greater durability than infrarenal EVAR with no increase in mortality
	Giulia Bertagna¹ , Baker Ghoneim ^{1,2} , Massimo Vezzosi ¹ , Maciej Juszcak ¹ , Donald Adam ¹ , Martin Claridge ¹
	¹ University Hospitals Birmingham NHS Foundation Trust, Birmingham
	² Zagazig University Hospitals, Zagazig, Egypt

Thursday 29th June

17.10 – 17.19	Consensus statement on the interhospital transfer of patients with acute aortic syndrome – TRAVERSING Delphi Study Aleksandra Staniszweska¹, Kamran Gaba², Benjamin Patterson², Sarah Wilson³, Rachel Bell⁴, Colin Bicknell⁵, Marcus Brooks⁶, Mark Callaway⁷, Stephen Goode⁸, Scott Grier⁶, Alex Hobson⁹, Ronelle Mouton⁶, Simon Neequaye¹, Gareth Owens¹⁰, Cha Rajakaruna⁷, Emma Redfern⁷, Geoffrey Tsang², Robert Hinchliffe^{6,11} ¹Liverpool University Hospitals NHS Foundation Trust, Liverpool ²University Hospital Southampton NHS Foundation Trust, Southampton ³Wexham Park Hospital, Frimley Health NHS Foundation Trust, Slough ⁴Freeman Hospital, Newcastle Hospitals NHS Foundation Trust, Newcastle ⁵St Mary's Hospital, Imperial College Healthcare NHS Trust, London ⁶North Bristol NHS Trust, Bristol ⁷University Hospitals Bristol NHS Foundation Trust, Bristol ⁸Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield ⁹Portsmouth Hospitals University NHS Trust, Portsmouth ¹⁰Aortic Dissection Awareness UK & Ireland, London ¹¹Bristol Medical School, Bristol Population Health Science Institute, University of Bristol, Bristol
17.20 – 17.29	Endovascular repair of infective aortic pathology Baker Ghoneim, Giulia Bertagna, Andrew Woodhouse, Darryl Braganza, Martin Claridge, Maciej Juszcak, Donald Adam Birmingham University Hospitals, Birmingham
17.30 – 17.39	Impact of frailty on treatment outcome for non-ruptured abdominal aortic aneurysm: A National Vascular Registry cohort study Majd Rawashdeh¹, Cain Clark², Ganan Sritharan¹, Tristan RA Lane¹, Alun Davies¹ ¹Imperial College London, London ²Coventry University, Coventry
17.40 – 17.49	Acute kidney injury following elective infrarenal and complex endovascular aneurysm repair; incidence, prognostic significance, and risk factors Jorg de Bruin Rotterdam, Netherlands
17:50 – 18:00	THE PRESIDENT'S DEBATE <i>Introduced by Bijan Modarai</i> Juxta-renal aortic aneurysms in 2023: Endovascular repair is the treatment of choice FOR: Rachel Bell AGAINST: Colin Bicknell
7.15pm	DRINKS RECEPTION
7.45pm	DINNER

08.30 – 09.00	ABSTRACT SESSION 3 (4 + 2 minutes)
	<i>Chairs: Pete Holt and Patrick Chong</i>
08.30 – 08.36	Clinical and radiological predictors of Major Adverse Events (MAE) in acute Type B Aortic Dissection (TBAD): Systematic review Barnaby Farquharson , Bilal Azhar, James Budge, Mital Desai, Ian Loftus, Peter Holt St George's University Hospital, London
08.36 – 08.42	Investigating the relationship between central blood pressure and the size of abdominal aortic aneurysms under surveillance Edmund Charles , Anna Pouncey, Maria Nicola, Guy Martin, Neil Poulter, Colin Bicknell Imperial College London, London
08.42 – 08.48	Complications post endovascular abdominal aortic aneurysm repair in patients with diabetes mellitus: A meta-analysis and systematic review Eman Ashraf Adly Aly Otify ^{1,2} , Mohamed Ahmed Elsayed Mekki ³ , Joseph Borucki ² , Dhatariya Ketan ² , Philip Stather ² ¹ University of East Anglia, Norwich ² Norfolk and Norwich University Hospital, Norwich ³ Cairo University Hospitals, Cairo, Egypt
08.48 – 08.54	Skeletal Muscle Index (SMI) derived from CT imaging as a predictor of outcome in vascular surgery: A systematic review and meta-analysis Abhilash Sudarsanam , Masaki Yanai, Alun Davies Imperial College London, London
08.54 – 09.00	Endovascular versus Surgery Therapy for Acute Limb Ischaemia Salvage - ESTABLISH Fatima Mannan ¹ , Lawrence Ugwumba ¹ , Tamer El-Sayed ¹ , Athanasios Saratzis ² , Sandip Nandhra ¹ , ESTABLISH Collaborative ¹ ¹ The Northern Vascular Centre, Freeman Hospital, Newcastle ² Leicester Vascular Institute, Leicester
09.00 – 09.07	GOLD SPONSOR PRESENTATION: TERUMO AORTIC
	<i>Chairs: Pete Holt and Patrick Chong</i>
	First Experiences with a new low profile Fenestrated Graft
	Joost van Herwaarden, Professor of Vascular Surgery, Utrecht, Netherlands

Friday 30th June

09.07 – 09.25	VASCULAR SOCIETY SESSION
	<i>Chairs: Paul Bevis and Katharine Lewis</i>
	Society Update
	<i>Rachel Bell, President, Vascular Society</i>
	Education and training opportunities
	<i>Patrick Coughlin, Chair of the Education and Training Committee</i>
	The VS PAD QIF & NHSE CLTI CQUIN
	<i>Ellie Atkins, VS/RCS Eng. Quality and Audit Research Fellow</i>
09.25 – 09.35	The implications of the new National Consultant Information Programme (NCIP) & NHSE Device capture for Endovascular intervention
	Jonathan Boyle
09.35 – 09.42	GOLD SPONSOR PRESENTATION: ANGIODROID
	<i>Chairs: Paul Bevis and Katharine Lewis</i>
	Why and how should I use CO2 in my daily practice
	<i>Athanasios Saratzis, Consultant Vascular Surgeon, Leicester Vascular Institute</i>
09.45 – 10.15	TRIALS THAT INFORM MANAGEMENT OF LIMB ISCHAEMIA
	<i>Chairs: Paul Bevis and Katharine Lewis</i>
	Implications of BEST-CLI for modern practice
	<i>Rob Sayers, Professor of Vascular Surgery, Leicester</i>
	BASIL-2
	<i>Andrew Bradbury, Professor of Vascular Surgery, University of Birmingham</i>
10.15 – 10.55	COFFEE
10.55 – 11.25	EVC: CASE DISCUSSIONS
	<i>Chair: Barend Mees, Vascular and Endovascular Surgeon, Maastricht, Netherlands & Jorg de Bruin, Rotterdam, Netherlands</i>

