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Welcome to Stockholm

The Local Organising Committee, ESVS President, and ESVS Executive Committee are pleased to welcome you to what we believe will be an exceptional scientific meeting with a broad perspective encompassing everything from basic science to current and future clinical management of our patients.

The final programme is in this book and on the ESVS APP, and as you will discover the program contains feature symposia on peripheral vascular disease, renal artery disease, management of aortic disease, PAD in diabetes and a joint symposium with the SVS, together with numerous training sessions and workshops.

The meeting has attracted over 400 submitted abstracts, which were scored and selected for the eight scientific sessions. These peer-reviewed papers are the centrepieces of our daily plenary sessions. We are sure that you will encounter exciting presentations in the scientific and poster sessions.

Ulf Hedin, Chairman, Local Organising Committee
Jean-Baptiste Ricco, ESVS President

Use the APP, get it here.
Overview of Waterfront Conference Centre

Level 2:
Training: Workshops and courses
Nurses and Technicians Sessions

Level 3:
Speaker Ready Room (31)
Meeting Rooms 36 and 37

Level 4: Main Entrance
Registration, ESVS Desk, Exhibition, Catering

Balcony:
Posters

Level 5:
Auditorium 1 and 2 and Bar 5 (access via exhibition hall only)
## Programme at a glance - Tuesday 23 September

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Venue</th>
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<tr>
<td>13:15</td>
<td>Welcome</td>
<td>Auditorium 1</td>
</tr>
<tr>
<td>13:30</td>
<td>Symposium: Peripheral Vascular Disease</td>
<td>Auditorium 1</td>
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<tr>
<td>13:30</td>
<td>EVST Case Reports</td>
<td>Auditorium 2</td>
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<tr>
<td>14:00</td>
<td>Vascular Trauma Workshop*</td>
<td>C1</td>
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<tr>
<td>15:00</td>
<td>Break</td>
<td>Exhibition</td>
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<tr>
<td>15:30</td>
<td>Scientific Session 1</td>
<td>Auditorium 1</td>
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<tr>
<td>15:30</td>
<td>EVST Symposium</td>
<td>Auditorium 2</td>
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<tr>
<td></td>
<td>Contemporary Issues in Endovasc. Training</td>
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<tr>
<td>16:30</td>
<td>Symposium: Renal Hypertension</td>
<td>Auditorium 1</td>
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<tr>
<td>18:30</td>
<td>Opening Ceremony and Reception*</td>
<td>City Hall</td>
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* Ticket holders only
# Programme at a glance - Wednesday 24 September

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Venue</th>
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<tbody>
<tr>
<td>07:00</td>
<td>Symposium: Best Strategy for rAAA</td>
<td>Bar level 5</td>
</tr>
<tr>
<td>08:00</td>
<td>Scientific Session 2</td>
<td>Auditorium 1</td>
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<tr>
<td>08:30</td>
<td>How to Write a Good Manuscript Workshop*</td>
<td>Room 24</td>
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<tr>
<td>09:00</td>
<td>Fundamental Endovascular Workshop*</td>
<td>C3</td>
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<tr>
<td>09:30</td>
<td>Scientific Session 3 (prize session)</td>
<td>Auditorium 1</td>
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<tr>
<td>11:00</td>
<td>Break</td>
<td>Exhibition</td>
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<tr>
<td>11:30</td>
<td>Scientific Session 4</td>
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<tr>
<td>11:30</td>
<td>Symposium: Preventing Amputation</td>
<td>Auditorium 2</td>
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<tr>
<td>13:00</td>
<td>Sponsored symposia</td>
<td>Aud. 1 and 2</td>
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<tr>
<td>14:00</td>
<td>Scientific Session 5</td>
<td>Auditorium 1</td>
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<tr>
<td>14:00</td>
<td>Symposium: Aortic Emergencies</td>
<td>Auditorium 2</td>
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<tr>
<td>14:00</td>
<td>Complex Aneurysm Workshop</td>
<td>Room 24</td>
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<tr>
<td>14:00</td>
<td>Endovascular “Below the knee” Workshop*</td>
<td>C3</td>
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<tr>
<td>14:00</td>
<td>Ultrasound “Below the Knee” Workshop*</td>
<td>C4</td>
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<tr>
<td>15:30</td>
<td>Break</td>
<td>Exhibition</td>
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<tr>
<td>16:00</td>
<td>ESVS Annual General Meeting</td>
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<td>16:00</td>
<td>EVST Annual General Meeting</td>
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<tr>
<td>17:00</td>
<td>EVST Honorary Lecture</td>
<td>Auditorium 2</td>
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* Ticket holders only
### Programme at a glance - Thursday 25 September

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Venue</th>
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<tbody>
<tr>
<td>07:00</td>
<td>Symposium: Vascular Trauma</td>
<td>Bar level 5</td>
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<tr>
<td>08:00</td>
<td>Revision Course*</td>
<td>C4</td>
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<td>08:00</td>
<td>Scientific Session 6</td>
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<tr>
<td>09:00</td>
<td>Venous Workshop*</td>
<td>Room 24</td>
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<td>09:30</td>
<td>Scandinavian Venous Forum Symposium</td>
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<tr>
<td>09:30</td>
<td>Symposium: Aortic Arch</td>
<td>Auditorium 1</td>
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<tr>
<td>10:00</td>
<td>EVAR Workshop*</td>
<td>C3</td>
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<tr>
<td>11:00</td>
<td>Break</td>
<td>Exhibition</td>
</tr>
<tr>
<td>11:30</td>
<td>Symposium 5 (SVS)</td>
<td>Auditorium 1</td>
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<tr>
<td>13:00</td>
<td>Lunch</td>
<td>Exhibition</td>
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<tr>
<td>14:00</td>
<td>Scientific Session 7</td>
<td>Auditorium 1</td>
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<tr>
<td>14:00</td>
<td>Symposium: Venous Guidelines</td>
<td>Auditorium 2</td>
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<tr>
<td>15:30</td>
<td>Break</td>
<td>Exhibition</td>
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<tr>
<td>16:00</td>
<td>Symposium: TEVAR Innovations</td>
<td>Auditorium 1</td>
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<tr>
<td>16:00</td>
<td>Scientific Session 8</td>
<td>Auditorium 2</td>
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<tr>
<td>17:00</td>
<td>Adjournment</td>
<td>Auditorium 1</td>
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* Ticket holders only
Scientific Programme - Tuesday 23 September - Afternoon

13:15 Welcome
   - Jean-Baptiste Ricco ESVS President
   - Anders Hamsten Vice Chancellor, Karolinska Institutet, Stockholm
   - Ulf Hedin Local Organising Committee Chairman

13:30 Symposium: Peripheral Vascular Disease
Chair: Ulf Hedin, Eric Allaire
   - Goran K Hansson, Sweden: On the origin of the Nobel Prize and atherosclerosis
   - Ulf Hedin, Sweden: Who is going to stroke? The molecular and clinical features of the unstable carotid atheroma
   - Thomas Schmitz-Rixen, Germany: Collateral development in lower limb ischemia
   - Eric Allaire, France: Do we know enough about AAAs to start looking for preventive pharmacotherapy?
   - Seppo Ylä-Herttuala, Finland: Eliminating vascular surgery? Future therapies in limb ischemia

13:30 EVST Case Reports (Abstracts on page 115)
Chair: Zoran Rancic, Olufemi Oshin, Igor Banzic
   - Case 1: M Ammi: Early failure of femoral angioplasty in patients with pseudoxanthoma elasticum.
   - Case 2: R Abreu: Reconstructive Surgery of the Large Intrathoracic Veins in Oncological Patients
   - Case 3: S Bonvini: Aortic Hybrid Sutureless Anastomosis on Porcelain Aorta
   - Case 4: B Dorweiler: Adamkiewicz’s Artery Originating from an AAA – EVAR or Open Repair?
   - Case 6: S Doganci: Successful Treatment of a Very Rare Testicle Tumor Related Bilateral Iliofemoral and Inferior Vena Cava Thrombosis with Simultaneous Double Ekos Catheter
   - Case 7: SA Küçüker: Intra-arterial thrombolysis with ultrasonographic waves for aortic stent- graft limb thrombosis
   - Case 8: V Manuel: Tuberculous Aortitis, a case report
   - Case 9: G Rodrigues: A Mycotic Forearm Pseudoaneurysm as an Unusual Complication of Infective Endocarditis
   - Case 10: U Gocen: Situs Inversus Totalis Patient with De-Bakey Type 3 Dissection: succesful Endovascular Replacement Treatment.
Scientific Programme - Tuesday 23 September – Afternoon

15:30 Scientific Session 1 (abstracts on page 27) Auditorium 1
Chair: George Hamilton, Thomas Schmitz-Rixen
- 1: A Lejay: Murine model of chronic limb ischemia closely mimicking human pathology
- 2: Jie Yu: Dipeptidyl Peptidase-4 Inhibitor Alogliptin Prevents Further Dilatation of Abdominal Aortic Aneurysm through Anti-oxidant and Anti-inflammatory Effect in Rats
- 3: J Malmstedt: The Receptor for Advanced Glycation End Products (RAGE) and its Ligands in Plasma and Infrainguinal Bypass Vein
- 4: D Chong: Nanotopography and Plasma Treatment: Redesigning the Surface for Vascular Graft Endothelialisation
- 5: A Hertault: Benefits of Completion ceCBCT after EVAR
- 6: P Törnqvist: Prospective Analysis of intraoperative cone-beam CT to evaluate the outcome of EVAR

15:30 EVST Contemporary Issues in Endovasc. Training Auditorium 2
Chair: Ulf Hedin, Hubert Stepak, Vincent Jongkind
- Ahmed Sayed, Egypt: How to create your endovascular training programme?
- Olufemi Oshin, United Kingdom: Preparing for endovascular procedure
- Liesbeth Desender, Belgium: Iliac and SFA interventions - what to use and why?
- Michal Stanisic, Poland: Diabetic foot management and below the knee interventions
- Jorge Fernandez Noya, Spain: Carotid interventions
- Fabio Verzini, Italy: Infrarenal EVAR'S

16:30 Symposium: Auditorium 1
The Renal artery and Renovascular Hypertension in Focus
Chair: George Hamilton, David Bergqvist
- Philip Kalra, United Kingdom: What Happened to PTRA? Interpreting ASTRAL and CORAL for the Management of Renal Artery Stenosis
- Michel Azizi, France: Is there a place for renal denervation?
- Martin Malina, Malmö, Sweden: Preserving renal function in aortic dissections and complex aortic aneurysms
- George Hamilton, United Kingdom: Management of paediatric reno-vascular disease
- Xavier Barral, France: Ex-vivo surgery for renal artery aneurysm
Scientific Programme – Wednesday 24 September – Morning

07:00  Sponsored symposium: Best Strategy for rAAA  Bar level 5
Chairs: Anders Wanhainen (SSVS), Rebecka Hultgren (LOC)
See details on page 24
This is a breakfast symposium arranged by the Swedish Society for Vascular Surgery. The first 100 participants will be seated at round tables and enjoy a breakfast while listening to the lectures.

08:00  Scientific Session 2 (abstracts on page 34)  Auditorium 1
Chair: T Resch, A Ivancic
Keynote speaker: Tara Mastracci: Acute TEVAR, Why, How and Where?
• 7: A Katsargyris: Ten-year Experience with Endovascular Repair of Thoracoabdominal Aortic Aneurysms: Results from 166 Consecutive Patients
• 8: I-Ming Chen: Number and Location of Abdominal Aorta Entry Tear is Associated with Abdominal Aorta Remodeling after Stent Grafting for Complicated Type B Aortic Dissection
• 9: J Steuer: Durability of TEVAR in Blunt Traumatic Thoracic Aortic Injury – Long-term Experience from Two Tertiary Referral Centres
• 10: L Canaud: Minimum 10-Year Follow-up of Endovascular Repair for Acute Traumatic Transection of the Thoracic Aorta
• 11: E Faure: Endovascular Management of Rupture in Acute Type B Aortic Dissections
• 12: T Fujikawa: Operative Results and Clinical Features of Chronic Stanford Type B Aortic Dissection: the Examination of 234 Patients in Six Years
• 13: R Gambhir: Lessons from 500 Adverse Event Reports on SFA Stents from MAUDE Database - Need for Action by ESVS?

09:30  Scientific Session 3 prize session (abstracts on page 42)  Auditorium 1
Chair: Ross Naylor, Philippe Kolh
• 14: L Meecham: Abdominal Aortic Aneurysm Diameters: A Study on the Discrepancy between Inner to Inner and Outer to Outer Measurements
• 15: T Martin Gonzalez: Renal Outcomes Following Feneg11 strated and Branched Endografting
• 16: H Holm: Short-term Outcome of Spinal Cord Ischemia after Endovascular Repair of Thoracoabdominal Aortic Aneurysm
• 17: G Panuccio: Performance of Bridging Stent-grafts in Fenestrated and Branched Aortic Endografting
• 18: GK Ambler: Incidence and Outcomes of Severe Renal Impairment Following Ruptured Abdominal Aortic Aneurysm Repair
• 19: MA Albayati: Angulation of the C-Arm during Complex Endovascular Aortic Procedures Increases Radiation Exposure to the Head
Scientific Programme – Wednesday 24 September – Morning

10:50  Presidential Address                     Auditorium 1
Jean-Baptiste Ricco: ESVS and Beyond

11:30  Scientific Session 4 (Abstracts on page 49) Auditorium 1
Chair: Fabien Thaveau, Martin Delle
Keynote speaker: Michael Jacobs, Netherlands: Why does Spinal Cord Ischemia happen?

- 20: B Maurel: Impact of Early Pelvic and Lower Limbs Reperfusion and Aggressive Perioperative Management on Spinal Cord Ischemia during Thoraco-abdominal Aortic Aneurysm Endovascular Repair
- 21: Z Szeberin: Early- and Long-term Outcome after Surgical Suprarenal Aortic Fenestration in Patients with Complicated Acute Type B Aortic Dissection
- 22: B Dorweiler: Long-term Patency of Renal and Visceral Vessels after open Thoraco-abdominal Aortic Replacement
- 23: L Husmann: Diagnostic Performance of 18F-FDG-PET/CT in Vascular Graft Infection
- 24: L Capoccia: Preliminary Results from a Multicenter Registry of Infection in Abdominal Aortic Endovascular repair (R.I. EVAR)
- 25: RM Krol: The Influence of Diabetes Mellitus and Insulin Use on the Prevalence of AAA among Patients Referred for Peripheral Artery Disease
- 26: A Linné: High Frequency of AAA in the North of Sweden not Explained by Higher AAA Prevalence Among Siblings or Smoking

11:30  Symposium: Preventing Amputation Auditorium 2
Chair: Jean-Baptiste Ricco, Andrew Bradbury

- Mauro Gargiulo, Italy: Clinical implications of the angiosome model
- Frank Vermassen, Belgium: How to revascularize – any new evidence for bypass / DEB/DES/SAP?
- Jonas Malmstedt, Sweden: How to integrate the vascular surgeon in the modern multidisciplinary approach to diabetic limb salvage and increase the revascularization rate?
- Florian Dick, Switzerland: Adjuncts to revascularization – evidence-based treatment of peripheral vascular disease in diabetics – secondary prevention strategies to live longer with both legs
- Alik Farber, USA: Best endovascular versus surgical therapy for critical limb ischemia (BEST-CLI) Trial
- Andrew Bradbury, United Kingdom: Which trials do we need? Registry or BASIL-II BTK
Scientific Programme – Wednesday 24 September – Afternoon

13:00  Sponsored symposia

Philips: Clinical innovation in the Hybrid OR  Auditorium 1
Jotec Symposium: Latest trends in endovascular therapy  Auditorium 2

Please see details on page 22-23

Lunch boxes will be available in the auditoria for these sessions

14:00  Scientific Session 5 (Abstracts on page 57)  Auditorium 1
Chair: A Jawien, E Laxdal

Keynote Speaker: To be confirmed: Angiosome Concept - Hypothesis or Reality?