11.25 – 11.32	GOLD SPONSOR PRESENTATION: BENTLEY
	<i>Chairs: Emma Wilton and Paul Moxey</i>
	Experience in arterial and venous occlusions with the BeBack crossing and re-entry catheter
	<i>Michael Lichtenberg, Chief Medical Officer of the Angiology Department at Vascular Centre Clinic Arnsberg, Germany</i>
11.35 – 12.35	PERIPHERAL PRIZE ABSTRACT SESSION (6 + 3 minutes)
	<i>Chairs: Michael Lichtenberg, Emma Wilton and Paul Moxey</i>
11.35 – 11.44	The SHOCC Study: SHOCKwave lithotripsy for patients with peripheral arterial disease
	Gabriel Lopez-Pena¹, Sarah Finch², Sarah Jane Messeder^{1,2}, Emmanuel Katsogridakis¹, Badri Vijaynagar¹, Robert Davies¹, Matthew Bown^{1,2}, Liam Musto^{1,2}, Daniel Carradice^{3,4}, Raghu Lakshminarayan^{3,4}, Ann-Marie Callis³, Louise Hitchman³, Soroush Sohrabi⁵, Owen Rees⁵, Narayanan Thulasidasan⁶, Lily Benton⁶, Christopher Miller⁷, Patrick Coughlin⁷, Christopher Twine^{8,9}, Peter Mezes⁸, Symeon Lechareas¹⁰, Paul Moxey^{1,1}, Joo-Young Chun^{11,12}, Athanasios Saratzis^{1,2} ¹Leicester Vascular Institute, University Hospitals of Leicester NHS Trust, Leicester ²Department of Cardiovascular Sciences, University of Leicester, Leicester ³Hull University Teaching Hospitals NHS Trust, Hull ⁴Hull York Medical School, Hull ⁵Betsi Cadwaladr University Health Board, Bangor ⁶Guys & St Thomas' NHS Foundation Trust, London ⁷Leeds Teaching Hospitals NHS Trust, Leeds ⁸North Bristol NHS Trust, Bristol ⁹University of Bristol, Bristol ¹⁰St Helens and Knowsley Teaching Hospitals NHS Trust ¹¹St George's Hospital NHS Foundation Trust, London ¹²Molecular and Clinical Sciences Research Institute, St George's University of London, London
11.45 – 11.54	The oxygenation status of calf and foot musculature predicts inadequate revascularisation in patients with limb ischaemia
	Lawen Lawko Karim¹, Ashish Patel¹, Amedeo Chiribiri¹, James Budge², Alberto Smith¹, Bijan Modarai¹ ¹Guy's and St Thomas' Clinical Research Consortium, London ²St Georges University Hospital, London

Friday 30th June

11.55 – 12.04	Utility of intravascular ultrasonography in guiding intra-procedural decision-making Harishankar Nair, Arsalan Wafi, Athanasios Diamantopoulos, Panos Gkoutzios, Becky Sandford, Narayanan Thulasidasan, Ashish Patel Guy's and St Thomas' NHS Trust, London
12.05 – 12.14	Endovascular revascularisation of “no-option” chronic limb-threatening ischaemia patients Vaux Robertson¹, Badri Vijaynagar¹, Harjeet Rayt¹, Robert Davies¹, Athanasios Saratzis^{1,2} ¹Leicester Vascular Institute, Leicester ²University of Leicester, Leicester
12.15 – 12.24	Early experience of the Phoenix atherectomy device Arsalan Wafi, Jia Su, Harishankar Nair, Athanasios Diamantopoulos, Ashish Patel, Narayanan Thulasidasan Guy's and St Thomas' NHS Trust, London
12.25 – 12.34	Acute Deep Vein Thrombosis clearance: Is thrombolysis still being used? Samuel Galea, Emma Wilton, Andrew Wigham Oxford University Hospital, Oxford
12.35 – 12.55	CHEE SOONG MEMORIAL LECTURE: EVAR: are the glory days over? <i>Introduced by Colin Bicknell</i> Michael Jenkins, Consultant Vascular Surgeon, Imperial College NHS Trust
12.55 – 13.00	PRESENTATION OF PRIZES AND CLOSE
13.00 – 14.00	LUNCH

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ABSTRACT SESSIONS



A contemporary analysis of quality of life in aortic aneurysm repair

Jayna Patel^{1,2}, Michelle Carmichael², Ashish Patel^{1,2}, Alberto Smith¹, Bijan Modarai^{1,2}

¹Kings College London, London

²Guy's and St Thomas Hospital, London

Background

There is a paucity of quality of life (QOL) data pertaining to aortic aneurysm repair. We captured QOL data using aneurysm-specific patient reported outcome measures (PROMs) after open repair (OR) and both standard infra-renal (EVAR) and branched/fenestrated repairs (Complex EVAR).

Methods

Two disease specific questionnaires were administered pre- and post-operatively, Aneurysm Dependant Quality of Life (AneurysmDQoL) and Aneurysm Symptom Related (AneurysmSRQ). Data were analysed using the Kruskal Wallis and Friedman tests.

Results

153 patients [127 (83%) male, age 75 (IQR 69-79) years] were recruited. 33 (21.6%) patients underwent OR, 69 (45.1%) Complex EVAR and 51 (33.3%) Standard EVAR.

Overall, AneurysmDQoL improved after repair, n=153 (median AWI score = -2.0 before procedure, after procedure: 0.9 at 6-weeks, 1.1 at 6-months and 0.7 at 1-year, p=0.001). The impact of symptoms (AneurysmSRQ) worsened after repair at 6-weeks (median score=27) but improved at 6-months (17.5) and 1-year (16), (baseline 19), p=0.001.

At 6 weeks after procedure, there was a greater negative impact on QOL after OR (-3.4) compared to standard EVAR (-0.8) and complex EVAR (-0.9), p=0.001. These differences were not observed at 6-months and 1-year. Patients in the OR group were less impacted by their symptoms at 6 months (OR=9, complex EVAR=17.5, standard EVAR=22, p=0.045) and one year (OR=6, complex EVAR=16, Standard EVAR=22, p=0.001).

Conclusion

These findings are important for providing personalised care, for example, informing patient selection and deciding the mode of repair. They provide the impetus for a larger prospective clinical study.

Low-profile vs standard profile fabric stent grafts for fenestrated and branched endovascular aortic aneurysm repair: 5 years single centre experience

Khalid Ahmed^{1,2}, Mohamed Elsherif³, Florian Enzmann⁴, Neil Collin¹, Graham Collin¹, Peter Mezes¹, John Hardman¹, Marcus Brooks¹, Paul Bevis¹

¹Department of Vascular Surgery, Southmead Hospital, North Bristol NHS Trust, Bristol

²University College London, School of Medicine, London

³Department of Vascular Surgery, Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield

⁴Department of Vascular Surgery, Medizinische Universität Innsbruck, Innsbruck, Austria

Objective

Low-profile (LP) fabric on an aortic stent graft reduces the delivery sheath diameter allowing treatment of a wider patient cohort. The impact on deployment and durability is unknown. We analysed prospectively collected data from a single UK centre to compare the outcomes of Low-profile vs Standard profile (SP) graft in complex endovascular aneurysm repair.

Methods

243 consecutive elective cases between September 2015 and December 2021 and follow-up data collected up to May 2021. Data were collected for patient, aneurysm and technical factors and analysed using StatsDirect3 with results presented as Mean $\pm$ SD for continuous data and N(%) for categorical data.

Results

39 LP cases (female 10(25.6%)) and 204 SP cases (female 26(12.7%)) (P=0.05). No significant differences in pre-operative age, aneurysm size, CPET, Creatinine, comorbidities, and use of antiplatelet and statins. There was no difference in target vessel number, fluoroscopy time or radiation dose between the groups. Perioperative mortality was 2(5.1%) in LP and 3(1.47% for SP). Access complications were more common in LP group. Sac shrinkage at 1 year was 13.4 $\pm$ 12mm LP and 18.0 $\pm$ 15mm SP. Complication rates post-discharge were 4 (10.23%) LP vs. 24(11.8%) SP.

Conclusion

LP stents are associated with higher rates of access complications. They allow a larger number of patients, especially female, to be treated without clinical compromise in this small series. There is a need for closer monitoring of graft performance and outcomes in the longer term which may be best achieved in a post-market registry.

Long-term outcomes and durability of Fenestrated Endovascular Aneurysm Repair (FEVAR): A meta-analysis

Aurélien Guérault, Aisha Bashir, Bilal Azhar, James Budge, Iain Roy, Ian Loftus, Peter Holt
St George's Vascular Institute, London

Background

Despite widespread use, long-term outcomes for FEVAR are largely unknown. This meta-analysis reports long-term survival, freedom from re-intervention (FFR), target vessel (TV) patency and sac regression post-FEVAR.

Methods

Medline and Embase databases were searched 1947-2023; articles were independently screened by two authors. Publication of Kaplan Meier (KM) analyses for any outcome of interest was an inclusion criterion. Raw KM probabilities were directly extracted from published curves and pooled by random-effects.

Results

2032 records were retrieved, 1328 screened after duplicate removal, yielding 36 included studies [n= 5005]. Median age was 73.2 years (IQR 72.2-74) and 85.9% male [84.9-86.9, 95% CI]. Pooled KM-estimated probabilities of survival [N= 34 studies, n= 4945 patients] at 1, 3 and 5 years were 91.7% [90.2- 93.1, 95%CI], 81.4% [78.1-84.5, 95% CI] and 65.9% [60.7-70.8, 95% CI]. For FFR [N= 23, n= 3088 patients] at 1, 3 and 5 years these were 90.5% [87.7-92.9, 95%CI], 81.2% [76.8-85.1, 95% CI] and 73.9% [67.0-79.9, 95% CI]. For TV patency [N= 12, n= 4582 TVs] at 1, 3 and 5 years, these were 96.4% [95.3-97.3, 95%CI], 95.4% [93.9-96.6, 95% CI] and 94.1% [91.9- 95.7, 95% CI]. Pooled estimate of sac regression [N= 8, n= 560] at 1 year was 40.2% [28.9-52.7, 95% CI].

Conclusions

This meta-analysis provides robust estimates for key outcomes of FEVAR up to 5 years. Beyond 5 years, it reveals the dearth of literature on this important topic, especially as concerns have been raised about long-term durability.

In-situ laser fenestration for complex aortic emergency presentations: A developing unit experience/case series

Mina Abdelmalak, Jakub Marczak, Simon Neequaye
Liverpool University Hospitals, Liverpool

Background

Complex endovascular aneurysm repair techniques excludes aneurysms while preserving critical vessels using custom-made devices. In 2009, Murphy described a technique of in-situ laser fenestration during aortic transection repair.

Methods

We report a 4-case series of using in-situ laser fenestration including antegrade/retrograde techniques +/- pre-stenting, demonstrating their presentation, indication of intervention, initial/30-day outcomes/complications.

First 2 cases were extent II thoraco-abdominal aortic aneurysm as the 2nd developed after a type B (Stanford) chronic aortic dissection (AD). Both presented acutely with chest pain and kidney injury. CTA showed malperfused left kidney because of proximal occlusion of left renal artery which reconstitutes distally in the 1st case and LRA originating from the false lumen in the 2nd.

The other 2 cases were type B (Stanford) acute AD, narrowed true lumen and aneurysmal descending thoracic aorta, presenting with back pain and paraplegia that resolved spontaneously, and proximal DTA aneurysm following a limited type B (Stanford) type IIIa (DeBakey) chronic AD respectively. CTA showed lack of the left posterior communicating artery, TEVAR with laser fenestration was considered due to incomplete posterior cerebral circulation.

Results

The first 3 cases had successful in-situ laser fenestration with satisfactory completion angiogram but failed at the 4th case for technical challenges. Follow-up at 30-days for the 3 cases proved patent fenestrations, well-perfused distal organs with no mortality.

Conclusion

In-situ laser fenestration is an off-label technique in aortic emergencies with complex anatomy/malperfused organs. It requires meticulous planning, advanced complex endografting expertise, and high-quality evidence in future.

Challenging the controversy surrounding percutaneous brachial artery access related complications: A meta-analysis and systematic review

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Background

Endovascular therapy has become increasingly preferred in the diagnosis and treatment of various conditions. The choice of arterial access site usually depends on the type of procedure being performed with most cases using the common femoral artery and, more recently, the radial artery.

Percutaneous access via the brachial artery has, however, been approached with caution due to the perceived increased risk of complications which limits the use of a good potential access point for endovascular procedures. Percutaneous brachial artery access (pBAA) has less evidence than femoral and radial access, with no large-scale studies. This study aims to review the literature and report the risk of developing complications following pBAA, thereby aiding in decision-making when considering anatomical locations for vascular access.

Methods

Systematic review and meta-analysis of the existing data on the complications of pBAA following various endovascular procedures was undertaken. 31 studies assessing complications in adults who had pBAA for all types of endovascular procedures were identified.

Results

The probability of haematoma was 4.76%, haemorrhage 1.43%, perforation 1.11% pseudoaneurysm 1.06%, spasm 0.9%, thrombus 0.55%, neuropathy 0.53%, occlusion 0.51%, ischaemia 0.37% and infection 0.24 %. Non-target vessel puncture, stenosis and stroke had a 0% incidence among the assessed population.

Conclusion

This study provides evidence to support clinical decision making when it comes to the utility of pBAA in endovascular diagnosis or therapy. The results demonstrate that pBAA is relatively safe with a low incidence of serious complications providing the clinician with the option of an alternate access point when planning treatment.

Compliance with Instructions for Use does not predict endograft failure as assessed by post EVAR sac regression

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Background

Given the concerns of late device related complications and endograft durability associated with EVAR, a greater understanding of patient selection is required. We aimed to study the utility of post-EVAR aneurysm sac size change in informing endograft complications and how this is associated with IFU.

Methods

A retrospectively cohort analysis of EVAR patients was analysed. Post-operative sac size change was modelled for patients, with reference to observed endograft complications (composite outcome of type 1 or type 3 endoleak, rupture preventing re-intervention or secondary rupture). Kaplan Meier analysis was performed to establish the event free probability of EVAR endograft complications associated with sac size change. Multivariate analysis of IFU as a predictor of sac regression was performed.

Results

Freedom from endograft complications associated with failure of sac regression was 66% (95% CI 60-74) versus 85% (95% CI 79-91) for sac regression 8 years post EVAR. The eight-year survival was 56% (95% CI 50-63) and 88% (95% CI 84-92) for failure of regression and sac regression groups respectively. 46% of patients were within IFU and 54% were not. Of patients achieving sac regression, 47% were within IFU and 53% were not ($P=0.816$). Multivariate analysis demonstrated no difference between patients within or outwith IFU as predictors of sac regression.

Conclusion

Post EVAR sac size change is an effective marker of therapeutic success. Compliance with IFU does not appear to be associated with sac regression post EVAR. Further research in methods of patient selection is warranted.

Can common femoral artery waveform analysis reliably predict significant disease of the ipsilateral iliac artery: A systematic review and meta-analysis

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Background

As a non-invasive, cost-effective imaging modality, Duplex scanning is recommended as the first-line investigation for peripheral arterial disease by NICE. Qualitative evaluation of the common femoral artery (CFA) waveform can provide information regarding likely presence or absence of significant aorto-iliac disease. Certain centres employ a 'triphasic-and-down' policy i.e. proceeding directly to antegrade endovascular intervention in the presence of distal disease and a triphasic CFA waveform. In others, pre-procedural cross-sectional imaging (CT/MR) is mandated, even with a triphasic CFA waveform, to exclude occult aorto-iliac disease. The review aims to analyse the reliability of triphasic CFA waveform in excluding significant aorto-iliac disease.