- 27: E Avgerinos: Autologous Alternative Veins do not Provide Better Mid-term Outcomes than Prosthetic Conduits for Below Knee Bypass when Great Saphenous Vein is Unavailable
- 28: R Stoekenbroek: Hide and seek: Does the TBI Allow for Earlier Recognition of PAD in Diabetic Patients?
- 29: E Saarinen: Benefit of Revascularization in Nonagenarians with Lower Limb Ischaemia is Limited by High Mortality
- 30: Kilsoo Yie: Angiosome Guided Surgical Revascularization; the Truth and Falsehood
- 31: M van Schaardenburgh: One Bout of Calf Raises Induces Improvement of Mitochondrial Function in Claudicants
- 32: A Bravo Molina: Influence of Microbiology and Wound Scores in the Diabetic Foot Syndrome Outcome
- 33: K Spillerová: The Importance of Angiosome Concept on Ulcer healing: Percutaneous Transluminal Angioplasty vs. Surgical Bypass in Below the Knee Arteries

14:00  Symposium: Aortic Emergencies  Auditorium 2
Chair: Nabil Chakfé, Piergiorgio Cao

- Jurg Schmidli, Switzerland: Acute Aortic syndromes
- Stephan Haulon, France: Imaging in aortic emergencies
- Mario Lachat, Switzerland: Management of ruptured AAA in patients with juxta- and pararenal aneurysms
- Ludovic Canaud, France: Secondary interventions for ruptured AAA in patients previously treated with EVAR
- Tim Resch, Sweden: Ruptured thoraco-abdominal aneurysms - current endovascular state of the art
- Janet Powell, United Kingdom: The Improve Trial Update
Scientific Programme – Wednesday 24 September – Afternoon

16:00      ESVS Annual General Meeting     Auditorium 1
- Jean-Baptiste Ricco: Opening and introduction by the President
- Ross Naylor: Report of the Editor in Chief
- Tina Cohnert: Report of the Treasurer
- Simon Parvin: Report of the Secretary General
- Jean-Baptiste Ricco: Election of President 2015-2016
- Jean-Baptiste Ricco: Election of Secretary General 2015-2020
- Jean-Baptiste Ricco: Any other business

16:00      EVST Annual General Meeting     Auditorium 2
Information on the website and the Annual Meeting APP

17:00      EVST Honorary Lecture     Auditorium 2
Vincent Riambau, Spain: How to shape a successful Vascular Surgery Career
Scientific Programme – Thursday 25 September – Morning

07:00 Symposium: Vascular Trauma
Bar level 5
Chairs: Carl Wahlgren (SSVS), Ulf Hedin (LOC)
See details on page 24
This is a breakfast symposium arranged by the Swedish Society for Vascular Surgery. The first 100 participants will be seated at round tables and enjoy a breakfast while listening to the lectures.

08:00 Scientific Session 6 (Abstracts on page 65)
Auditorium 1
Chair: GJ de Borst, C Zeebregts
- 34: A Millon: A New Carotid 3D MRI Sequence for Stenosis Measurement and Plaque Characterization at the Same Time
- 35: I Barbetta: Risk Scoring System to Predict Life Expectancy after CEA in Patient with Asymptomatic Carotid Artery Stenosis
- 36: D Högberg: Carotid Artery Atherosclerosis among 65 year old Swedish Men - a Population Based Screening Study
- 37: L Best: The Role of Transcranial Doppler Ultrasound in the Management of Patients with Carotid Disease: a Meta-analysis
- 38: M Jonsson: Urgent Carotid Artery Stenting Does not Increase the Risk for Periprocedural Complications - a Nationwide Population-based Registry Study

09:00 Keynote speakers: High risk for stroke, symptomatic and asymptomatic
HH Eckstein, Germany (Live transmission from Hamburg): Risk Factors for CEA in Symptomatic Patients
R Naylor, United Kingdom: High risk for stroke, asymptomatic

09:30 Scandinavian Venous Forum Symposium
Auditorium 2
Modern Vein Treatment - what is the evidence?
Chair: Lotte Klitfod, Bo Eklof
- Bo Eklof, Sweden: Introduction and welcome
- Lars Rasmussen, Denmark: Modern treatment of GSV varicose veins, what is the evidence?
- Eberhard Rabe, Germany: The role of foam sclerotherapy in varicose veins treatment.
- Thomas Proebstle, Germany: A new kid on the block - glue ablation
- Marianne de Maeseneer, Belgium: Can recurrence be avoided and how should we treat it?
- Martin Lawaetz: Denmark: When is compression relevant after varicose vein treatment?
- Olle Nelzen, Sweden: When should we treat perforators and how?
- Lena Blomgren, Sweden: Endovenous laser when treating patients with Klippel-Trenaunay’s syndrome

Continued on next page >
Scientific Programme – Thursday 25 September – Morning

< Continued from previous page

- **Niels Baekgaard**, Denmark: Treatment of iliofemoral DVT
- **Antonio Rosales**, Norway: Endovenous treatment of iliocaval postthrombotic obstruction
- **Bo Eklof**, Sweden: Future trends

Abstract presentation: Iliac stenting in local anesthesia of patients with post-thrombotic syndrome is safe with good results
*Vascular Clinic, Gentofte Hospital and Rigshospitalet, University of Cph, Denmark*
L Klitfod, Sven Just, P Foegh, N Baekgaard

09:30 Symposium: Aortic Arch
Chair: Stéphan Haulon, Michael Jacobs
- **Frank Vermassen**, Belgium: DISSECT - a new categorisation of aortic dissection in the endovascular era
- **Jan Brunkwall**, Germany: Acute Type B Aortic Dissection: Has the treatment paradigm changed?
- **Tim Resch**, Sweden: Planning for arch endografts
- **Stéphan Haulon**, France: Lessons learned from Endovascular aortic arch repair
- **Michael Jacobs**, The Netherlands: The place for Open aortic arch repair

11:30 Symposium 5 (SVS/ESVS)
Auditorium 1
Joint symposium with the Society for Vascular Surgery – Transatlantic Debates

First debate
- **Peter Lawrence**, USA: Surgery is the best method for the reconstruction of tibial disease in patients with critical limb ischaemia
- **Yann Gouëffic**, France: Percutaneous intervention should be the first line of treatment for infra-popliteal lesions that are anatomically accessible

Second debate
- **Ross Naylor**, United Kingdom: The vast majority of patients with asymptomatic carotid disease should be treated medically
- **Bruce Perler**, USA: Carotid endarterectomy is indicated for many patients with severe asymptomatic carotid disease

Transatlantic Perspective: Results of emergent carotid surgery in symptomatic patients receiving fibrinolysis for stroke
- **Jean-Baptiste Ricco**, France: The European approach
- **Glenn LaMuraglia**, USA: The American Approach
Scientific Programme – Thursday 25 September – Afternoon

14:00  Scientific Session 7 (abstracts on page 71)  Auditorium 1

Chair: T Cohnert, P Balaz

Keynote speaker: Ron Balm, Netherlands: Evidence base for Rx of rAAA
(balanced view point)

- 39: G Martufi: Local Diameter, Wall Stress and Thrombus Thickness Influence the Local Growth of Abdominal Aortic Aneurysms
- 40: A Aber: Cost-effectiveness Analysis of Open and Endovascular Repair for Ruptured Abdominal Aortic Aneurysm
- 41: SC van Beek: Mid-term Survival and Reinterventions after Endovascular Versus Open Repair in Ruptured Abdominal Aortic Aneurysms
- 42: E Arnaoutoglou: Post Implantation Inflammatory Response After EVAR for AAA. Influence on Patients 30-day Outcome
- 43: E Gallitto: Long Term Results of Standard Suprarenal Fixation Endografts for Abdominal Aortic Aneurysms with Neck Length 5-10mm
- 44: JB Ricco: Postoperative and Long-term Results of Total Laparoscopic Versus Conventional Aortic Bypass Surgery: A Propensity Analysis
- 45: P Degranges: Results of ECAR (Endovasculaire vs. Chirurgie dans les Anévrysmes Rompus) Trial

14:00  Symposium: Venous Guidelines  Auditorium 2

Chair: Cees Wittens, Philippe Kolth

- Cees Wittens, Germany: Introduction
- Niels Baekgaard, Denmark: General Considerations
- Sarah Onida, United Kingdom: Assessment Clinical and Quality of Life
- James Lawson, Netherlands: Diagnostics
- Paul Pittaluga, France: Conservative and Medical treatment
- Athanasios Giannoukas, Greece: Treatment Superficial
- Thomas Noppeney, Germany: Treatment Deep Venous
- Cees Wittens, Germany: Recurrent Disease
- Alun Davies, United Kingdom: Venous Malformations
- Alun Davies, United Kingdom: Summary and changes since June 2014
- Panel discussion
Scientific Programme – Thursday 25 September – Afternoon

16:00  Symposium: TEVAR Innovations – the next decade  Auditorium 1
Chair: Vincent Riambau, Arkadiusz Jawien
- Gian Pellegrini, Medtronic: A Study of R&D Methodology in Thoracic Branch System Design
- Piergiorgio Cao, Cook Medical: Future Thoracic Devices
- Rob Thomson, WL Gore: Highly durable branch designs for use in the Aortic arch and beyond
- Nabil Chakfe, France: Status of TEVAR technology
- Stephan Haulon, France: Unmet needs

16:00  Scientific Session 8 (abstracts on page 79)  Auditorium 2
Chair: Lars Rasmussen, Ingmar Wennström
- 46: CR Lattimer: D-dimer levels are significantly increased in blood taken from varicose veins compared to ante-cubital blood from the same patient
- 47: H Sinabulya: Endovenous laser ablation for healing venous ulcers and risk factors for recurrence after three years
- 48: S Chastanet: Influence on Chronic Venous Insufficiency of Primary Absence of the Great Saphenous Vein in the Saphenous Compartment at the Thigh
- 49: J Brownrigg: Percutaneous Endovenous Intervention for Acute and Chronic Deep Venous Occlusion
- 50: C Karathanos: Factors Associated with Recurrence of Superficial Vein Thrombosis in Patients with Varicose Veins

17:00  Adjournment  Auditorium 1
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Educational opportunities

Join our panel discussion:

- Latest innovations in the Hybrid OR
  Chair: Prof. Dr. F. Vermassen
- Dose Management in the Hybrid OR
  Prof. Dr. F. Vermassen, University Hospital Ghent, Belgium
- The advantages of 3D live image guidance
  Prof. Dr. J. Brunkwall, University Hospital Cologne, Germany
- Financial considerations for purchasing a Hybrid OR & Future clinical innovations
  A. Balguid, PhD, Philips Healthcare

Join our imaging workshops:

- Combine clinical excellence with innovative workflow in the Mobile Surgery Suite
  September 24th and 25th
  Location: Suite 23
  Visit www.philips.com/ESVS to register
- Ultrasound below the Knee – Masterclass
  Convenor: Prof. J. Eiberg (ESVS)
  Wednesday September 24, 14.00 – 18.00
  Location: C4
  Register at www.esvs.org

Launch of the 3rd generation Mobile C-arm with Flat Detector

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  Wednesday September 24
  15.30 – 16.00 at Philips booth M4

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References:
1. Data on file at Vascutek.
7. The Magnet Accelerated Cannulation is achieved using the Intrinsic Magnet GuideWire and the Contraflexible Magnet GuideWire.
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Sponsored Symposia

Wednesday 24 September:

07:00  Symposium: Best Strategy for rAAA  Bar level 5

Chairs: Anders Wanhainen (SSVS) Rebecka Hultgren (LOC)
- J Roy, Sweden: rAAA Case/Discussion
- M Malina, Sweden: Primary EVAR strategy for rAAA
- L Blohmé, Sweden: Patient-oriented strategy for rAAA
- K Mani, Sweden: Comparison EVAR vs. OR in rAAA from Swedvasc
- J Powell, United Kingdom: AAA morphology influence outcome after rAAA

This is a breakfast symposium arranged by the Swedish Society for Vascular Surgery. The first 100 participants will be seated at round tables and enjoy a breakfast while listening to the lectures. This symposium is made possible through an unrestricted grant from V-Tech.

13:00  Philips Symposium Clinical innovation in the Hybrid OR  Auditorium 1

Chair: F Vermassen
- F Vermassen, Belgium: Dose Management in the Hybrid OR
- Jan Brunkwall, Germany: The advantages of 3D live image guidance
- Angelique Balguid, Philips Healthcare: Financial considerations for purchasing a Hybrid OR & future clinical innovations
13:00 Jotec Symposium: Latest trends in endovascular therapy Auditorium 2

Chair: Michael Jacobs, The Netherlands, Jos C. van den Berg, Switzerland

- Piotr Szopinski, Poland: Endovascular treatment of iliac aneurysms – first clinical experiences with the E-liac Stent Graft System
- Jaroslaw Trebacz, Poland: Combination of thoracic stent graft and E-xl in acute type B dissection
- Luis Miguel Salmerón Febres, Spain: E-xl: A good indication on the visceral aorta

07:00 Symposium: Vascular Trauma Bar level 5

Chair: Carl Wahlgren (SSVS), Ulf Hedin (LOC)

C Montan, Sweden: Vascular trauma case/Discussion
K Brohi, London, United Kingdom: Trauma-Induced coagulopathy- a current review
D Harkin, Northern Ireland: Ischemia-reperfusion injury in extremity trauma
C Wahlgren, Sweden: Strategies for vascular damage control

This is a breakfast symposium arranged by the Swedish Society for Vascular Surgery. The first 100 participants will be seated at round tables and enjoy a breakfast while listening to the lectures.

This symposium is made possible through an unrestricted grant from Covidien.
The ESVS is grateful for the participation from the exhibitors. We ask that you pay them a visit during the breaks in the scientific programme:

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Training programme

**Tuesday 23 September**
14:00-18:00 Vascular Trauma Workshop

**Wednesday 24 September**
08:30-12:30 How to write a good Manuscript
09:00-12:30 Fundamental Endovascular Surgery
14:00-18:00 Endovascular Surgery, Below the Knee Interventions
14:00-18:00 Complex Aneurysms
14:00-18:00 Ultrasound below the Knee – Masterclass

**Thursday 25 September**
08:00-17:30 ESVS Revision Course
09:00-13:00 Deep venous stenting & Thrombolysis
10:00-17:00 EVAR Workshop

*Training is available only to ticket holders. Ask for unsold tickets at the ESVS stand in the Entrance Hall.*

Social Programme

**Welcome Reception – Tuesday 23 September 18:30**

The Welcome Reception will be held at the beautiful City Hall across the water from the Conference Centre (10 minutes’ walk).