Methods

Medline, Embase, Cochrane library and reference lists were searched to identify studies comparing CFA waveform analysis with a reference test in determining presence of ipsilateral iliac disease. Reference tests included intra-arterial pressure gradients, cross-sectional angiography, or iliac duplex. Triphasic waveforms were considered "normal", whilst biphasic or monophasic waveforms were considered "abnormal". A sensitivity and specificity pair were calculated for each study, and meta-analysis using a bivariate model was performed.

Results

Six studies with 981 limbs, in 569 patients, were included. Where reported, mean age was 67, 64.8% had claudication and 35.2% critical limb ischaemia, 49% were smokers and 31% diabetic. The pooled sensitivity for CFA waveform analysis in predicting iliac disease was 86.9% (95% CI;76.2-93.2) and specificity 77.4% (95% CI;63.3-87.1).

Conclusion

The best data available suggests Duplex imaging may be insufficient as a stand-alone imaging modality prior to antegrade endovascular intervention, and a lower threshold for cross-sectional imaging may be appropriate.

The multi-modality approach to the acute abdominal aortic aneurysm

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Background

To report early and mid-term outcomes of open repair (OSR), standard (IREVAR) and complex (cEVAR) endovascular repair for acute symptomatic (SAAA) and ruptured abdominal aortic aneurysm (RAAA).

Methods

Retrospective study of patients with acute AAA treated between January 2012 and December 2021 in a single vascular centre. Primary endpoint was 30-day mortality. Secondary end point was Kaplan-Meier estimates of mid-term survival. Data are presented as median (IQR). P-value of <0.05 was considered significant.

Results

288 patients [224 men; median age 76 (70-80) years] with infrarenal, juxtarenal and extent IV aneurysms underwent repair. 30-day mortality for SAAA repair (n=136) was 6.6% [OSR 2/19, IREVAR 0/41, cEVAR 7/76] and for RAAA repair (n=152) was 32.2% [OSR 30/73, IREVAR 16/64, cEVAR 3/15]. There was no difference in early mortality (on-IFU 6/24 vs. off-IFU 10/40) or 3-year survival (on-IFU 65.8±10% vs. off-IFU 65.9±8%; p=0.83) for RAAA patients treated with IREVAR based on IFU neck morphology. In 70 RAAA patients treated by OSR, pre-operative CTA demonstrated that 21 had on-IFU neck morphology (OSR mortality 4/21), 12 had off-IFU neck morphology but could have had IREVAR (OSR mortality 7/12), and 37 would have required cEVAR (OSR mortality 19/37). In RAAA patients with off-IFU neck morphology, OSR is associated with significantly higher mortality compared with off-IFU IREVAR or cEVAR: OR 3.6, 95% CI 1.5-9.2, p=0.002.

Conclusion

In RAAA repair, off-IFU and on-IFU IREVAR have similar early and mid-term outcomes. In experienced centres, off-IFU IREVAR and cEVAR may reduce the early mortality of RAAA repair.

A systematic review: Are biomimetic stents a good option in infra-inguinal peripheral arterial disease?

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Background

Biomimetic stents are peripheral self-expanding stents indicated for the superficial femoral and popliteal artery, where they have been shown to reduce intimal hyperplasia. Our aim is to synthesise the current evidence on biomimetic stents for the management of infra-inguinal peripheral arterial disease, to help guide clinical decision making.

Methods

A systematic review searching MEDLINE, Embase, CINAHL and Cochrane on 12th January 2023 was completed following PRISMA guidelines (PROSPERO registration: CRD42022385256). Study quality was assessed using the Joanna Briggs Institute Critical Appraisal tools checklist. End points included primary patency, secondary patency, freedom from target lesion revascularisation and/or mortality at one-year.

Results

In total, 37 studies were included comprising 4493 patients. The range of demographics reported were mean age (58.1-76.1 years), male sex (49-94.1%), hypertension (22.9-99%), diabetes (21-97.1%), hyperlipidaemia (30.5-97%) and current smokers (16.2-96%). Lesion characteristics included lesion length (52.8-279mm) and chronic total occlusion (26-100%). The Trans-Atlantic Inter-Society Consensus Document on Management of Peripheral Arterial Disease (TASC) grading system was used in 24 studies and 21 studies assessed calcium score. Thirty-two studies reported one-year primary patency rates ranging from 68.4-100% and 15 studies reported one-year secondary patency rates ranging from 80.1-100%. One-year freedom from target lesion revascularisation ranged from 77.6-97.1% and mortality at one-year of 1.2-27.5%.

Conclusions

Biomimetic stents are a good option for the management of infra-inguinal peripheral arterial disease with good primary and secondary patency rates. They should be considered for the individual presenting with symptomatic short femoropopliteal lesions.

Face, content and construct validity of a low cost and open-source endovascular simulator

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Background

Simulation has been shown to improve subject interest, real world performance and team-based performance. Current endovascular simulators are expensive, have limited availability and limited scope.

The St Georges Vascular Institute (SGVI) EndoSim is an in-house developed open-source simulator that leverages low-cost computing (Raspberry pi), 3d printing and open-source software, costing less than £100. It offers tactile feedback, use of endovascular wires and catheters, and a radiation-less on-screen angiogram.

Methods

Construct validity of SGVI EndoSim was assessed with a standardised test administered to 20 participants (10 unexperienced and 10 experience in endovascular procedures). The test involved performing an aortic angiogram and cannulation of a renal artery. Face and content validity was tested using a Likert questionnaire (5 point from strongly positive to strongly negative of the device), 6 examined face validity and 3 content validity.

Results

The time taken to complete the task was significantly different between the experience and inexperienced group (mean 182 vs 290 seconds respectively, $p=0.006$). Questions examining content validity were rated 'Strongly positive' or 'Positive' responses from all participants. Of questions examining face validity; 5 gained either 'Strongly positive' or 'positive' responses from all participants. One question, relating to realism of displayed graphics, had all but two 'Neutral' responses, with all other being 'Strong positive' or 'Positive'.

Conclusions

SGVI EndoSim is a low cost and open source endovascular simulator and has face, content and construct validity. We believe that such simulators could be a key part of the solution to the issues facing UK early year endovascular education.

Use of iliac branched devices for aortoiliac aneurysms – A single unit experience

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Background

Iliac branched endovascular devices (IBE) allow preservation of internal iliac flow and avoid complications usually caused by iliac embolization such as buttock claudication, erectile dysfunction, colonic and pelvic ischaemia. We present a single-centre experience of 30 patients treated with bilateral/unilateral IBEs for aortoiliac aneurysms, as primary repair or revision.

Method

Patients treated with IBEs at our centre were included and followed up to date (Feb 2023). Data collected retrospectively included patient demographics, contralateral iliac management completion angiograms, 30 day and 1 year morbidity and mortality.

Results

Over a period of 9 years (2014-2023) 30 patients had EVAR with unilateral/bilateral IBEs. All patients were treated electively for asymptomatic aortoiliac aneurysms (5 incidental, 25 from surveillance). 8 patients had previous EVAR with device failure. Of the 14 patients with bilateral CIA disease, 9 underwent contralateral internal iliac coiling/extension and 5 had bilateral IBEs. Initial ontable angiogram showed 100% limb patency, 3 Type 1a endoleak, one Type 3 endoleak and one Type 1c endoleak. 11 procedures were successfully completed under local or regional block.

Mean follow up was 28 months. 30 day limb patency was 100% and no endoleaks identified. By 1 year one iliac limb had occluded, one reintervention for Type 3 endoleak performed and 1 mortality occurred.

Conclusion

Our outcomes with IBEs compare with published data. IBEs provide good endovascular solution for patients with high freedom from reintervention. Ability to perform procedures under local anaesthetic further improves patient outcomes. Longer term follow up is needed to explore durability and efficacy of these devices.

Poor survival in women referred for treatment of thoracic aortic aneurysms: Might utilisation of the Aortic Size Index improve outcomes?

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Background

Women with aortic arch or descending thoracic aorta (DTA) aneurysms have poorer survival than men. A large prospective observational study provides opportunity to investigate differences in outcomes between sexes.

Methods

Adult women (n=321) and men (n=565) referred to NHS hospitals, with new/existing arch or DTA aneurysms of ≥ 4 cm diameter were followed between March 2014-2022. Baseline characteristics and survival (overall and aneurysm-related (AR)) were compared for men and women, with/without adjustment for aneurysm diameter and aneurysm size index (ASI=diameter/body surface area).

Results

At baseline, women were older (mean age 72.8(9.9) vs 69.7 (11.2)) and more likely to have respiratory diseases (e.g., COPD 26.2% vs 14.0%). Men were more likely to have cardiac diseases (e.g., coronary heart disease 14.6% vs 21.4%). Mean (SD) aneurysm diameter was the same (5.7(1.1) vs 5.7(1.2),cm), but mean ASI was significantly bigger for women (3.32(0.80) vs 2.83(0.63), $p < 0.001$).

Women had worse overall and AR survival ($p < 0.001$ for both). 110 (34.3%) women and 135 (23.9%) men died before intervention, with 48/110 (43.6%) AR deaths for women, compared with 48/135 (35.6%) for men.

Increased mortality for women remained significant when adjusted for diameter but not when adjusted for ASI. For 5.5-6.5cm aneurysms, 74.2% of women survived 2-years compared with 86.1% of men. For ASI between 2.62-3.24 (middle-third) 89.6% of both men and women survived 2-years.

Conclusion

Guidelines for referral to specialist services should be based on ASI rather than diameter to prevent inequity due to patient sex.

Elective fenestrated EVAR offers greater durability than infrarenal EVAR with no increase in mortality

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Background

To report outcomes of standard (IREVAR) and fenestrated (FEVAR) endovascular repair of asymptomatic infra- (IR) and juxtarenal (JR) abdominal aortic aneurysms (AAA).

Methods

Retrospective study of consecutive patients with IR and JR AAA treated between January 2010 and December 2021 in a tertiary vascular referral centre. The primary outcome was survival. The secondary outcomes were complication and reintervention rates.

Kaplan-Meier estimator was calculated and compared for both groups using log-rank test. Results were presented as estimated proportion surviving with standard error.

Results

657 patients (595 men; median age 75.8 [71, 81]) were treated for IR and JR AAA with IREVAR (357) and FEVAR (300). The median follow-up was 56.9 months [30.3;83.3]. During the follow-up period 283 (43.1%) patients died. The overall survival at 1, 3 and 5 years was 92.8% (1.0%), 80.8% (1.6%) and 68.0% (1.9%), and was not different for IREVAR and FEVAR (HR 0.99, 95%CI 0.77-1.26, p=0.9).

Patients who underwent IREVAR had lower post-operative complication rates, with pulmonary complications as leading cause (overall rate 6.5% v. 19.8%; OR 3.54, 95%CI 2.14-6.03, p<0.001), however, a significantly higher proportion underwent reinterventions (13.4% v. 8.0%; OR 1.78, 95%CI 1.07-3.03, p=0.026).

Conclusion

Units with sufficient technical expertise, robust pre-operative assessment and good patient selection can deliver FEVAR at relatively low peri-operative risk, with survival rates similar to IREVAR, but with greater durability.

Consensus statement on the interhospital transfer of patients with acute aortic syndrome – TRAVERSING Delphi Study

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Background

Standardisation of referral pathways and transfer of patients with acute aortic syndromes to regional centres have been recently recommended by NHS England in the Emergency Acute Aortic Dissection Toolkit. The aim of the TRAVERSING study was to establish a multidisciplinary consensus on the interhospital transfer of patients with acute aortic syndrome to specialist high-volume aortic centres.

Methods

Consensus on the key aspects of interhospital transfer of patients with acute aortic syndrome was established using Delphi method in line with Conducting and Reporting of Delphi Studies (CREDES) guidelines. Vascular and cardiothoracic surgeons, emergency physicians, cardiologists, intensivists and anaesthetists in the United Kingdom were invited to participate via key professional societies.

Results

Three consecutive rounds of an electronic Delphi Survey were completed by 212, 101 and 58 respondents respectively. Using pre-defined consensus criteria, 60 out of 117 (51%) statements explored in the survey were included in the consensus statement. It covered the referral pathway, including referral criteria, essential investigations, transfer arrangements and clinical management during the interhospital transfer. Resources at a specialist aortic centre and the key time frames were also outlined. The study concluded that whilst high-risk patients can be taken directly to the aortic centre, others should arrive within four hours of initial referral.

Conclusion

The consensus statement produced by the TRAVERSING Study in the first set of multidisciplinary recommendations on the interhospital transfer of patients with acute aortic syndrome. Its implementation is likely to contribute to safer and more standardised emergency referral pathways to regional high-volume aortic units.

Endovascular repair of infective aortic pathology

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Background

Endovascular repair (EVAR) may be an acceptable alternative to open surgery (OSR) in selected patients with infective aortic pathology. This study reports early and mid-term outcomes of EVAR for infective native aortic aneurysms (INAA) and aortic graft infection (AGI).

Methods

A retrospective study of consecutive patients with INAA (n=55) and AGI (n=17) treated with EVAR and long-term antibiotic therapy between January 2010 and December 2022 in a single UK vascular centre. Primary endpoint was 30-day mortality. Secondary end point was Kaplan-Meier estimates of mid-term survival. Data are presented as median (IQR). A P-value of <0.05 was considered significant.

Results

72 patients [57 men; median age 72 (64-76) years] with infrarenal (n=8), juxtarenal (n=10), thoraco-abdominal (n=42; 11 extent I-III, 31 paravisceral/extent IV), and descending thoracic (n=12) aneurysms underwent repair for acute symptoms (n=54) or rupture (n=18) with infrarenal (n=8), thoracic (n=12), fenestrated-branch (n=49), and parallel grafts (n=3). The 30-day mortality was 11% (n=8). Re-intervention was required in 12 patients (2 early, 10 late) with five patients treated for infection-related complications. Median follow-up was 44 months (13-73). The overall 1, 3 and 5-year survival was $83.1 \pm 4.5\%$, $70.8 \pm 5.5\%$ and $62.4 \pm 6.3\%$: there was no difference comparing indication ($p=0.83$), acuity of presentation ($p=0.5$), or extent of aortic pathology ($p=0.4$).

Conclusion

In a cohort of patients with predominantly infective complex aortic aneurysms, EVAR in combination with long-term antibiotic therapy was associated with favourable early mortality and mid-term durability compared to that reported with open surgical strategies.

Impact of frailty on treatment outcome for non-ruptured abdominal aortic aneurysm: A National Vascular Registry cohort study

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Background

NVR introduced the recording of frailty metric to patient undergoing AAA repair in recognition of its vital role and impact on patient outcome. In this study, we aim to identify the incidence of frailty and its impact of treatment outcome for patient undergoing elective infrarenal abdominal aortic aneurysm repair.

Methods

We performed a retrospective analysis of National Vascular Registry data (2019-2020) to discern the incidence of frailty in patients undergoing abdominal aortic aneurysm repair. We analysed the baseline cohort and performed a subgroup analysis for each type of repair (Open, EVAR). We performed binary logistic regression to investigate the relationship between frailty ("frail" vs. "not frail"), baseline characteristics, and treatment outcomes.