The Reception is free of charge but it is necessary to have a ticket to get in and the doors will be closed at 18.30, so be sure you get there in good time.

The Society wishes to thank the City of Stockholm for the welcome reception.

**Closing Reception – Thursday 25 September 17:30 – Bar 5**

Say goodbye to your colleagues over a glass of wine.

Tickets available at the registration desk by the entrance
SCIENTIFIC SESSION 1 - 23 September 15:30-16:30
Chair: George Hamilton, Thomas Schmitz-Rixen

1: Murine model of chronic limb ischemia closely mimicking human pathology
*University Hospital of Strasbourg, France*
A Lejay, F Thaveau, C Delay, A-L Charles, J Zoll, N Chakfé, B Geny

2: Dipeptidyl Peptidase-4 Inhibitor Alogliptin Prevents Further Dilatation of Abdominal Aortic Aneurysm through Anti-oxidant and Anti-inflammatory Effect in Rats
*Kobe University Graduate School of Medicine, Japan*
Jie Yu

3: The Receptor for Advanced Glycation End Products (RAGE: and its Ligands in Plasma and Infrainguinal Bypass Vein
*Molecular medicine and surgery, Karolinska Institutet, Stockholm, Sweden*
Malmstedt J

4: Nanotopography and Plasma Treatment: Redesigning the Surface for Vascular Graft Endothelialisation
*University College London, University of Glasgow, United Kingdom*
DST Chong, N Gadegaard, AM Seifalian, MJ Dalby, G Hamilton

5: Benefits of Completion ceCBCT after EVAR
*Hopital Cardiologique, CHRU Lille, France*
A Hertault, T Martin-Gonzalez, R Spear, B Maurel, J Sobocinski, M Le Roux, R Azzaoui, S Haulon

6: Prospective Analysis of intraoperative cone-beam CT to evaluate the outcome of EVAR
*Vascular Center, Skane University Hospital, Sweden*
P Törnqvist, N Dias, B Sonesson, T Resch
1: Murine model of chronic limb ischemia closely mimicking human pathology
1 Equipe d’Accueil 3072, Mitochondrie, Stress oxydant et Protection Musculaire, Université de Strasbourg; 2 Department of Vascular Surgery and Kidney Transplantation, University Hospital, Strasbourg; 3 Department of Biophysics and Nuclear Medicine, University Hospital, Strasbourg; 4 Department of Physiology and Functional Explorations, University Hospital, Strasbourg; 5 Institut de Génétique et de Biologie Moléculaire et Cellulaire (IGBMC), CNRS UMR7104/INSERM U964, Collège de France, Université de Strasbourg, Illkirch; France
A Lejay 1,2; P Choquet 3; F Thaveau 1,2; F Singh 1,4; A Schlagowski 1,4; AL Charles 1,4; G Laverny 5; D Metzger 5; J Zoll 1,4: N Chakfe 2; B Geny

Introduction:
The aim of this study is to establish a chronic mouse model of critical limb ischemia (CLI) with in- and ex vivo validation, closely mimicking human pathology. Indeed, chronicity and stability of lower limb hypoperfusion is difficult to obtain because of neoangiogenesis and arterial collaterality.

Methods:
28 Swiss mice were submitted to sequential unilateral femoral (Day 0) and iliac ligatures (Day 4). Ischemia was confirmed by clinical scores (tissue and functional damages) and MIBI scintographies at Days 0, 4, 6, 10, 20, and 30. At Days 10, 20 and 30, muscle mitochondrial respiration, calcium retention capacity and reactive oxygen species (ROS) production were investigated, together with transcripts of mitochondrial biogenesis and antioxidant enzymes. Histological analysis was also performed.

Results:
Clinical and functional damages confirmed CLI. MIBI scintographies showed hypoperfusion of the ischemic limb that remained stable until Day 30. Mitochondrial respiration was impaired in ischemic muscles compared to controls (Vmax = 7.93 ± 0.99 vs. 10.09 ± 2.87 mmol 02/min/g dw; p=0.01), together with impaired calcium retention capacity (7.4 ± 1.6 mmol/mg dw vs. 11.9 ± 0.9 mmol/mg dw ; p<0.001) and biogenesis (41% decrease in PGC 1α, -49% in PGC 1ß, and -41% in NRF1). Ischemic muscles also demonstrated increased production of ROS in electron paramagnetic resonance (0.084 ± 0.029 vs. 0.051 ± 0.031 mmol/min/mg dw; p=0.03) and in DHE staining (3622 ± 604 arbitrary units of fluorescence vs. 1224 ± 324; p<0.01), decreased antioxidant enzymes (32% decrease in SOD1, -41% in SOD 2, and -49% in catalase), and myopathic features (wider range in fiber size, rounded shape, centrally located nuclei, and smaller cross-sectional areas). All defects were stable over time.

Conclusions:
Sequential femoral and iliac ligatures closely mimic human functional, clinical, scintigraphic and skeletal muscle mitochondrial characteristics and could prove useful to test therapeutic approaches.
2: Dipeptidyl Peptidase-4 Inhibitor Alogliptin Prevents Further Dilatation of Abdominal Aortic Aneurysm through Anti-oxidant and Anti-inflammatory Effect in Rats
Kobe University Graduate School of Medicine, Japan
Jie Yu

Introduction:
Dipeptidyl peptidase-4 inhibitor alogliptin has been proved to prevent abdominal aortic aneurysm (AAA) formation. However, the mechanism of alogliptin on aneurysm development has not been sufficiently investigated. The objective of this study was to determine how alogliptin prevents further dilation of AAA development mimicking clinical setting.

Methods:
The AAA model induced with intraluminal elastase and extraluminal calcium chloride was created in 42 rats. Forty-two rats were divided 3 groups: a low-dose of alogliptin group (Group LD; 1 mg/kg/day), a high-dose group (Group HD; 3 mg/kg/day), and a control group (Group C, water). Alogliptin administration by gastric gavage once per day was started on 7 days after aneurysm formation (Dilatation ratio: 158.9 ± 7.7 %). On day 14, reactive oxygen species (ROS) expression and the oxidation product of DNA 8-hydroxydeoxyguanosine (8-OHdG) was measured. As ROS have been reported to activate ERK pathway which is important modulator of MMPs and inflammatory cytokines, MMP expression and inflammatory response were also analyzed along with ERK evaluation. Histopathological examination was performed on day 28, and the AAA dilatation ratio was calculated to evaluate alogliptin protective effect.

Results:
On day 14, ROS expression and 8-OHdG positive cells in aneurysm walls were decreased by alogliptin treatment (ROS expression: 4.4 ± 0.6 in Group C, 3.2 ± 0.1 in Group LD, and 2.7 ± 0.3 in Group HD, p < 0.001; 8-OHdG-positive cells: 167.4 ± 6.9 cells in Group C, 102.7 ± 19.9 cells in Group LD, and 64.7 ± 2.7 cells in Group HD, p < 0.001). Western blot analysis showed decrease ERK levels in treatment groups compared with in control group. The treatment significantly reduced mRNA expression of MMPs, TNF-α and MCP-1 in aneurysm walls. Immunohistochemical staining for CD68 demonstrated the decrease of macrophage infiltration in aneurysm wall with treatment groups. On day 28, the aortic wall in groups LD and HD were less dilated, and had higher elastin content than those in Group C (Dilatation ratio: 199.2 ± 10.8 % in Group C, 170.0 ± 4.4 % in Group LD, and 155.1 ± 2.3 % in Group HD, p < 0.001).

Conclusion:
Alogliptin treatment starting after aneurysm formation inhibits further dilation in rat model through anti-oxidant and anti-inflammatory effect. Inhibition of ERK activation by reducing oxidative stress prevented inflammatory response and matrix degeneration, resulting in prevention of the aortic dilatation.
3: The Receptor for Advanced Glycation End Products (RAGE: and its Ligands in Plasma and Infrainguinal Bypass Vein

*Molecular medicine and surgery, Karolinska institutet, Stockholm, Sweden*

J Malmstedt

**Introduction:**

Objective: To investigate if RAGE and its ligands are associated with outcome in patients with and without diabetes undergoing infrainguinal bypass surgery.

**Methods:**

A prospective observational study with at least 3 years follow up was conducted in 68 patients (57% male) with (n = 38) and without (n = 30) diabetes undergoing their first elective infrainguinal vein bypass due to peripheral arterial occlusive disease. Endosecretory RAGE (esRAGE). S100A12, advanced glycation end products and carboxymethyl-lysine (CML) were determined in plasma using ELISA. Influence of plasma levels on the main outcome measure (amputation free survival) was evaluated using Cox proportional hazard regression analysis. Plasma levels of esRAGE, CML and S100A12 in healthy controls (n = 30) without cardiovascular disease matched for sex and age were compared to patients, using Mann-Whitney U test. S100A12, RAGE, AGE and CML in vein tissue obtained at bypass surgery were determined using immunohistochemistry.

**Results:**

Forty-six patients survived with intact leg during a median follow up of 702 days, (IQR 188 to 899). Seventeen died, and 6 were amputated. High plasma levels of S100A12 were associated with reduced amputation free survival, (hazard ratio [HR] 2.99) 95% CI 1.24-7.24: when comparing levels above the 75th percentile with levels below. The increased risk was essentially unchanged adjusting for age, sex and diabetes (HR 2.58) 95% CI 1.05 – 6.35). Diabetic patients had higher mean S100A12 plasma levels, 11.75 ng/mL; 95% CI 8.12-15.38 compared to non diabetic patients 5.01; 3.62-6.41 (P= .002). whereas levels of CML, esRAGE and AGE were comparable. Mean plasma levels of CML and S100A12 were higher in patients compared to controls, 1.25 μg/mL; 95% CI 1.18-1.32 versus 0.89; 0.82-0.96 (P=.001). and 8.73 ng/mL; 95% CI 6.52-10.95 versus 3.47; 2.95-3.99 (P< .001). respectively. Diabetic patients did not differ from non diabetic patients in the proportion of vein tissue area stained for AGE (21%). RAGE (5%). CML (9 %) and S100A12 (3%). and staining was found in all veins with the same percentage in both diabetic and non diabetic patients.

**Conclusion:**

Plasma levels of S100A12 and CML are elevated in peripheral arterial occlusive disease and markers of RAGE and its ligands are found in vein tissue used for bypass. This may indicate a role for S100A12, CML and RAGE in peripheral arterial disease complications by activation of the RAGE system.
4: Nanotopography and Plasma Treatment: Redesigning the Surface for Vascular Graft Endothelialisation

*University College London, University of Glasgow, United Kingdom*

DST Chong, N Gadegaard, AM Seifalian, MJ Dalby, G Hamilton

**Introduction:**
Current vascular graft materials in clinical use, such as PTFE and Dacron®, do not endothelialise and have low unacceptable patency rates. The importance of an endothelial cell layer on the luminal surface of a vascular graft is well-known. The influence of topographical features and surface chemistry on cellular adhesion and proliferation is recognised and under investigation. A nanocomposite polymer has been developed which has shown promise as a vascular graft material due to its compliant, biocompatible and antithrombogenic properties. However, despite these benefits a lack of endothelialisation is still a cause for major concern. Our aim in this work is to investigate the potential of plasma treatment and topographical structures on the luminal graft surface to enhance the self-endothelialisation potential of a nanocomposite vascular graft material.

**Methods:**
POSS-PCU is a polycarbonate urea urethane (PCU) with a nanoparticle, polyhedral oligomeric silsesquioxane (POSS) incorporated within it and fabricated according to published protocols. Microgrooves (MG) of pitch 25μm were fabricated using photolithography and nanopits, Near-Square (NSQ), were fabricated using electron beam lithography. These were then embossed onto the POSS-PCU polymer and replication fidelity was confirmed using atomic force microscopy (AFM) and scanning electron microscopy (SEM). The samples then underwent oxygen plasma treatment at different powers at a fixed time (40W, 60W, 80W at 60 seconds). Successful plasma treatment was confirmed by water contact angle (WCA) measurements. Human Umbilical Vein Endothelial Cells (HUVECs) were seeded onto the treated polymer samples and cell proliferation was measured using Live/Dead Cell® staining. Immunostaining of vinculin and actin was conducted to observe cell morphology and adhesion.

**Results:**
The embossing of the micro- and nanostructures were replicated with high fidelity, as seen by SEM and AFM. The microgrooves have a pitch size of 25μm. NSQ was also verified to be 120nm pits with centre-centre spacing of 300nm with ±50nm offset in pit placement. Oxygen plasma treatment of the different samples, show that increase in power increased significantly the hydrophilicity of the samples (p < 0.05). These had a direct impact on giving the optimal surface on which HUVECs preferentially proliferate and adhere, with an average WCA of 68°, giving the highest HUVEC growth. HUVEC proliferation was seen to increase on NSQ surfaces over MG and planar samples, retaining both morphology and function.

**Conclusion:**
These exciting observations indicate an important role for nanotopography and plasma treatment in the development of vascular grafts.
5: Benefits of Completion ceCBCT after EVAR

Hopital Cardiologique, CHRU Lille, France
A Hertault, T Martin-Gonzalez, R Spear, B Maurel, J Sobocinski, M Le Roux, R Azzaoui, S Haulon

This presentation has been made possible through a grant from General Electric Healthcare

Introduction:
The aim of this study was to compare contrast enhanced cone-beam computed tomography (ceCBCT) to completion angiogram following endovascular aneurysm repair (EVAR).

Methods:
All patients treated with bifurcated or fenestrated and branched endografts in our hybrid room during the study period were included. From December 2012 to July 2013, a completion angiogram (CA) was performed at the end of the procedure, and a Computed Tomography Angiography (CTA) before discharge (group 1). From October to December 2013, a completion ceCBCT was performed at the end of the procedure and a contrast-enhanced ultrasound (CEUS) during the 30-day postoperative period (group 2). The rate of perioperative events, including type I or III endoleaks, kinks or occlusions of target vessels and bridging stents, need for additional procedures or early secondary procedures, and global radiation exposure (mSv) and total volume of contrast medium injected were analyzed and compared.

Results:
Seventy-nine patients were included in group 1 and 54 in group 2. Perioperative events rate were respectively 10.1% (8/79) in group 1 and 33.3% (18/54) in group 2 (p=0.001). Additional procedures were performed in 7 patients (8.9%) in group 1 and 17 (31.5%) in group 2 (p=0.001). Two early secondary procedures were performed in group 2 (3.7%). and 3 (3.8%) in group 1 (p=0.978). Median radiation exposure due to the ceCBCT was 7 Gy.cm² (5.25-8) (39%, 27% and 11% of the total procedure radiation exposure, respectively for bifurcated, fenestrated and branched endografts). CEUS never diagnosed endoleaks or any adverse events not diagnosed by ceCBCT. Global radiation and volume of contrast injected during the patient hospital stay in group 1 and 2 were 34 (25.8-47.3) and 11 (5-20.5) mSv, and 184 (150-240) and 91 (70-132.8) mL respectively (reduction of 68%, p<0.001 and 50%, p<0.001).