Results

A total of 4020 patients were included. Frail patients who received open repair were more likely to have postoperative complications (38.3% vs 24.50%; OR 1.798, 95%CI 1.352-2.391). In the EVAR group, postoperative complications in general were low in both "frail" and "not frail" groups (3.7% vs 4.3%) however respiratory complications specifically were more statistically significant in the frail group (0.7% vs 0.5%; OR 2.476, 95%CI 1.139-5.385). There was no significant difference in mortality in both subgroups between "frail" and "not frail".

Conclusion

Frailty has a great impact on post operative morbidity. Validated frailty scoring should be utilised in the preoperative assessment to identify patients who are at higher risk of developing complications. Future research should be focused on early identification of frail patients before intervention and explore the role of preoperative optimisation to reduce the impact of frailty.

Acute kidney injury following elective infrarenal and complex endovascular aneurysm repair; incidence, prognostic significance, and risk factors

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Background

Acute Kidney Injury (AKI) is a well-known complication following cardiovascular procedures. Our objective was to assess incidence, risk factors, and the prognostic significance of AKI following infrarenal-EVAR and complex endovascular aneurysm repair.

Methods

Consecutive patients undergoing elective infrarenal-EVAR or c-EVAR between 2000-2018 in two large teaching hospitals in the Netherlands were included. The primary outcome was incidence of perioperative AKI-development. Secondary outcomes included, mid-term renal function (RIFLE-criteria), overall-survival, and risk factors for AKI-development. To determine survival and risk factors for AKI, multivariable analyses were performed, accounting for preoperative renal function and other confounders.

Results

We included 540 patients who underwent infrarenal-EVAR and 147 patients who underwent c-EVAR. Incidence of AKI was 8.7% (n=47) in infrarenal-EVAR patients, and 23% (n=34) in c-EVAR patients (fenestrated-EVAR: 18%/ branched-EVAR: 38%). After risk-adjusted analysis, compared with non-AKI, postoperative AKI development was associated with higher 3-year mortality following both infrarenal and c-EVAR. Infrarenal-EVAR mortality-HR: 1.6 [95%CI 1.01-2.7], $p = .046$, c-EVAR mortality-HR: 2.4 [95%CI 1.1-5.2], $p = .033$. Following multivariable logistic regression, preoperative chronic kidney disease (eGFR<60; OR: 2.2 [95%CI: 1.03-4.8]) and neck-diameter (OR[/mm]: 1.1 [95%CI: 1.01-1.2]) were significantly associated with AKI following infrarenal-EVAR, whereas for c-EVAR only contrast volume (OR[/10cc]: 1.1 [95%CI: 1.0-1.2]) was found to be significantly associated with AKI.

Conclusion

AKI is a well described complication following infrarenal-EVAR and is common after c-EVAR. As AKI seems to be associated with permanent renal deterioration and lower survival, efforts to prevent AKI are essential.

Clinical and radiological predictors of Major Adverse Events (MAE) in acute Type B Aortic Dissection (TBAD): Systematic review

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Background

Optimal management of acute Type B Aortic Dissection (TBAD) remains an area of controversy with an increasing trend towards endovascular intervention. The search for risk factors is ongoing and several clinical and radiological risk factors have been described in the literature. This study provides a contemporary qualitative summary of best available evidence for predictors of major adverse events (MAE) in acute TBAD.

Methods

A systematic review was conducted according to the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) statement. Society for Vascular Surgery (SVS) and Society of Thoracic Surgeons (STS) recommendations for reporting standards were applied to clinical definitions of acute TBAD for the purposes of this review.

Results

32 studies reporting on a total of 4544 patients met eligibility criteria for inclusion. 69% of study participants are male with mean age of 62.4 years on presentation. 4 studies assessed acute complicated TBAD and 28 studies assessed acute uncomplicated TBAD. Aortic diameter >40mm is the most consistently identified independent predictor of MAE in this review. Other risk factors identified include age, renal impairment, connective tissue disease, patency of false lumen, false lumen diameter, location of primary entry tear, multiple barrelled dissection and size of primary entry tear.

Conclusions

Multiple predictors of MAE for acute TBAD have been described in the literature. Significant body of evidence suggests patients presenting with aortic diameter >40mm have increased likelihood of MAE. These patients may benefit from enhanced surveillance or early endovascular intervention. Weaker evidence exists for other risk factors.

Investigating the relationship between central blood pressure and the size of abdominal aortic aneurysms under surveillance

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Background

Hypertension is a risk factor for developing an AAA; it has been suggested that higher central blood pressure (cBP) may have important implications. We investigated the relationship between cBP and AAA size recorded at the beginning of a prospective study based on ultrasound imaging.

Methods

Data were collected prospectively in a multicentre cohort study from June 2022 to February 2023, including men and women >55 years old, without connective tissue disorders, with an AAA ≥ 3 cm or ≥ 5.5 cm and not proceeding to surgery. Patients with atrial fibrillation were excluded (due to interference with pulse wave analysis). Results were adjusted for demographics, comorbidities and medication use.

Results

96 patients were included (male=77, mean age=75.5, mean AAA diameter=4.15cm, mean systolic cBP=125, mean diastolic cBP=98, mean number of antihypertensives=1.8). Weak correlations with AAA maximum AP diameter were found between: systolic (-0.17 , $p<0.1$) and diastolic cBP (0.01 , $p<0.1$); and history of CVA/TIA ($n=17$, -0.24 , $P<0.1$) and chronic lung disease ($n=31$, 0.18 , $p<0.1$). Moderate correlation was found for history of CKD ($n=23$, 0.36 , $p<0.1$). Multivariate analysis showed systolic cBP ($SE=0.004$, $p=0.011$) and history of CVA/TIA ($SE=0.19$, $p=0.03$) were significant negative predictors of AAA size, while a history of CKD ($SE=0.67$, $p<0.001$) was a significant positive predictor. No antihypertensives were shown to be associated with AAA size.

Conclusions

Central systolic and diastolic blood pressure were not significant predictors of larger AAA size. Further work will assess AAA growth rates according to central BP and different antihypertensive use.

Complications post endovascular abdominal aortic aneurysm repair in patients with diabetes mellitus: A meta-analysis and systematic review

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Background

People with diabetes mellitus (DM) have higher long-term mortality following abdominal aortic aneurysm (AAA) repair than those without DM. However, whether this adverse outcome is directly related to their aneurysm is unclear.

Methods

To determine the rates of complications in people with and without DM post endovascular abdominal aortic aneurysm repair. Primary outcome data include AAA sac enlargement, reinterventions, endoleaks, post-operative AAA rupture and conversion to open surgical repair.

Methods: PubMed, Embase and Cochrane databases were searched for primary research studies between 2005 and 2023 according to PRISMA guidelines. Those undergoing AAA repair via endovascular aneurysm repair were included. Meta-analysis was conducted using Review Manager 5.4.

Results

Thirty-five studies were identified totalling 90,347 people in the control group, and 17,660 in the DM group. Those with DM had a lower rate of reintervention compared to controls (9.94% v 11.58%; OR 0.89, 95% CI [0.82-0.97]; P=0.005), however there was no significant difference in the rate of overall, type I or type II endoleaks (P=0.22, P=0.29, P=0.15 respectively).

People with DM were also less likely to have sac enlargement post AAA repair (9.66% v 11.27%; OR 0.79, 95% CI [0.68-0.93]; P=0.003). Additionally, people with DM had a significantly reduced rate of conversion to open surgery (2.11 % DM v 3.12% control; OR 0.80, CI [0.66-0.97]; P=0.02).

Conclusions

Reinterventions, sac enlargement post AAA repair, and conversion to open surgical repair were significantly lower in people with DM, however the cause for these differences remains unclear.

Skeletal Muscle Index (SMI) derived from CT imaging as a predictor of outcome in vascular surgery: A systematic review and meta-analysis

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Background

It is well known that sarcopenia is associated with poor outcomes in patients undergoing vascular surgery. Recent studies have shown that skeletal muscle index (SMI) is an effective objective measure of sarcopenia. This systematic review aims to identify whether SMI, defined as skeletal muscle mass (derived from CT imaging) normalised for height, may be used as a marker of frailty to predict outcomes.

Methods

A systematic review of the literature was conducted in accordance with the PRISMA guidelines. Primary outcome measures were long-term (all cause) mortality, 30-day (in-hospital) mortality and 30-day morbidity. Meta-analysis for all-cause mortality using time-to-event data was reported as summary hazard ratio (HR), and 30-day mortality and morbidity were reported using odds ratio (OR).

Results

A total of 1991 patients were included in the meta-analysis, of which 580 patients were classified as having 'low' SMI and 1411 patients were classified as having 'normal' SMI. Meta-analysis revealed that patients with 'low' SMI had a significantly higher risk of 30-day mortality (OR 12.74, 95% CI 3.29 – 49.39; $p < 0.001$), all cause mortality (HR 2.80, 95% CI 2.25 – 3.49; $p < 0.001$) and post operative morbidity (OR 6.21, 95% CI 1.31 – 29.94; $p < 0.001$) compared to patients with 'normal' SMI.

Conclusion

Low skeletal muscle index (SMI) is associated with increased risk of mortality and morbidity, and may serve as a useful risk stratification tool. Standardised definitions of SMI cut-off values and tools for rapid, automated assessment of muscle mass will further improve its utility and usability in routine clinical practice.

Endovascular versus Surgery Therapy for Acute Limb Ischaemia Salvage – ESTABLISH

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Background

Acute limb ischemia (ALI) is a limb and life-threatening condition requiring urgent management which remains controversial. This study aimed to provide a global survey of contemporary management of ALI.

Methods

An international survey was conducted from December 2022 to February 2023 among clinicians who manage ALI using the JCIS online survey tool through mailing lists and social media.

Results

37 responses were received from vascular surgeons and interventional cardiologists from Europe (UK, Italy, and Greece), the USA, and New Zealand. 65% of respondents manage more than 30 ALI cases annually. CT angiography was routinely used for diagnosis and intervention planning.

51% of respondents preferred open surgery for ALI management, while 5% preferred endovascular first, and 40% used both approaches equally. Open surgery was preferred due to confidence in outcomes and concerns about distal embolisation and bleeding risks associated with endovascular interventions. Approximately 14% of respondents reported lack of endovascular evidence and 5% reported lack of endovascular local expertise.

29% supported endovascular approach as minimally invasive, while 18% believed it offered faster recovery. 42% reserved endovascular for unfit patients and poor outflow cases. 10% adopted a selective approach depending on aetiology, clinical severity, and predicated endovascular outcome. Interventional radiology room or hybrid availability and leading clinician preference were the key deciding factors for 5% of respondents.

Conclusions

The survey results indicate variation in ALI management, likely due to lack of strong evidence. A randomised controlled trial comparing open and endovascular approaches is required for better guidance on ALI optimal management.

The SHOCC Study: SHOCkwave lithotripsy for patients with peripheral arterial disease

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Background

Intravascular lithotripsy (IVL) is an adjunct for treating severely calcified plaques by endovascular means. This is the first multicentre prospective study assessing outcomes using IVL as a primary treatment in patients with severely calcified lesions and chronic limb-threatening ischaemia across the NHS.

Methods

A multicentre prospective cohort-study was performed in eight NHS hospitals (consecutive patients). The primary outcome measured was vessel patency 90-days and six-months post-procedure. Impact of IVL on plaque morphology/consistency using computed-tomographic angiography (CTA) 3D plaque analysis was also assessed. This report details 90-day results.

Results

A total of 78 patients (mean age 72) with 92 lesions were recruited. Thirty-two (41%) had rest pain, 35 (45%) tissue loss, and 11 (14%) with claudication. Most lesions were femoropopliteal (51, 74%); 15 patients had multiple lesions treated (19%). All lesions were severely calcified on baseline CTA (PACSS-grading). All procedures were completed successfully using IVL as the primary preparation strategy, followed by angioplasty (plain or drug-coated). Stenting was performed in nine lesions (11%) post-IVL. Two participants (2.9%) required endovascular re-intervention within 30 days and one (1.4%) had a major amputation. At 90 days, two (2.9%) more minor amputations took place; no access, thromboembolic or cardiovascular complications were reported. Based on CTA plaque-analysis pre-/post-IVL (24 lesions), the calcium proportion/burden of treated plaques was reduced by a median 55%.

Conclusion

IVL in highly calcified lesions and patients with CLTI is safe, with promising 90-day results; IVL seems to change the morphology of calcified plaques in the immediate post-operative period.

The oxygenation status of calf and foot musculature predicts inadequate revascularisation in patients with limb ischaemia

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Background

Diagnosis/treatment algorithms for limb ischaemia rely solely on clinical signs and non-functional assessments. We have previously shown that calf muscle oxygenation, measured by Blood Oxygenation Level Dependent MRI (BOLD MRI), correlates with the severity of limb ischaemia. We aimed to develop BOLD for the foot and to determine calf/foot oxygenation after limb revascularisation.

Methods

T2*-weighted single-shot multi-echo BOLD MRI of the foot and calf at 3.0T were carried out prior to and up to 14 days after revascularisation by angioplasty/stenting or bypass surgery. Gradient (Grad), measured on T2* curve, indicated muscle oxygenation. Changes in calf/foot oxygenation were correlated with limb outcomes.

Results

48 patients [30 male, median age 73(59-88)] underwent pre-intervention foot BOLD scanning, with good inter-scan ($P<0.0001$) and inter-user ($P<0.0001$) reproducibility for Grad. CLTI patients had lower foot Grad than claudicants ($P<0.0001$). 56 patients [36 male, median age of 71(61-84)] had angiograms captured for collateral vessel assessment. 61 patients [40 male, median age=68(60-85)] had pre and post intervention BOLD of the calf and foot. Patients with unsuccessful revascularisation had a lower fold change in calf Grad ($P<0.0001$) and foot Grad ($P<0.03$). BOLD assessment of the Calf [sensitivity=82.14%(64.14%-92.12%), specificity=75%(46.77%-91.11%), $P<0.0001$] was superior to the foot [(n=21, sensitivity 100%(79.61%-100%), Specificity 66.67% (30%-94.08%), $P=0.0051$] for predicting unsuccessful revascularisation on follow up.

Conclusion

BOLD MRI is a reliable tool for assessing oxygenation in the calf and foot muscles of patients with limb ischaemia. Its role for identifying poorly oxygenated limbs after revascularisation merits further investigation.

Utility of intravascular ultrasonography in guiding intra-procedural decision-making

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Background

Intravascular ultrasonography (IVUS) use is increasing in endovascular infra-inguinal arterial interventions to aid accurate sizing of devices and identify significant residual disease. We aimed to evaluate our current practice and utility of intra-procedural IVUS as a decision-making aid during such interventions.

Methods

A retrospective review was performed of all infra-inguinal interventions involving use of IVUS between 2018 and 2021 with follow up to March 2023. Data were gathered on patient demographics and intervention. Outcomes measured were: 1) whether IVUS identified or guided further intervention intra-procedurally, 2) primary patency and limb outcomes.