Conclusion:
Completion ceCBCT is achievable in routine practice to assess technical success after EVAR. It offers the opportunity to perform additional treatment during the primary procedure and reduces the need for a postoperative CTA, thus reduces total in-hospital radiation exposure and contrast media volume injection.
6: Prospective Analysis of intraoperative cone-beam CT to evaluate the outcome of EVAR

*Vascular Center, Skane University Hospital, Sweden*

P Törnqvist, N Dias, B Sonesson, T Resch

**Introduction:**
Reinterventions after EVAR are common and therefore strict imaging follow up is required. Conventional angiography (CA) during EVAR might not be optimal for detecting EVAR complications. Cone-beam computer tomography (CBCT) provides cross-sectional imaging intraoperatively. The purpose of this study was to evaluate if CBCT can detect intraoperative complications and to compare this to angiography and 1 month CT follow up (CTA).

**Methods:**
51 patients (44 men) were enrolled in a prospective trial. Patients underwent completion angio and CBCT during infrarenal EVAR. Contrast was used except if preoperative renal insufficiency was present or if preset maximum contrast dose threshold was reached. CBCT reconstruction included the top of the stentgraft to the iliac bifurcation. Endoleaks, kinks or compressions were recorded. Findings on final imaging were compared to CTA.

**Results:**
CBCT was technically successful in all patients (with contrast n=36, without contrast n=15). 12 endoleaks (EL) (5 type I, 7 type II) were detected on CA. CBCT detected 4 out of 5 type I endoleaks, but only one of the type II EL. 4 type I EL were treated, no type II’s were. CTA identified 8 type II endoleaks and the one residual type I endoleak. 2 cases of stent compression were seen on CA. CBCT revealed 6 stent compressions and one kink, which resulted in 4 intraoperative adjunctive maneuvers. CTA identified all cases of kinks or compressions that were left untreated. Two of them were corrected later. No additional kinks/compressions were found on CTA. 33 patients had CBCT and CA without any reported stentgraft kinks, compressions or endoleaks. Groin closure consisted of 78 fascial sutures, 9 cut-downs and 11 percutaneous sutures. Seven femoral artery pseudoaneurysms (<1cm) were detected on CTA, but no intervention was needed.

**Conclusion:**
CA is better than CBCT to detect and categorize endoleaks but CBCT (with or without contrast) is better than CA for detection of kinks or stentgraft compression. CA plus CBCT identified all significant complications noted on 1 month FU CTA. The use of intraoperative CA and CBCT can possibly replace early CTA after standard EVAR thus reducing overall radiation and contrast use. Technical development might improve resolution and usefulness of CBCT further.
SCIENTIFIC SESSION 2 - Wednesday 24 September 08:00-09:30
Chair: T Resch, A Ivancic

Keynote speaker: Tara Mastracci: Acute TEVAR, Why, How and Where?

7: Ten-year Experience with Endovascular Repair of Thoracoabdominal Aortic Aneurysms: Results from 166 Consecutive Patients
Department of Vascular and Endovascular Surgery, Klinikum Nuremberg, Germany
ELG Verhoeven, A Katsargyris, IF Tielliu, TR Prins, W Ritter, H Renner

8: Number and Location of Abdominal Aorta Entry Tear is Associated with Abdominal Aorta Remodeling after Stent Grafting for Complicated Type B Aortic Dissection
Taipei Veteran General Hospital, China
I-Ming Chen, Chun-Che Shih

9: Durability of TEVAR in Blunt Traumatic Thoracic Aortic Injury – Long-term Experience from Two Tertiary Referral Centres
Dept of Surgical Sciences, Vascular Surgery, Uppsala University, Sweden, Dept of Surgery, Stockholm South Hospital, Stockholm, Sweden, Clinic for Cardiovascular Surgery and Clinic for Radiology, Zurich University Hospital, Switzerland
J Steuer, M Björck, R Tunesi, Z Rancic, G Puippe, A Wanhainen, M Lachat, T Pfammatter

10: Minimum 10-Year Follow-up of Endovascular Repair for Acute Traumatic Transection of the Thoracic Aorta
CHU de Montpellier, Hospital A de Villeneuve, France
L Canaud, C Marty-Ané, V Ziza, P Branchereau, P Alric

11: Endovascular Management of Rupture in Acute Type B Aortic Dissections
Department of Thoracic and Vascular Surgery; University hospital, Montpellier, France
E Faure, L Canaud, JP Becquemin, P Alric

12: Operative Results and Clinical Features of Chronic Stanford Type B Aortic Dissection: the Examination of 234 Patients in Six Years
Kawasaki Saiwai Hospital, Japan
T Fujikawa

13: Lessons from 500 Adverse Event Reports on SFA Stents from MAUDE Database - Need for Action by ESVS?
King’s College Hospital, London, United Kingdom
R Gambhir
SCIENTIFIC SESSION 2 - Wednesday 24 September 08:00-09:30

7: Ten-year Experience with Endovascular Repair of Thoracoabdominal Aortic Aneurysms: Results from 166 Consecutive Patients

Department of Vascular and Endovascular Surgery, Klinikum Nuremberg, Germany
ELG Verhoeven, A Katsargyris, IF Tielliu, TR Prins, W Ritter, H Renner

Introduction:
To present our experience with total endovascular repair of thoracoabdominal aortic aneurysm (TAAA) using fenestrated and branched stent-grafts.

Methods:
Consecutive patients with TAAA treated with fenestrated and branched stent-grafts within the period January 2004 - October 2009 at one institution, and within the period November 2009 – December 2013 at a second institution, under the supervision of the senior author. Suprarenal AAA treated with fenestrated/branched grafts, even if including all four visceral vessels, were excluded. All data were collected prospectively.

Results:
A total of 166 patients (125 male, 41 female, mean age 68.8 ± 7.6 years) were treated. Types of TAAA were: type I, n=12 (7.2%). type II, n=50 (30.1%). type III, n=53 (31.9%). type IV, n=41 (24.8%). and type V, n=10 (6%). Mean aneurysm diameter was 71±9.3mm. Sixty-five per cent (108/166: of the patients were refused open surgery. Forty-seven per cent (78/166) of the patients had previously undergone one or more open and/or endovascular aortic surgery. Technical success was 93% (154/166). Mean operative time was 272±85 min. Median estimated blood loss was 400 ml (range, 100-5000 ml). Thirty-day mortality was 8.4% (14/166). Permanent spinal cord ischemia (SCI) occurred in 4.8% (8/166). Median hospital stay was 10 days (range 3-50 days). and median ICU stay 2 days (range 0-30 days). Mean follow-up was 28.3 months (1-108 months). Estimated survival at 1, 2, and 5 years was 85.5 ± 3%, 79 ±4%, and 60.6 ± 9.6%, respectively. Estimated target vessel patency at 1, 2, and 5 years was 97.5±0.6%, 95.4±1.2%, and 90±2.3%, respectively. Estimated freedom from reintervention at 1 and 3 years was 89 ± 2.7% and 71.5% ±5.7%, respectively.

Conclusion:
Endovascular repair of TAAA with fenestrated and branched stent-grafts in high volume centers appears safe and effective in the mid-term. Except for reintervention rates, these results compare favorably with published series of open TAAA repair, despite treatment of a high-risk patient cohort.
SCIENTIFIC SESSION 2 - Wednesday 24 September 08:00-09:30

8: Number and Location of Abdominal Aorta Entry Tear is Associated with Abdominal Aorta Remodeling after Stent Grafting for Complicated Type B Aortic Dissection

Taipei Veteran General Hospital, China
I-Ming Chen, Chun-Che Shih

Introduction:
Thoracic endovascular aorta repair for complicated type B aortic dissection is a challenging issue in last decade. The remodelling process of aorta false lumen is still unknown and hard to predict, especially in the abdominal aorta part. In this study, we try to find out some impact factors from retrospective analysis in our patient group.

Methods:
From November 2006 to July 2012, 84 patients received thoracic stent graft implantation +/- cervical bypass due to complicated type B aortic dissection in our institute. 73 of them had regular post-operative contrast computed tomography scan follow up more than 1 year and then were included in our study. Most of the (71 of 73 false lumen in thoracic aorta got total thrombosis or obliterated without any contrast. However, the false lumen of abdominal aorta got total thrombosis or obliterated without any contrast only in 27 of 73 patients (regression group) while the false lumen were still patent in other 46 patients (non-regression group). We measured the number and the location (thoracic aorta, supra-renal aorta, infra-renal aorta, iliacs) of all entry tears in pre-operative computed tomography scan and compare the results between two groups.

Results:
Pre-operative number of entry tear in abdominal aorta is significantly higher in non-regression group (3.36 +/- 2.26 versus 1.22 +/- 1.15, P<0.001). Fewer entry tears are found over supra-renal aorta in regression group. (1.54 +/- 1.18 versus 0.56 +/- 0.75, P<0.001) The incidence of distal stent graft induced new entry is much higher in non-regression group. (P<0.05)

Conclusion:
The number and the location of entry tear are the predictors of abdominal aorta remodeling after TEVAR for complicated type B aortic dissection. If pre-operative number of entry tear in abdominal aorta, especially supra-renal aorta, is fewer, the remodelling of dissected aorta after TEVAR will process better.
SCIENTIFIC SESSION 2 - Wednesday 24 September 08:00-09:30

9: Durability of TEVAR in Blunt Traumatic Thoracic Aortic Injury – Long-term Experience from Two Tertiary Referral Centres

Dept of Surgical Sciences, Vascular Surgery, Uppsala University, Sweden, Dept of Surgery, Stockholm South Hospital, Stockholm, Sweden, Clinic for Cardiovascular Surgery and Clinic for Radiology, Zurich University Hospital, Switzerland

J Steuer, M Björck, R Tunesi, Z Rancic, G Puippe, A Wanhainen, M Lachat, T Pfammatter

Introduction:
Blunt traumatic thoracic aortic injury is a life-threatening condition, the second most common cause of death from blunt trauma after head injury. The advent of TEVAR has revolutionised the management of these patients, and with the use hybrid operating theatres, it is now possible to treat several injured organ systems in the same environment. Early outcome after TEVAR for blunt aortic injury (BAI) is excellent, but long-term data is scarce. The aim of the present study was to analyse long-term outcome of TEVAR for BAI by merging data from two European tertiary referral centres.

Methods:
All patients undergoing TEVAR for BAI at the two centres were registered prospectively during the period 2001-2010. In one centre, 17 patients were treated, and in the second one 29. Data on mechanism of injury, concomitant injuries, intra-operative variables, need of subsequent re-intervention and survival was documented. All patients were followed-up in 2013; in one centre on Aug 31st, 2013. In the second centre, follow-up was undertaken continuously during 2013.

Results:
Of the 46 patients, there were eight women (17%). Median age was 42 years (range, 18-85 years). Twenty-nine patients were injured in motor vehicle accidents, ten had fallen from heights, and three were involved in crush injuries. Miscellaneous causes lay behind the four remaining cases. All patients had concomitant injuries. The median injury severity score (ISS) was 43 (range, 25-75). Early (30-day) mortality was 13% (6 of 46 patients), whereas in-hospital mortality was 17% (8 of 46). as two patients died of brain injury and multiple organ failure, respectively, during the primary hospitalisation. After a median follow-up of 6.1 years (range, 0-12.2 years), seven patients (15%) underwent re-intervention, all of them within the first post-operative year. Four patients underwent re-lining of the stentgraft, one of them with subsequent carotid-subclavian bypass, two patients were operated upon with carotid-subclavian bypass with no additional procedure, and one patient underwent explantation of the stentgraft. Five- and ten-year survival, respectively, was 85% (Fig 1)

Conclusion:
TEVAR allows rapid and safe therapy in patients with BAI. Re-intervention is needed in roughly one in six patients during the first year, but after that it is very uncommon. Long-term survival in these patients is excellent. The initial outcome is highly dependent on the severity of other injuries.
SCIENTIFIC SESSION 2 - Wednesday 24 September 08:00-09:30

10: Minimum 10-Year Follow-up of Endovascular Repair for Acute Traumatic Transection of the Thoracic Aorta

*CHU de Montpellier, Hospital A de Villeneuve, France*

L Canaud, C Marty-Ané, V Ziza, P Branchereau, P Alric

**Introduction:**
Thoracic endovascular aortic repair (TEVAR) for traumatic rupture of the descending thoracic aorta (DTA) appears, in the short term, to be associated with better outcome, but long term data is still lacking.

**Methods:**
A review of a prospectively maintained database of patients who underwent TEVAR for traumatic rupture of the DTA in our unit with a minimum 10-year follow-up was performed. Follow-up computed tomography scans were performed at 1 week, at 3 and 6 months, and annually thereafter. Particular attention was focused on device related issues.

**Results:**
Among the 53 patients who underwent TEVAR for an acute traumatic rupture of the DTA, 17 of them were at a minimum 10-year follow-up: mean age 45.8 +/- 17 years [18-78], 4 women. Mean follow up was 11.6 years (range: 10.1- 13.1 years). Technical success was achieved in 100% (Excluder-TAG [7], Talent [9], Zenith [1]). The distribution of the proximal landing zone was zone 2 in 4 cases, zone 3 in 13 patients. A case of inadvertent coverage of supra-aortic trunks occurred intraoperatively. An early proximal type I endoleak was successfully treated by a proximal implantation of a second stent-graft. No perioperative death was observed and none of the patients suffered transient or permanent paraplegia, cerebral complication. At a minimum 10-year follow-up, all the patients are still alive. Furthermore, follow-up computed tomography scans did not disclosed any stent-graft migration or collapse, secondary endoleak or pathologic enlargement of the thoracic aorta.

**Conclusion:**
Our minimum 10-year follow-up study of endovascular repair for acute traumatic transection of the thoracic aorta demonstrated that the improved operative mortality of TEVAR over open, lasts over time without any device or procedure related issues.
11: Endovascular Management of Rupture in Acute Type B Aortic Dissections

Department of Thoracic and Vascular Surgery; University hospital, Montpellier, France

E Faure, L Canaud, JP Becquemin, P Alric

Introduction:
Reports of thoracic endovascular aortic repair (TEVAR) for complicated acute type B dissection bring together a large range of clinical presentations. With a 50% of 30-day mortality rate when managed with open surgery, rupture is the most dramatical complication of acute type B dissections. We investigated the outcomes of TEVAR for acute type B dissection complicated by rupture (R-ABD) to assess the results of this particularly critical subgroup.

Methods:
A review of consecutive TEVAR for R-ABD in two tertiary centers was performed using prospectively maintained database.