Results

A total of 79 cases were included with a median age of 72.7 years and 30% were female. 96% of cases had chronic limb-threatening ischaemia. Levels treated were femoropopliteal only (n=30, 38%), tibial only (n=12, 15.2%) and femoropopliteal and tibial (n=37, 46.8%). Vessel preparation was performed in 45 (57%) cases, and 50 (63%) cases had target lesion stenting. IVUS identified a flow-limiting dissection not identified by angiography in 10 (13%) cases, with all leading to further treatment. IVUS identified a flow-limiting stenosis in 26 (33%) cases not identified by angiography, and guided further treatment in 21 (80.8%) of these cases. Median follow-up was 19.9 months with 27% cumulative mortality. Median primary patencies were 17.4 months for femoropopliteal cases, 12.4 months for tibial and 5.4 months for femoropopliteal and tibial.

Conclusion

Intra-operative IVUS can identify flow-limiting residual disease and guide further intervention in a substantial proportion of infra-inguinal endovascular procedures.

Endovascular revascularisation of “no-option” chronic limb-threatening ischaemia patients

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Background

Patients with chronic limb-threatening ischaemia (CLTI) often present with multi-level disease and might be deemed to have no revascularisation options. We report outcomes after endovascular revascularisation of limbs, previously deemed impossible to revascularise and subsequently referred to a tertiary complex peripheral arterial disease (PAD) service.

Methods

Overall, 57 consecutive patients [median age 71 years, 43 (75.4%) male, all with tissue-loss, diabetes, IHD, previous smoking history, multi-level TASC-D PAD; 14 (24.6%) on renal dialysis] underwent intervention, referred between 01/10/2019-31/12/2021 by other institutions once deemed impossible to revascularise. Of these, 91% had severely calcified PAD (PACSS ≥ 3). Procedures included femoro-popliteal stenting with retrograde access (22), SAFARI-technique (14), common-femoral lithotripsy with drug-coated ballooning (DCB) (8) and/or biomimetic stenting (1), femoral endarterectomy with aorto-iliac stenting and distal angioplasty (5), CERAB with distal angioplasty (2), femoro-popliteal atherectomy with DCB for in-stent occlusion (2), and CERAB with chimney endografting (1). Two patients underwent deep-venous arterialisation (DVA), following an inflow procedure.

Results

Overall, 55 procedures were completed successfully, with the exception of two DVAs. One peri-operative iliac rupture was treated with a covered stent. Fifteen patients (26.3%) developed acute kidney injury (stage 2). Thirty-day and one-year mortality was 3.5% and 10.5% (all cardiovascular causes). Thirty-day and one-year re-intervention rates were 1.8% and 24.6% (endovascular re-intervention), and 0% and 1.8% (hybrid re-intervention). At one-year there were 6 (10.5%) major amputations.

Conclusion

Using a wide repertoire of endovascular tools, an acceptable limb-salvage rate was maintained in this population of “no-option” CLTI patients, treated by a tertiary multidisciplinary-team.

Early experience of the Phoenix atherectomy device

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Background

Vessel preparation with rotational atherectomy is considered a safe and effective strategy for targeting complex infra-inguinal lesions. This study aims to report the early experience of using the Phoenix atherectomy device in a single centre.

Methods

A retrospective analysis of all cases incorporating Phoenix atherectomy between 2017 and 2021, with follow-up till end of 2022, was performed. Outcomes of interest were atherectomy-related complications, primary patency and 1 year freedom from major adverse limb events (f-MALE).

Results

A total of 66 cases with a median age of 69.5 years were included, of whom 24 (36%) were female. Target lesions were native femoropopliteal (23, 35%), femoropopliteal in-stent restenosis (12, 18%), native crural (30, 46%) and crural in-stent restenosis (1, 1%). Median lesion length was 193 [IQR 6 – 497] mm, mostly chronic total occlusions (52, 78.8%). The atherectomy device failed to cross the target lesion in 2 cases due to heavy calcification. Intra-procedural complications were perforation (5, 8%), dissection (12, 19%), distal embolization (6, 9%), and slow/no flow phenomenon (7, 11%). Bail-out stent rate was 31.8%, but 52.4% of these had <60% of the atherectomised segment stented. The median primary patencies were 12.8 months in femoropopliteal and 2.7 months in crural segments. Overall 1-year f-MALE was 81.1%.

Conclusion

Vessel preparation with the Phoenix atherectomy device demonstrated acceptable rates of intra-procedural complications, but primary patency rates were greatly superior in femoropopliteal compared to crural target lesions. fMALE was high in this cohort of mostly long occlusions.

Acute Deep Vein Thrombosis clearance: Is thrombolysis still being used?

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Background

Various treatment modalities for clot clearance are available to the clinician for the management of acute deep vein thrombosis (DVT). These include catheter directed thrombolysis (CDT), percutaneous pharma-mechanical thrombectomy and mechanical thrombectomy. The use of thrombolytic therapy carries a risk of major bleeding during the infusion period. It also requires greater hospital and human resources, requiring higher level of nursing care, length of stay for the duration of the infusion as well as repeat visits to the interventional radiography suite for assessment of thrombus clearance. The aim of the study was an epidemiological study assessing trends of treatment of acute DVT in a tertiary referral centre.

Methods

A retrospective analyses of a prospective collated database was performed to assess for trends in the treatment modality of the management of acute DVT. Patients treated for an acute DVT between 2014 and 2022 were included in the study.

Results

A total of 101 patients were treated for an acute DVT between 2014 and 2022 with varying modalities as presented below.

Trends of venous clot clearance modality over time for the treatment of acute DVT			
Year	Thrombolysis	Pharmacomechanical thrombectomy +/- CDT	Mechanical Thrombectomy
2014	1	0	0
2015	0	2	0
2016	8	4	0
2017	5	1	0
2018	5	3	0
2019	2	8	0
2020	7	9	0
2021	4	1	12
2022	0	0	23

Conclusions

In the past 18 months, this centre has weaned off the use of thrombolysis. This has decreased the resources needed to proceed with intervention and decreased patient exposure to potential life-threatening complications.

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Late screw perforation of external iliac artery following total hip replacement

Albagir Altahir, *Khalid Hamid*, Joseph Winstanley, Ahmed Youssif, Haytham Hamid
Sunderland Royal Hospital, Sunderland

POSTER 2

Endovascular iliocaaval reconstruction due to retroperitoneal fibrosis - a noteworthy complication

Lawrence Ugwumba, Tamer El-Sayed, Claire Dawkins, Ralph Jackson, Sandip Nandhra
Northern Vascular Centre, Newcastle

POSTER 3

Endovascular means of inflow blood control in vascular surgery: Case series

Miroslav Bobus, Pavla Jezkova
Nemocnice Agel, Trinec, Czech Republic

POSTER 4

Not performing an additional case prior to elective endovascular or open Abdominal Aortic Aneurysm (AAA) repair is a missed opportunity for cost saving and training: A retrospective audit *Chantae Reid-Agboola^{1,2}*, Adam Talbot¹, David Pintar¹, John Quarmby¹

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POSTER 5

Comparison of reintervention rates for the Endurant, Excluder and Zenith stent-graft – literature review

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POSTER 6

Ruptured popliteal aneurysms: A systematic review

Wissam Al-Jundi, Philip Stather, *Aseel Abuduruk*, Adel Abdallah
NNUH, Norwich

POSTER 7

Median Arcuate Ligament (MAL) associated visceral artery aneurysm rupture: Does size matter? A systematic review

Lefteris Karanasios, Zeyad Ragab, *Harry Cavenagh*, Tariq Ali, Philip Stather
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