Results:
Between 2000 and 2014, 24 patients (mean age 68 years); 14 males: underwent TEVAR for R-ABD. Sixteen (67%) were in shock (Systolic blood pressure <80 mmHg: before surgery and 20 required chest drainage for hemothorax. Proximal entry tear was in zone 2 in 7 (29%) and 3 in 17 (71%). Five patients required coverage of the left subclavian artery for adequate proximal landing zone, of whom 3 with concomitant extra-anatomic debranching of the supra-aortic vessels. Technical success was achieved in 100%. The 30-day mortality rate was 16.7% (n=4). Two patients had paraplegia. None stroke neither renal insufficiency requiring new dialysis occurred. During a mean follow-up of 28 months, another death in relation with dissection occurred and 8 patients (33%) required reintervention. All reintervention were managed by endovascular means. At last follow up CT-scan, 8 patients (33%) had complete remodeling of the aortic wall.

Conclusion:
This study confirms the feasibility of TEVAR for R-BAD and its lower perioperative morbidity and mortality rate compared to open surgery, reducing by more than 2 third the 30-day mortality. However the rate of reintervention is high and a long term follow up is mandatory.
SCIENTIFIC SESSION 2 - Wednesday 24 September 08:00-09:30

12: Operative Results and Clinical Features of Chronic Stanford Type B Aortic Dissection: the Examination of 234 Patients in Six Years

Kawasaki Saiwai Hospital, Japan

T Fujikawa

Introduction:
Recently, a technology of thoracic endovascular aortic repair (TEVAR) has been developed. However, TEVAR for Stanford type B aortic dissection (TBAD) is still controversial. The benefit of TEVAR for acute TBAD is unclear, and TEVAR for chronic TBAD has morphological limitations and a probability of re-intervention. Therefore conservative treatment in acute phase and open surgery in chronic phase are golden standard even now. We examined our result of open surgery for chronic TBAD, and the clinical features of them.

Methods:
From January 2008 and September 2013, 234 patients underwent open surgery for chronic TBAD in our service. Our basic strategy was open surgery using left heart bypass. Operative indication was exceeding 50mm of maximum diameter or rapid enlargement over 5mm within 6 months.

Results:
In 180 cases, false lumen (FL) was patent. Mean term from onset of TBAD to operation was 64.5±55.8 months. There was no significant difference between patent FL group and thrombosed FL group (p=0.44). Mean ratio of FL diameter to maximum aortic diameter (FL/AD) was 0.64±0.21. There was no correlation between FL/AD and the term before the operation (Correlation coefficient: 0.12). Descending thoracic aortic replacement was performed in 127 cases and thoracoabdominal aortic replacement in 107 cases. The overall operative mortality was 6.8% 4.6% (10/216) in elective operations and 33.3% (6/18) in non-elective operations. 1-year and 3-years survivals were 87.6% and 86.7%. Re-intervention free rate was 97.0%.

Conclusion:
The enlargement of uncomplicated TBAD in chronic phase had less relation with the morphology of FL, and our open repair had acceptable early outcomes and low re-intervention rate. And there were less morphological limitations. These results should be sufficiently considered in the treatment of TBAD. But further prospective study for TBAD is necessary.
13: Lessons from 500 Adverse Event Reports on SFA Stents from MAUDE Database - Need for Action by ESVS?

King's College Hospital, London, United Kingdom

R Gambhir

Introduction:
When a Boeing aircraft develops a problem at New York, within the next 24 hrs the whole Boeing fleet, the world over, gets an alert with initial defect report, cause and a fix. On the other hand when the trigger mechanism of delivery system of an SFA stent fails in a London Hospital, nothing similar happens. FDA mandates the manufacturers to report all adverse events within 30 days on the MAUDE database. An analysis of 500 adverse event reports on SFA stents reveals lessons for the vascular societies and calls for unified action for the sake of patient safety.

Methods:
MAUDE database was searched for all adverse event reports on SFA stents from 01/04/2012 to 31/03/2014. Each report lists the event description, the date, patient injury, intervention if required and the manufacturer's narrative.

Results:
500 SFA stent adverse reports were recorded and analysed. All known manufacturers were listed. Adverse reports from 2 stent manufacturers were significantly more than the others. A similar deployment failure was reported for over 1 year by one manufacturer. More than 1/3rd of the reported cases had either a failure in deployment of the stent or retrieval of the standard delivery system (sds). In another 1/3rd the stent was damaged after deployment-twisted, torqued, fractured, or occluded. In the remaining 1/3rd there were multitudes of problems from breakage of sds components and their retention within the patient to mis-lodgment. Adverse patient effects included Acute Limb ischemia, limb loss and death. Majority required endovascular intervention, failing which an open procedure was performed in 20% of patients. Analysis of manufacturer's narrative rarely revealed no attributable cause, the malfunction, mal-deployment was labeled as procedure related and not device related. The manufacturers narrative often stated that the device met pre-release specifications and no manufacturing defect could be identified.

Conclusion:
A review of adverse event reports form manufacturer’s clearly indicates that the adverse event was procedure related and probably due to the operator not exercising due care or not following the IFU. There is a need for the societies to take a lead in user adverse event reporting, analysis and communicating these to the centre’s on a definitive time scale in a more open and unified manner to prevent patient harm and improve outcomes.
SCIENTIFIC SESSION 3 - Wednesday 24 September 09:30-11:00
Chair: R Naylor, P Kolh (Prize Session)

14: Abdominal Aortic Aneurysm Diameters: A Study on the Discrepancy between Inner to Inner and Outer to Outer Measurements
University Hospital of North Staffordshire, United Kingdom
P Buxton, L Meecham, D Mobley, C Bosanko, C Day, JR Asquith, L Papp, O Ehsan, J Fairhead, P Oakley, AD Pherwani

15: Renal Outcomes Following Fenestrated and Branched Endografting
Hôpital Cardiologique CHRU Lille, France
T Martin Gonzalez, B Maurel, J Sobocinski, A Hertault, C Pinçon, R Spear, M Le Roux, R Azzaoui, S Haulon

16: Short-term Outcome of Spinal Cord Ischemia (SCI: after Endovascular Repair (ER: of Thoracoabdominal Aortic Aneurysm (TAAA)
Vascular Center Malmö, Sweden
H Holm, N Dias, B Sonesson, T Resch

17: Performance of Bridging Stent-grafts in Fenestrated and Branched Aortic Endografting
Department of Vascular Surgery, St. Franziskus Hospital and University Clinic of Muenster, Germany
G Panuccio, T Bisdas, B Berekoven, G Torsello, M Austermann

18: Incidence and Outcomes of Severe Renal Impairment Following Ruptured Abdominal Aortic Aneurysm Repair
Cambridge Vascular Unit, Cambridge, United Kingdom
GK Ambler

19: Angulation of the C-Arm during Complex Endovascular Aortic Procedures Increases Radiation Exposure to the Head
Academic Department of Vascular Surgery, London, United Kingdom
MA Albayati, S Kelly, D Gallagher, R Dourado, R Salter, P Gkoutzious, T Carrell, S Abisi, B Modarai
SCIENTIFIC SESSION 3 - Wednesday 24 September 09:30-11:00

14: Abdominal Aortic Aneurysm Diameters: A Study on the Discrepancy between Inner to Inner and Outer to Outer Measurements

University Hospital of North Staffordshire, United Kingdom
L Meecham, R Evans, P Buxton, K Allingham, M Hughes, J Asquith, S Rajagopalan, J Fairhead, AD Pherwani

Introduction:
The NHS Abdominal Aortic Aneurysm Screening Program (NAAASP) is now fully operational in England. The current method of sizing aortas on screening with ultrasound (US) is to measure the maximal anterior to posterior (AP) inner to inner (ITI) aortic wall diameter in cross and transverse-section, similar to the Multicentre Aneurysm Screening Study (MASS). This is in contrast to the AP outer to outer (OTO) wall measurement used in the UK Small Aneurysm Trial. It is recognised that the ITI measurements are smaller than OTO measurements and our primary aim was to calculate the absolute difference in AP ITI and OTO measurements across varying aortic diameters. We postulate that this difference is excluding patients with sub-aneurysmal aortas from the NAAASP, therefore our secondary aim was to estimate the potential number of patients lost from the screening program.

Methods:
Since the implementation of our local NAAASP in April 2012, patients out-with the screening programme that undergo US of abdominal aortas at the vascular institution have both ITI and OTO measurements recorded. These were compared retrospectively and analysed for variability at threshold sizes of AAA using the statistical package SPSS®.

Results:
From May 2012 to October 2013, of 806 abdominal aortic scans performed, 452 contained both ITI and OTO measurements. The majority (364, 81%) were performed on men with the mean age of 78 years. The mean difference between ITI and OTO measurements was 4.21mm (P<0.001). There was no statistical difference between the genders (P=0.348). Thresholds were created for statistical analysis between different ITI & OTO aortic diameters, these were <3cm; 3.1-4cm; 4.1-5cm and >5cm. There was no significant difference between the means at each threshold size for ITI diameter (P=0.758). Over two years, 15,447 men have undergone US screening within the Staffordshire & South Cheshire AAA screening program. Of these, 177 (1.14%) had sub-threshold ITI aortic diameters between 2.6cm and 2.9cm this equates to 2,384 men from the NAASP in the year 2012-2013.

Conclusion:
We advocate lowering the threshold for entry into a surveillance program of screening for AAA, to an ITI diameter of 26mm rather than the current 30mm. An alternative cost effective way is to re-screen this small subgroup at longer intervals, perhaps at 5 or 7 years. The inclusion of smaller sizes requires further investigation by large-scale studies, possibly by the NAAASP itself.
SCIENTIFIC SESSION 3 - Wednesday 24 September 09:30-11:00

15: Renal Outcomes Following Fenestrated and Branched Endografting

_Hospital Cardiologique CHRU Lille, France_

T Martin Gonzalez, B Maurel, J Sobocinski, A Hertault, C Pinçon, R Spear, M Le Roux, R Azzaoui, S Haulon

**Introduction:**
The purpose of this study was to analyze immediate and long-term renal outcomes (renal function and renal events: after fenestrated (FEVAR) and branched endovascular aortic aneurysm repair (BEVAR).

**Methods:**
All FEVAR and BEVAR performed between October 2004 and October 2012 were included in this study. Postoperative acute renal failure (ARF) was defined and classified according to the RIFLE criteria. Renal volume (calculated with a 3D workstation: and eGFR (estimated with the MDRD formula) were evaluated before the procedure, before discharge, 12 months after and yearly thereafter. Renal stent occlusion, dissection, fracture, stenosis, kink, renal stent related type III endoleak and renal stent secondary intervention were all considered “renal composite events” and analyzed. A time-to-event analysis was performed for renal events and renal secondary interventions.

**Results:**
During the study period, 225 patients were treated with FEVAR and BEVAR. Renal target vessels (n=427) were perfused by fenestrations (n=274) or branches (n=53). Median follow-up was 2.4 years (2.2-2.6). FEVAR and BEVAR were associated with similar mean renal artery diameter and renal artery angulations. Preoperative renal stenosis rate was higher with BEVAR (p<0.021). Technical success was achieved in 96.4% of patients. Postoperative ARF was depicted in 64 patients (29%). requiring transient hemodialysis in 12 patients (5.3%) and permanent hemodialysis in one case (0.44%). An additional 4 patients (1.9%) required hemodialysis during follow-up. Significant decrease in right renal volume (17.07 cm3) 95% confidence interval (CI), 12.52-21.67). left renal volume (24.55cm3) 95% CI, 19.14-29.97: and eGFR (12.54 ml/min per 1.73m2) 95% CI, 8.43-16.66: were observed during follow-up (p<0.000). The 30-day, 1-year and 5-year freedom from renal composite event was 98.1% (95% CI, 97.2%-99%). 95% (95% CI, 93.5%-96.5%) and 87.5% (95% CI, 84.7%-90%). Freedom for renal composite events was significantly higher in FEVAR (p<0.048) compared to BEVAR. The 30-day, 1-year and 5-year freedom from renal occlusion was 99.5% (95% CI, 99%-100%). 98.5% (95% CI, 97.6%-99.4%) and 93.8% (95% CI, 91.7%-95.9%) after FEVAR and BEVAR (NS). Median time to renal related secondary intervention was 450 days (Q1-Q3, 124-991.5) for both procedures.

**Conclusion:**
FEVAR and BEVAR are durable options for the treatment of complex aortic aneurysms and are associated with a low renal morbidity rate. Freedom for renal composite events was significantly higher with FEVAR. Renal volume is as accurate as eGFR to depict renal dysfunction during follow-up.
SCIENTIFIC SESSION 3 - Wednesday 24 September 09:30-11:00

16: Short-term Outcome of Spinal Cord Ischemia (SCI: after Endovascular Repair (ER: of Thoracoabdominal Aortic Aneurysm (TAAA):
Vascular Center Malmö, Sweden
H Holm, N Dias, B Sonesson, T Resch

Introduction:
Objective: To analyze the short-term outcome of SCI after ER of TAAA.

Methods:
All patients undergoing ER with branched stent-grafts for Crawford class I-IV TAAA between 2008-2013 were prospectively registered. Retrospective review of patient charts, pre-, intra and postoperative imaging was performed. Preoperative demographics and comorbidities were noted. Pertinent arterial anatomy as well as perioperative and postoperative variables were recorded.

Results:
65 patients (49 males, 69 (IQR: 64 – 72: y.o.) were identified. 45 underwent elective repair while 20 were acute. The patients were grouped anatomically according to Crawford class: 11 type I, 25 type II, 15 type III and 14 type IV. 30 day mortality was 7.7 % (2 elective and 3 ruptures: including one intraoperative death. 21 patients (33 %) developed SCI: 2 type I (20 %), 13 type II (52%). 3 type III (20 %). 3 type IV (21 %).
After the perioperative period, 14 patients had total (n=5) or partial (n=9) recovery from SCI. Some permanent SCI deficit beyond 30 days (n=15, 25%) was more common for type II TAAA (p=0.06). elective patients (p=0.046). longer operative time (p=0.028). larger bleeding (p=0.041: and higher contrast volume use (p=0.022). All patients with permanent SCI had received spinal drainage.

Conclusion:
ER of TAAA has low perioperative mortality compared to contemporary open repair series. However, SCI incidence is high. More extensive repair, longer operation, more blood loss and use of contrast seem to be associated with higher risk of SCI. An acute repair does not lead to increased SCI risk. Further analysis is required on the predictive factors of SCI. Improved patient selection and better peri- and operative management might improve outcomes.
SCIENTIFIC SESSION 3 - Wednesday 24 September 09:30-11:00

17: Performance of Bridging Stent-grafts in Fenestrated and Branched Aortic Endografting

Department of Vascular Surgery, St. Franziskus Hospital and University Clinic of Muenster, Germany

G Panuccio, T Bisdas, B Berekoven, G Torsello, M Austermann

Introduction:
Bridging stent-grafts (BSGs) are used to connect the target vessel with the main body during fenestrated or branched aortic endografting (f/bEVAR). At present, no dedicated device is available as BSG and different combinations of stent-grafts and relining stents have been proposed. Aims of this study were to assess the performance of the BSGs and to address potential risk factors for poor outcomes.

Methods:
Between 01/2010 and 03/2014, 150 consecutive patients underwent f/bEVAR and 515 target vessels were revascularized. Main measure outcome was any BSG-related complication. A logistic regression analysis including target vessel type, type of endografting (fenestrated or branched) and type of BSG identified potential risk factors for the main measure outcome.

Results:
The main body consisted of only fenestrations in 72 patients (48%). only branches in 68 patients (45%) and a combination of both in 10 patients (7%). Fenestrated devices were implanted mainly by Crawford type 4 and juxtarenal aneurysms (n= 57, p < 0.001). The target vessels included 104 celiac-, 139 superior mesenteric-, 268 renal- and 3 other arteries. The technical success amounted to 99,6% (511 out of 515 target vessels). Ballon expandable BSG were mainly used (n 490, 95,7%) and in 329 was relining stent combined (64,4%). Main reasons for technical failure were the dislocation of the main body (n=2) and unsuccessful cannulation (n=2). One could be revascularized by means of the periscope technique. Three renal arteries in two patients (0.5%) occluded perioperatively. After a mean follow-up of 11 months (range 1-41), 5 other renal artery occlusions (0.9%) occurred and 17 BSG-reinterventions (3%) were performed (Figure) residual distal type 1 endoleak celiac artery after renal extension). No SMA occlusion was reported. The patency and freedom-from-reintervention rate at 2 years amounted to 97% and 93% respectively. Revascularization of the renal artery and use of a branched main body were the only independent risk factors for occlusion (odds ratio: 11.7; 95% CI: 1.4- 91.9 P=0.03 and 3.4; 95% CI: 0.9-13.3 P=0.03, respectively). The branched main body was also risk factor for reintervention (odds ratio 4.0; 95% CI:1.2-13.4 P=0.002). Of note, use of relining stents seems not to prevent BSG-related complications.

Conclusion:
The currently used BSGs are showed low occlusion and reintervention rates. Outcomes after bEVAR and revascularization of the renal arteries might be improved by means of a dedicated device. SMA-related complications are rare or probably underestimated due to the associated mortality.
SCIENTIFIC SESSION 3 - Wednesday 24 September 09:30-11:00

18: Incidence and Outcomes of Severe Renal Impairment Following Ruptured Abdominal Aortic Aneurysm Repair

Cambridge Vascular Unit, Cambridge, United Kingdom

GK Ambler, H Lee, N Al-Zuhir, PD Hayes, PA Coughlin, K Varty, MS Gohel, JR Boyle

Introduction:
Renal dysfunction following ruptured abdominal aortic aneurysm (rAAA) repair is common and multifactorial. It has been suggested that some of the potential benefits of emergency endovascular repair (EVAR) may be lost, relative to open repair (OSR), owing to the increased risk of contrast-induced nephropathy in this patient group, but little firm evidence exists. Recently, a standard definition of renal dysfunction after EVAR, the Aneurysm Renal Injury Score (ARISe), has been proposed to facilitate standardised reporting and thus improve our knowledge of this issue.

Methods:
Data were collected retrospectively on renal outcomes of all patients treated for infra-renal rAAA in a single tertiary referral centre since the availability of routine out of hours emergency EVAR. The ARISe score was used to describe the degree of renal dysfunction and factors which correlated with poor renal outcomes were assessed.

Results:
Two hundred and five patients were treated for infra-renal rAAA between January 2006 and April 2014. One hundred and twenty-five were treated with OSR, whereas eighty were treated with EVAR. Patients treated with EVAR were older than those treated with OSR (mean age 77 vs. 74 years respectively, P=0.02), but there was no significant difference in pre-operative serum creatinine between the two groups (mean creatinine 144 μmol/L in both groups, P=0.97). Patients treated with OSR were significantly more likely to develop ARISe score 3 or greater renal injury (38% vs. 24%, P<0.05), and there was a trend towards an increased requirement for temporary or permanent renal replacement therapy (RRT), though this did not reach significance (31% vs. 21%, P=0.15). Increased pre-operative serum creatinine was strongly associated with a requirement for RRT postoperatively (P<0.001). Age, sex, type of endograft and pre-operative CT scanning were not associated with differences in renal outcomes. Patients suffering ARISe score 3 or greater renal impairment had significantly higher mortality at both 30 days and 12 months (32% vs. 18%, P=0.05 and 24% vs. 49%, P=0.001 respectively).

Conclusion:
In this large case series of high risk patients, OSR was associated with a significantly higher incidence of severe renal impairment compared to EVAR, despite the increased dose of contrast involved in endovascular therapy and the older age of these patients. Severe renal impairment was in turn associated with higher mortality rates.
19: Angulation of the C-Arm during Complex Endovascular Aortic Procedures Increases Radiation Exposure to the Head

*Academic Department of Vascular Surgery, London, United Kingdom*

MA Albayati, S Kelly, D Gallagher, R Dourado, R Salter, P Gkoutzious, T Carrell, S Abisi, B Modarai

**Introduction:**
Reliance on endovascular techniques and increasing procedural complexity means that the vascular interventionalist is exposed to significant radiation doses, particularly to unprotected body parts. We aimed to directly measure head and body radiation exposure to the operating team during complex endovascular aortic procedures.

**Methods:**
Between October 2013 and July 2014, consecutive elective branched and fenestrated endovascular aortic repair (EVAR) procedures performed in a hybrid operating theatre were prospectively analysed. Body (over-lead and under-lead) and head doses were measured for the primary (PO) and assistant operator (AO) using electronic dosimeters. Fluoroscopy and digital subtraction angiography (DSA) acquisition times, C-arm angulation, dose area product (DAP) and operator height were recorded. Data were analysed using Mann-Whitney U test and linear regression modelling.

**Results:**
Seventeen cases were analysed (Crawford II [n=4], Crawford III [n=2], Crawford IV [n=11]), with a median operative time of 280 (IQR 200-330) minutes. Median age was 76 (71-81) years; median body mass index was 28 (25-32) kg/m2; 82% were male. Stent grafts incorporated branches only (n=4), fenestrations only (n=10) or a mixture of branches and fenestrations (n=3). A total of 21 branches and 37 fenestrations were cannulated and stented.

Head dose was significantly higher in the PO compared with AO (median 54 (24-130) μSv versus 15 (7-43) μSv, respectively; p=0.022), as was over-lead body dose (median 80 (37-163) μSv versus 32 (6-48) μSv, respectively; p=0.003). The corresponding under-lead (“total body effective”) doses were similar between operators (p=0.222). Primary operator height (r²= -0.649; p=0.042), DSA acquisition time in left anterior oblique (LAO) position (r²=0.629; p=0.026) and degree of LAO angulation (r²=0.648; p=0.019) were independent predictors of greater PO head dose.

**Conclusion:**
The head is an unprotected area that receives a significant radiation dose during complex EVAR. The deleterious effects of exposure to this area are not fully understood. Operators should be cognisant of head exposure increasing with angulation of the C-arm and limit this manoeuvre.
SCIENTIFIC SESSION 4 Wednesday 24 September, 11:30-13:00
Chair: Fabien Thaveau, Martin Delle

Keynote speaker: Michael Jacobs, Netherlands: Why does Spinal Cord Ischemia happen?

20: Impact of Early Pelvic and Lower Limbs Reperfusion and Aggressive Perioperative Management on Spinal Cord Ischemia during Thoraco-abdominal Aortic Aneurysm Endovascular Repair
CHRU Lille, France

21: Early- and Long-term Outcome after Surgical Suprarenal Aortic Fenestration in Patients with Complicated Acute Type B Aortic Dissection
Semmelweis University Department of Vascular Surgery, Budapest, Hungary
Z Szeberin, E Dósa, M Fehérvári, C Csoyay-Novák, N Pintér, L Entz

22: Long-term Patency of Renal and Visceral Vessels after open Thoraco-abdominal Aortic Replacement
Division of Vascular Surgery, Dept of Cardiothoracic & Vascular Surgery, University Medical Center, Mainz, Germany
B Dorweiler, M Youssef, A Neufang, F Jungmann, C Dueber, CF Vahl

23: Diagnostic Performance of 18F-FDG-PET/CT in Vascular Graft Infection
University Hospital of Zurich, Switzerland
BR Sah, L Husmann, A Scherrer, D Mayer, B Hasse

24: Preliminary Results from a Multicenter Registry of Infection in Abdominal Aortic Endovascular repair (R.I. EVAR)
Vascular and Endovascular Surgery Division, Dept of Surgery “Paride Stefanini”, Policlinico Umberto I, “Sapienza” University of Rome, Italy
L Capoccia, D Menna, A Esposito, P Sirignano, AR Rizzo, W Mansour, E Sbarigia, F Speciale

25: The Influence of Diabetes Mellitus and Insulin Use on the Prevalence of AAA among Patients Referred for Peripheral Artery Disease
Martini Hospital Groningen, Netherlands
RM Krol, JIL Wegerif, GJ Glade, BPJA Keller, JC Breek

26: High Frequency of AAA in the North of Sweden not Explained by Higher AAA Prevalence Among Siblings or Smoking
Dept of clinical science and education, Karolinska Institutet at Sodersjukhuset Sweden
J Forsberg, A Linné, K Leander, D Lindström, R Hultgren
SCIENTIFIC SESSION 4 Wednesday 24 September, 11:30-13:00

20: Impact of Early Pelvic and Lower Limbs Reperfusion and Aggressive Perioperative Management on Spinal Cord Ischemia during Thoraco-abdominal Aortic Aneurysm Endovascular Repair

CHRU Lille, France


Conflicts of interest:
Stephan Haulon is a consultant for Cook Medical and GE Healthcare
Adrien Hertault is a consultant for GE Healthcare

Introduction:
Spinal cord ischemia (SCI) is a devastating complication following thoracoabdominal aortic aneurysm (TAAA) endovascular repair. In an attempt to reduce its occurrence, we have modified our implantation protocol in January 2010 by withdrawing all large sheaths from the iliac arteries as soon as possible during the procedure. In addition, we have also modified our perioperative protocol (aggressive blood and platelet transfusion, median arterial pressure monitoring >80mmHg, and systematic cerebrospinal fluid drainage except for type 4 TAAA).

Methods:
Between October 2004 and December 2013, we have performed 204 TAAA endovascular repairs with custom made devices manufactured with branches and fenestrations to perfuse the visceral vessels. Data from all patients were prospectively collected in an electronic database. We compared the early outcomes of patients treated before (group 1, 43 patients) and after (group 2, 161 patients) modification of our implantation and perioperative protocols.

Results:
Group 1 and 2 patients had similar comorbidities (median age at repair 70.9 years [65.2-77]). aneurysm characteristics (median diameter 58.5 mm [53-65]). and length of procedure (median 190 min [150-240]). The in-hospital mortality rate was 11.6 % in group 1 vs 5.6 % in group 2 respectively (RR = 0.481 [0.17-1.36]; p = 0.09). The spinal cord ischemia rate was 14% vs 1.2% (RR = 1.148 [1.016-1.296]; p = 0.001) respectively. If we exclude Type 4 TAAA from this analysis, the spinal cord ischemia rate was 25% (6/24 patients) in group 1 vs 2.1% (2/95 patients) in group 2 (RR=1.306 [1.034-1.648]; p <0.001) respectively.

Conclusion:
Early restoration of arterial flow to the pelvis and lower limbs and aggressive perioperative management significantly reduces SCI following TAAA endovascular repair. With this modified approach, extensive TAAA endovascular repairs are associated with low rates of SCI.
21: Early- and Long-term Outcome after Surgical Suprarenal Aortic Fenestration in Patients with Complicated Acute Type B Aortic Dissection

Semmelweis University Department of Vascular Surgery, Budapest, Hungary

Z Szeberin, E Dósa, M Fehérvári, C Csoyay-Novák, N Pintér, L Entz

Introduction:
It is important to compare new methods (e.g. stent graft implantation) to established techniques and there is a lack of data about surgical aortic fenestration. Late death is frequently related to aortic rupture, so new techniques – such as endograft coverage of the primary tear – are welcome to avoid this late complication.

The purpose of this retrospective cohort study was to determine the early- and long-term mortality and morbidity of surgical suprarenal aortic fenestration as well as reveal risk factors associated with shorter survival time in patients with complicated acute type B aortic dissection.

Methods:
Forty-two patients (33 men, mean age: 55 ± 11 year) were treated with surgical suprarenal aortic fenestration between 2002 and 2008. Follow-up visits were scheduled at 4 weeks, 3-6 and 12 months after the surgery and annually thereafter. In our follow-up study we investigated clinical data, physical examination, chest X-ray and CT angiography findings.

Results:
The indication of surgery was malperfusion in 11 (26%). (5 lower extremity /12%/ and 6 visceral /14%/), progressive aortic dilatation in 4 (10%), significantly narrowed true lumen in 6 (14%) and unsettling pain or uncontrollable hypertension despite medical therapy in 21 cases (50%). The 30-day mortality was 21.4% (2 multiple organ failures, 2 heart failures, 3 pneumonias, 1 intestinal necrosis, 1 major haemorrhage). The mean follow-up time was 84 ± 40 months. The 5-year survival rate was 70.6%. Eight patients (19%) died over the follow-up period (5 aortic ruptures, 1 aortic rupture after resection of a large aneurysm of the aortic isthmus, 2 acute myocardial infarctions). None of the patients became paraplegic after the surgery. Further surgery or stenting was indicated in 9 cases (21%). Patients with malperfusion on admission had significantly shorter survival time than those without (P=0.0209).

Conclusion:
This study presents long-term experience of the largest cohort of patients in a single centre with complicated acute type B aortic dissections treated with open suprarenal aortic fenestration. Surgical suprarenal aortic fenestration can be accomplished with low paraparesis and acceptable early and late mortality rates. Late mortality frequently relates to thoracic aortic rupture, therefore these patients require close observation. Stent graft coverage of the primary entry tear may decrease the late aortic related deaths, but suprarenal fenestration stays an option for cases not suitable for endovascular methods.
SCIENTIFIC SESSION 4 Wednesday 24 September, 11:30-13:00

22: Long-term Patency of Renal and Visceral Vessels after open Thoraco-abdominal Aortic Replacement

Division of Vascular Surgery, Dept of Cardiothoracic & Vascular Surgery, University Medical Center, Mainz, Germany

B Dorweiler, M Youssef, A Neufang, F Jungmann, C Dueber, CF Vahl

Introduction:
In TAAA a paradigm-shift is observed from open surgery towards total endovascular aortic repair using fenestrated and branched endografts. Whereas outcome after open replacement in terms of mortality and paraplegia has been evaluated in extensu, no studies exist addressing long-term patency of visceral and renal vessels. In order to enable comparison of target vessel patency between open and endovascular treatment, we analyzed our series of open thoracoabdominal aortic replacements.

Methods:
Our vascular surgery database was screened for patients that received open thoracoabdominal aortic replacement between 1998 and 2012 and patient records were analyzed retrospectively. Only patients were included with a minimum number of 3 imaging scans (CT-/MR-Angiography) preoperatively, postoperatively and at least 6 months follow-up) and imaging scans were evaluated for graft/vessel patency.

Results:
37 Patients (mean age 65±10 years, 14 women) were identified that have been operated for aneurysms of Crawford Type I (1), II (9), III (8), IV (17) and Safi V (2). A total of 131 vessels were revascularized by either patch inclusion (n=105) or selective revascularization (bypass/transposition, n=26) and the respective cumulative patency rates for patch/selective revascularization were 96,3%/100% at 5 years and 83,1%/100% at 10 years. In addition, a trend for better performance of selective revascularization (bypass/transposition) was evident as all vessel occlusions were observed in cases of patch-inclusion, whereas all selectively revascularized vessels were patent. The respective patency rates for the celiac trunc, superior mesenteric artery, right and left renal artery were 100%, 100%, 96,8% and 90,7% at 5 years.

Conclusion:
In our series of open thoracoabdominal aortic replacement, excellent patency rates for revascularized renal and visceral vessels were observed during long-term follow-up. We were able to provide a reference value of long-term target vessel patency that can and should be taken into account for the judgement of the efficacy of endovascular repair in TAAA.
23: Diagnostic Performance of 18F-FDG-PET/CT in Vascular Graft Infection

*University Hospital of Zurich, Switzerland*

BR Sah, L Husmann, A Scherrer, D Mayer, B Hasse

**Introduction:**

The aim of this study was to evaluate the diagnostic accuracy of positron emission tomography/computed tomography with 18F-fluorodeoxyglucose (FDG-PET/CT) in a population with suspected graft infection and to validate a new diagnostic imaging score for FDG-PET/CT.

**Methods:**

FDG-PET/CT was performed prospectively in 30 patients with suspected graft infection, in 13 of them prior to start of antimicrobial treatment. Diagnostic accuracy was assessed using a new 5-point-likert-scale for visual grading and by using a binary score. SUV max. values were calculated for quantitative measurements of metabolic activity, and cut-off points were calculated using receiver operator curve (ROC). The standard of reference was a microbiological culture, obtained after open biopsy or graft explantation.

**Results:**

Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy of PET/CT for the diagnosis of graft infections was 100 %, 86 %, 96 %, 100 %, and 97 %, respectively. Using the new scale, FDG-PET/CT correctly recognized 23 patients with graft infection, one patient was diagnosed false-positive, six patients were correctly classified as true-negative, and no patients were rated false-negative. Using a previously established binary score, sensitivity, specificity, PPV, NPV, and accuracy was 96 %, 86 %, 96 %, 86 % and 93 %, respectively. ROC analysis suggested a SUV max. cutpoint value of 3.7 to differentiate between infected and non-infected grafts (p < 0.001). Additionally, FDG-PET/CT provided a conclusive clinical diagnosis in six out of seven patients without graft infection (i.e. other sites of infections or malignancy).

**Conclusion:**

The diagnostic accuracy of FDG-PET/CT in the detection of aortic graft infection is high. A newly introduced visual grading score and early imaging prior to antimicrobial treatment may further improve the diagnostic accuracy.
24: Preliminary Results from a Multicenter Registry of Infection in Abdominal Aortic Endovascular repair (R.I. EVAR)

Vascular and Endovascular Surgery Division, Dept of Surgery “Paride Stefanini”, Policlinico Umberto I, “Sapienza” University of Rome, Italy
L Capoccia, D Menna, A Esposito, P Sirignano, AR Rizzo, W Mansour, E Sbarigia, F Speziale

Introduction:
Objective: to report on epidemiology, risk factors, diagnosis, treatments and outcomes in a series of patients previously treated by EVAR and with an infection diagnosed from 1 to 72 months after endograft implantation, collected by the Italian Registry of Infection in EVAR (R.I.-EVAR).

Methods:
From June 2012 to October 2013 twenty-six cases of abdominal aortic endograft infection were recorded. Cases collected were available for patients submitted to EVAR implantation from January 2004 to June 2013. Comparative perioperative and long-term mortality rates analysis was performed respect to type of infection treatment, presence of aorto-enteric fistula, type of endograft employed, presence of risk factors for infection. Significance was set at p<0.05.

Results:
Mean time from EVAR treatment to infection diagnosis was 20.5±20.3 months (range 1-72). In 6 cases (23.1%) an aorto-enteric fistula (AEF) was detected. Positive tissue cultures were found in 76.9% of patients. More than 1 infectious agent was found in 19.3% of cases. EVAR infection treatment was conservative in 4 cases, endovascular in 2. Endograft excision was performed in 10 cases by conventional treatment (aortic stump+extra-anatomic bypass) and in 10 cases by in situ reconstruction (cryopreserved allograft or rifampin-soaked silver Dacron graft). Overall mortality was 50% in all treatment groups. 30-day mortality was 38.4% (10/26 cases). Four patients with AEF died in the first month following treatment (66.6%). Mean time from infection treatment to infection-related death was 1.25±0.62 months. Suprarenal endografts required a more proximal aortic cross-clamping for removal and were burdened by higher mortality rates than infrarenal endografts (p=0.01). No significant difference was encountered in 30-day and overall mortality respect to presence of risk factors and presence of AEF. Total survival after infection treatment in 13 cases was 27.9±22.4 months (range 2-74).

Conclusion:
EVAR infection diagnosis is burdened by extremely high mortality rates. Prospective registries could help monitoring outcomes in EVAR infection patients and possibly developing new surveillance protocols. Preventive treatment strategies are needed and should be developed in close collaboration with industries.
SCIENTIFIC SESSION 4 Wednesday 24 September, 11:30-13:00

25: The Influence of Diabetes Mellitus and Insulin Use on the Prevalence of AAA among Patients Referred for Peripheral Artery Disease
Martini Hospital Groningen, Netherlands
RM Krol, JIL Wegerif, GJ Glade, BPJA Keller, JC Breek

Introduction:
The prevalence of abdominal aortic aneurysm (AAA) is known to be less among patients with diabetes mellitus (DM). This is supposed to be a result of a greater arterial wall thickness which reduces wall stress. The question is whether or not this protective effect can be found among patients with suspected peripheral artery disease (PAD) who were referred to the vascular surgeon.

Methods:
From January 2008 till December 2012, 1956 patients with suspected PAD were referred to the vascular surgeon. After exclusion, 1697 patients, 971 men, with an average age of 68 years, were successfully screened with duplex for AAA. Their relevant patient characteristics were retrospectively gathered (sex, age, smoking habits, cardiovascular or cerebrovascular history, hypertension, DM, COPD, dyslipidemia, medication use, Rutherford classification and ankle brachial index).

Results:
In the screened group, 24,5% has DM and 38% of these patients use insulin. The prevalence of AAA in the screened group is 7,0% (118 patients). Among the patients with an AAA 19,5% has DM (23 patients). Four patients with an AAA use insulin. Male sex (OR3,1 CI 1,95-4,98). higher age (OR11,53 CI 8,0-34,73) and smoking (OR2,9 CI 1,82-4,73) had an independent positive influence on the variability and the prevalence of AAA in a multivariate analysis. Insulin use appears to have an independent and significant negative influence on the development of AAA (OR0,3 CI 0,12-0,90).

Conclusion:
In the screened group, DM and the use of oral antidiabetic agents have no significant relationship with the presence of AAA. However, AAA is significantly less present among those patients who use insulin. The protective effect of DM on the prevalence of AAA, as seen in the literature, might actually be dependent on the use of insulin. This effect could be explained by the fact that patients who use insulin usually have more progressed disease, which has had more influence on the vascular status of the patient. Another possibility is that the lower prevalence of AAA in patients with DM, described in the literature, does not depend on the disease itself, but on the effects of insulin use.
SCIENTIFIC SESSION 4 Wednesday 24 September, 11:30-13:00

26: High Frequency of AAA in the North of Sweden not Explained by Higher AAA Prevalence Among Siblings or Smoking

Dept of clinical science and education, Karolinska Institutet at Sodersjukhuset Sweden
J Forsberg, A Linné, K Leander, D Lindström, R Hultgren

Introduction:
The frequency of Abdominal Aortic Aneurysm (AAA) is higher in the north region of Sweden compared to the south with a 38% higher incidence for AAA in men. Smoking is less common in the north and can subsequently not be responsible for the increased risk. A strong hereditary trait has been suggested as an explanation to the regional differences in disease pattern. Organized screening for AAA in siblings is currently not arranged in either region. Our aim was to investigate if siblings to AAA-patients in the north part of Sweden have a higher prevalence of AAA compared to siblings in the Stockholm region (mid).

Methods:
All patients treated for AAA between Jan 2008- Aug 2012 at two hospitals covering a large county of the north were screened for siblings (n=483). The living siblings residing in the north were offered an ultrasound scan of the abdominal aorta preceded by a structured telephone interview regarding health and medications. Ultrasound was performed by one validated examiner using both LELE and OTO-technique. The result of the ultrasound-examination was compared to the previously published results of the prevalence of AAA in siblings in Stockholm (mid Sweden).

Results:
379 siblings were included of which 8 had undergone aortic repair and 8 had a known AAA under surveillance. 363 were screened with ultrasound. The prevalence of AAA in all siblings was 34/379 (10%, brothers 14%, sisters 6%). There was no difference in the prevalence of AAA in siblings from north compared to mid region (p=0.75). Smoking was as common in both regions among siblings with AAA.

Conclusion:
Our data do not support a strong hereditary trait for AAA in the north part of Sweden compared to other regions. The results reinforce the importance of developing structured screening protocols for first degree relatives to AAA patients, since the prevalence in siblings is strikingly high as compared to the prevalence of AAA in the general population.
Keynote Speaker: To be confirmed: Angiosome Concept - Hypothesis or Reality?

27: Autologous Alternative Veins do not Provide Better Mid-term Outcomes than Prosthetic Conduits for Below Knee Bypass when Great Saphenous Vein is Unavailable
University of Pittsburgh Medical Center, PA, USA
ED Avgerinos, A Naddaf, U Sachdev, D Doucet, A Mohapatra, SA Leers RA Chaer MS Makaroun

28: Hide and seek: Does the TBI Allow for Earlier Recognition of PAD in Diabetic Patients?
Academic Center Amsterdam, Netherlands
R Stoekenbroek

29: Benefit of Revascularization in Nonagenarians with Lower Limb Ischaemia is Limited by High Mortality
Department of Vascular Surgery, Helsinki University Central Hospital, Finland
E Saarinen, S Vuorisalo, P Kauhanen, A Albäck, M Venermo

30: Angiosome Guided Surgical Revascularization; the Truth and Falsehood
Sejong General Hospital, Bucheon, Korea
Kilsoo Yie

31: One Bout of Calf Raises Induces Improvement of Mitochondrial Function in Claudicants
Dept of Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Norway
M van Schaardenburgh, M Wohlwend, O Rognmo, E Mattsson

32: Influence of Microbiology and wound scores in the Diabetic Foot Syndrome Outcome
Hospital Universitario San Cecilio, Granada, Spain

33: The Importance of Angiosome Concept on Ulcer healing: Percoutaneous Transluminal Angio-plasty vs. Surgical Bypass in Bellow the Knee Arteries
Department of Vascular surgery, Central University Hospital of Helsinki, Finland
K Spillerová, F Biancari, A Leppäniemi, A Albäck, M Söderström, M Venermo
SCIENTIFIC SESSION 5 Wednesday 24 September 14:00-15:30

27: Autologous Alternative Veins do not Provide Better Mid-term Outcomes than Prosthetic Conduits for Below Knee Bypass when Great Saphenous Vein is Unavailable

University of Pittsburgh Medical Center, PA, USA
ED Avgerinos, A Naddaf, U Sachdev, D Doucet, A Mohapatra, SA Leers RA Chaer MS Makaroun

Introduction:
Ipsilateral, single segment great saphenous vein (GSV) remains the optimal conduit for below knee bypass to treat critical limb ischemia. There is a need to better define the benefit of alternative autologous vein (AAV) segments over contemporary prosthetic conduits in patients in whom GSV is not available.

Methods:
Patients who underwent bypass to below-knee targets for chronic arterial occlusive disease between 2007-2011 were retrospectively reviewed and categorized in three groups) GSV; AAV (small saphenous veins, arm veins or spliced vein segments); Prosthetic. The primary outcome was graft patency (primary, assisted primary, secondary). Secondary outcome was limb salvage. Cox regression models were used to assess the effect of baseline predictors. Results were considered statistically significant when p-value was <0.05.

Results:
423 infrainguinal bypasses to below knee target vessels (popliteal 122 (29%), tibial 238 (56%), pedal 63 (15%): were analyzed. 258 (61%) patients received a single segment GSV, 118 (28%) an AAV and 47 (11%) a prosthetic conduit. Postoperative outcomes had no significant differences among groups. Primary patency at 2 years for the GSV, AAV and prosthetic groups was 47%, 26% and 40% respectively. AAV demonstrated the poorest primary patency rates, though non statistically significant compared to the prosthetic group (P=.068). Primary assisted patency at 2 years for the GSV, AAV and prosthetic groups was 70%, 52% and 45% respectively. The primary-assisted patency of GSV was significantly superior to both AAV (P=.008) and prosthetic grafts (P=.002), which did not differ significantly from one another (P=.479). Secondary patency at 2 years for the GSV, AAV and prosthetic groups was 75%, 57% and 46% respectively and again AAV and prosthetic grafts did not differ significantly from one another (P=.212). In cox regression analysis primary, primary assisted and secondary patency were positively predicted by GSV (HR 1.65, P=.001; HR 1.65, P=.006; HR 1.72, P=.006 respectively: when compared to AAV, but there was no difference between AAV and prosthetic grafts. Neither target artery (popliteal vs tibial/pedal) or runoff score, nor statins showed any predictive value. Limb salvage at 2 years for the GSV, AAV and prosthetic groups was 87%, 77% and 74% respectively with no significant differences among groups.

Conclusion:
When GSV is not available, alternative autologous vein conduits do not offer a significant patency advantage in midterm follow up over prosthetic bypasses for below knee targets.
28: Hide and seek: Does the TBI Allow for Earlier Recognition of PAD in Diabetic Patients?
*Academic Center Amsterdam, Netherlands*
R Stoekenbroek

**Introduction:**
It is assumed that in diabetic patients, calcification of the ankle arteries may cause unreliable measurement of the ankle-brachial index (ABI). Clinical guidelines recommend the toe-brachial index (TBI) as an alternative in diabetic patients with ‘falsely elevated’ ankle pressures, arbitrarily defined as an ABI >1.4. Considering that arterial calcification is also common among diabetics with an ABI <1.4, and may thus result in a ‘falsely normal’ ABI and subsequent underdiagnosis of PAD. We investigated whether diabetics have a lower TBI at similar ABI as compared to non-diabetics, and if the TBI may enable earlier detection of PAD in diabetics.

**Methods:**
We randomly selected 326 diabetic and non-diabetic patients (512 legs) with suspected PAD from our vascular lab registry. Mean difference between ABI and TBI was compared for diabetics and non-diabetics. In addition, a Bland-Altman plot was constructed with 95% limits of agreement established from non-diabetics. Separate analyses were performed including only patients with Fontaine stages 2 or 3, or an ABI within the normal reference range (0.91-1.4).

**Results:**
Diabetic and non-diabetic patients were similar with regard to age and sex distribution. Median ABI did not differ between both groups. (Table 1: Median TBI was higher in diabetics, but overall the difference between ABI and TBI was similar. Remarkably, in patients with Fontaine 2 or 3, mean difference between ABI and TBI was larger for non-diabetics (mean difference -0.11, 95% CI -0.20 to -0.03; p=0.008). Among patients with a normal ABI, both the TBI and the difference between ABI and TBI were similar for diabetics and non-diabetics. (Table 1) The difference between ABI and TBI for diabetics overlapped the reference range established from non-diabetics, independent of the magnitude of the measurements. (Figure 1)

**Conclusion:**
We found no indication that the TBI may enable earlier detection of PAD in diabetics. The TBI and ABI are strongly correlated, and this relation is not influenced by the presence of diabetes. In patients with Fontaine 2 or 3, TBIs were actually lower in non-diabetics at similar ABIs. As such, initial assessment of the TBI in diabetics, compared to non-diabetics, generally does not yield additional information if the ABI is not obviously elevated.
29: Benefit of Revascularization in Nonagenarians with Lower Limb Ischaemia is Limited by High Mortality  
Department of Vascular Surgery, Helsinki University Central Hospital, Finland  
E Saarinen, S Vuorisalo, P Kauhanen, A Albäck, M Venermo  

Introduction:  
The number of very old patients referred to vascular surgical units has increased due to increased life expectancy of population. According to the population projects, this increase will continue during the following decades. Advanced age is well known risk factor in patients undergoing surgical interventions for lower limb ischaemia. On the other hand, amputation of an independently living elderly will lead to permanent institutional care. The aim of this study was to evaluate the outcome of patients aged 90 years and older with lower limb ischaemia undergoing surgical or endovascular revascularization.  

Methods:  
Two hundred thirty-three nonagenarians with either chronic critical limb ischaemia (CLI) or acute limb ischaemia (ALI) who underwent revascularization at our institution between 2002 and 2013 were included. Risk factors were evaluated and survival, leg salvage and amputation-free survival (AFS) were assessed.  

Results:  
The median age of study population was 92 years (range 90-100 years). The majority of patients (81.5%) were female. One in four patients (24.5%) had diabetes and the incidence of coronary artery disease was 79.8%. Seventy-three percent of the patients had CLI and 27 % of patients had ALI. Seventy percent of patients underwent surgical revascularization and 30% of patients were treated endovascularly. Majority of patients (72.5%) maintained their independent living status, 27.5 % of patients ended up to institutional care postoperatively. Similarly, majority of patients (82%) sustained their walking ability, whereas 18% of patients were not able to independently ambulate after revascularization. Preoperative (30-day) mortality was 19.6% vs. 10% in surgical versus endovascular group, respectively (p=0.505). One-year survival, leg salvage and AFS were 50.9% vs. 48.6% (p=0.505). 85.1% vs. 87.0% (p=0.259) and 45.7% vs. 44.4% (p=0.309) in surgical and endovascular group, respectively. Dementia was independent risk factor of poor AFS (OR 1.56; 95%CI 1.077-2.272, p=0.019) (Fig 1.)  

Conclusion:  
The overall survival of patients aged 90 years and older is very poor. Good limb salvage can be achieved by both surgical and endovascular revascularization and independent living can be maintained in majority of patients. However, the benefit of revascularization is limited due to high mortality, especially in patients with dementia.
SCIENTIFIC SESSION 5 Wednesday 24 September 14:00-15:30

30: Angiosome Guided Surgical Revascularization; the Truth and Falsehood
Sejong General Hospital, Bucheon, Korea
Kilsoo Yie

Introduction:
The usefulness of angiosome guided therapy in critical limb ischemia has been under debating. We tried to evaluate the efficacy of angiosome guide revascularization comparing the results between complete revascularization using great saphenous vein (GSV) Y graft and single graft bypass.

Methods:
From Jul 2008 to Dec 2012, a total of 102 CLI patients underwent BTK or pedal bypass surgery for critical limb ischemia. 71 pts (83 limbs) underwent single graft bypass (Anterior tibial artery or posterior tibial artery). otherwise 31 patients (37 limbs) underwent complete revascularization using GSV Y graft.

Results:
There is no statistical differences between both two groups in terms of preoperative demographics, postoperative complications and mean 3 years follow up results. However, in the patients who underwent single graft bypass surgery, primary patency is longer in positive pedal arc group compared to no pedal arch group (85% in positive pedal arc group vs. 47.6% in no pedal arc group). In the patients who underwent Y graft bypass surgery, primary patency was similar in both group. (87.5% in positive arc group vs. 80% in no pedal arc group).

Conclusion:
Angiosome guided treatment is necessary in the cases of negative pedal arch. If the patients shows negative compatability in terms of wound location with angiosome area, and poor pedal arch, complete revascularization using GSV Y graft or angiosome guided single bypass surgery is reasonable. Otherwise, if pedal arch is competent in peri-operative evaluation, single bypass surgery regardless of angiosome is sufficient.
**31: One Bout of Calf Raises Induces Improvement of Mitochondrial Function in Claudicants**

*Dept of Circulation and Medical Imaging, Norwegian University of Science and Technology, Trondheim, Norway*

M van Schaardenburgh, M Wohlwend, O Rognmo, E Mattsson

**Introduction:**
Mitochondria in patients with PAD do not produce as much ATP as mitochondria in normally perfused muscle. Therefore patients with PAD do not only have a decreased supply of nutrients and oxygen, as a result of diseased arteries, but the concurrent mitochondrial respiratory defects also lead to an even lower ATP production from the amount of O2 present. Ischemic preconditioning is known to improve functionality and to increase the number of mitochondria. We wanted to explore whether any impact on the mitochondria would be seen already after one bout of training. The extended goal being whether specific “mitochondrial training” with increased ATP production to follow could improve symptoms for patients with claudication.

**Methods:**
Two groups were tested: a control group with healthy elderly individuals (n=11) and another group with intermittent claudication (n=8). In patients with claudication we used one bout of continuous calf raises followed by 5 extra repetitions after initiation of pain. This approach secured local ischemia and reperfusion = ischemic preconditioning in the gastrocnemius muscle. The control group performed 100 calf raises.

Biopsies from the gastrocnemius muscle were taken 15 minutes prior to the training and another four at fixed time intervals (15 min, 1 h, 3 h and 24 h.) after the single bout of exercise. Respiratory capacities were determined by using mitochondrial respirometry. The main substrates used were octanoylcarnitine, glutamate (fatty acid oxidation), malate (complex I), succinate (complex I and II), and FCCP and rotenone (complex II). Repeated measures mixed model was used for statistical analysis. Statistical significance was indicated by a value of p<0.05.

**Results:**
Within the group of claudicants Complex I respiratory capacity reached the highest value at 24 hours (15.4 ± 3.14) compared to the lowest (8.9 ± 3.28). (p = 0.04). Also fatty acid oxidation had the highest value at 24 hours (9.2 ± 2.56) compared to the lowest (4.7 ± 2.45). (p = 0.07).

**Conclusion:**
The muscular mitochondrial respiratory capacity improves already after one bout of ischemic preconditioning in claudicants. Calf raise exercise with five extra repetitions after initiation of pain might therefore be an alternative to reach specific “mitochondrial training” of the gastrocnemius muscle. This concept is promising and might be a new conservative approach to intermittent claudication; leading to a decrease of necessary vascular interventions.
SCIENTIFIC SESSION 5 Wednesday 24 September 14:00-15:30

32: Influence of Microbiology and wound scores in the Diabetic Foot Syndrome Outcome
Hospital Universitario San Cecilio, Granada, Spain

Introduction:
The diabetic foot syndrome (DFS) is an important complication of DM resulting very often in amputation, disability and reduced quality of life. Little is known about the relationship between the different wound classifications and the microbiology of DFS. We aimed to identify accurate predictors to establish the best empiric therapy and to reduce the rate of amputations.

Methods:
Prospective study of 250 consecutive patients diagnosed of DFS from January 2009 to September 2013 attended at our institution. Tissue samples for culture were obtained at admission and 48 hours after. Wound classification scores were recorded at admission and a reevaluation was performed 48 hours after.

Results:
Median age was 66 years (22-91). being male 199 patients (80%). Hundred and five patients had received antibiotics prior to hospital admission and 162 (65%) had femoropopliteal or tibial ischemia. Osteomyelitis was present on plain X-ray in 51 patients (36%). Infection was monomicrobial in 131 patients (52%). Staphylococcus aureus was the most frequent pathogen (76 patients, 30%); being MRSA in 26% (20/76) E. coli and E. faecalis were 2nd and 3rd most frequent pathogens. Two hundred and nine patients (85%) needed amputation being major in 25 patients (10%). Seven patients (3%) died during hospitalization. After one year of follow-up, 51 patients (21%) were readmitted because of worsening and 38 needed minor or major amputation. Associated risk factors for amputation were Wagner score ≥ 3; TEXAS score ≥ 2B and PEDIS score ≥ 2 (p<0.05). No microorganism was associated with amputation, although Staphylococcus aureus and Gram Negative Bacilli were the ones with greater amputation rate or severity score (PEDIS, Wagner, TEXAS) at admission. Medium length of stay was 19 days. Staphylococcus aureus infection was associated with a prolonged length of stay (25 days, p=0.04). Overall, 74% of grampositives were sensitive to quinolones and 98% to vancomycin and 90% of gramnegatives to cefotaxime and 95% to carbapenemes.

Conclusion:
TEXAS, PEDIS and Wagner wound classification can predict outcome. MRSA infection was associated with a longer stay. Empiri therapy with a combination of vancomycin and carbapenem will result in coverage of most pathogens involved in DFS.
SCIENTIFIC SESSION 5 Wednesday 24 September 14:00-15:30

33: The Importance of Angiosome Concept on Ulcer healing: Percoutaneous Transluminal Angio-plasty vs. Surgical Bypass in Bellow the Knee Arteries

*Department of Vascular surgery, Central University Hospital of Helsinki, Finland*

K Spillerová, F Biancari, A Leppäniemi, A Albäck, M Söderström, M Venermo

**Introduction:**
Angiosome concept has enabled a fresh look at revascularization in patients with CLI and foot ulcer, entailing a selective revascularization of the specific artery feeding the area affected by ulceration. Despite the existence of numerous studies favouring angiosome-targeted revascularization the concept remains controversial. The aim of our study was to compare the main treatment strategies in CLI with tissue lesion, surgical and endovascular revascularization, using angiosome concept in terms of the wound healing and freedom from major amputation

**Methods:**
The study cohort comprises a total of 975 consecutive patients who underwent endovascular or surgical revascularization in bellow the knee arteries between the January 2010- July 2013. Data collection was performed by reviewing patients records from our prospectively collected database as well as patients angiograms and MRIs. Statistical analysis was performed using a SPSS statistical software (SPSS v. 22.0, SPSS Inc., Chicago, Ill., USA). Differences between bypass surgery and PTA groups were adjusted by estimating a propensity score, which was employed for one-to-one matching as well as adjust for other variables in estimating their impact on the postoperative outcome.

**Results:**
Propensity score matching with a caliper width of 0.02 resulted in 252 pairs with similar baseline and operative characteristics. Actuarial analysis showed the positive impact of angiosome targeted bypass surgery on wound healing(p=0.046, HR 1.295, 95%CI 1.005-1.668) compared with angiosome targeted angioplasty. Interestingly also non-angiosome targeted bypass surgery achieved better wound healing rates than PTA independently of the angiosome oriented strategy (p=0.001, HR 1.890, 95%CI 1.292-2.766). Cox proportional hazards analysis showed that angiosome targeted revascularization (p=0.036, HR 1.294, 95%CI 1.017-1.647), bypass surgery (p<0.0001, HR 1.791, 95%CI 1.412-2.272). C-reactive protein ≤ 10 mg/dL (p=0.005, HR 1.416, 95%CI 1.110-1.806) and the number of affected angiosomes (p=0.024, HR 0.854, 95%CI 0.744-0.979) were independent predictors of wound healing(Fig.1).The non-angiosome targeted angioplasty was associated with the highest risk of major amputation as compared with non-angiosome targeted bypass surgery (p=0.049, HR 0.569, 95%CI 0.325-0.997). angiosome targeted bypass surgery (p=0.033, HR 0.589, 95%CI 0.362-0.958) and an-giosome targeted angioplasty (p=0.005, HR 0.556, 95%CI 0.371-0.834).

**Conclusion:**
The healing of ulcer in patients with CLI is significantly better in bypass surgery independent of the angiosome concept rather than angiosome-targeted percoutaneous transluminal angioplasty. Furthermore low C-reactive protein and low number of affected angiosomes plays important role in both wound healing and the risk for major amputation.
SCIENTIFIC SESSION 6 Thursday 25 September 08:00-09:30
Chair: GJ de Borst, C Zeebregts

Please note that the Keynote Speakers lectures come at the end of the session.

34: A New Carotid 3D MRI Sequence for Stenosis Measurement and Plaque Characterization at the Same Time
Hopital E Herriot, Lyon, France
A Millon, S Bros, L Boussel, PM Robson, Z Fayad, M Sigovan, P Douek

35: Risk Scoring System to Predict Life Expectancy after CEA in Patient with Asymptomatic Carotid Artery Stenosis
Ospedale San Carlo Borromeo, Milan, Italy
I Barbetta, D Bissacco, M Carmo, M Bonzini, V Catanese, S Di Gregorio, PG Settembrini

36: Carotid Artery Atherosclerosis among 65 year old Swedish Men - a Population Based Screening Study
Institution of Surgical Science, Uppsala, Sweden
D Högberg, B Kragsterman, M Björck, J Tjärnström, A Wanhainen

37: The Role of Transcranial Doppler Ultrasound in the Management of Patients with Carotid Disease: a Meta-analysis
University College London Medical School, United Kingdom
L Best

38: Urgent Carotid Artery Stenting Does not Increase the Risk for Periprocedural Complications - a Nationwide Population-based Registry Study
Karolinska Institutet Dept of Clinical Science and Education, Södersjukhuset, Stockholm, Sweden
M Jonsson, D Lindström, A Wanhainen, P Gillgren

Keynote lectures: High risk for stroke, symptomatic and asymptomatic

Speaker 1: HH Eckstein, Munich, Germany (Live transmission from the German Society's meeting in Hamburg: Risc Factors for CEA in Symptomatic Patients)

Speaker 2: R Naylor: High risk for stroke, asymptomatic
SCIENTIFIC SESSION 6 Thursday 25 September 08:00-09:30

34: A New Carotid 3D MRI Sequence for Stenosis Measurement and Plaque Characterization at the Same Time

_Hopital E Herriot, Lyon, France_

A Millon, S Bros, L Boussel, PM Robson, Z Fayad, M Sigovan, P Douek

**Introduction:**
Risk of stroke related to carotid atherosclerosis depends on degree of stenosis and carotid plaque vulnerability. We propose a new 3D MRI sequence (3D-T1) allowing measurement of these parameters at the same time without gadolinium injection.

**Methods:**
Forty-six patients with atherosclerotic plaque of carotid bifurcation underwent the new 3D-T1 sequence (4 minutes acquisition time) and the standard protocol comprising Gadolinium-enhanced MR Angiography (CE-MRA) for stenosis measurement and 2D HR-MRI sequences for plaque characterization on a 3T MRI scanner. Qualitative evaluation was performed by two observers on both the 3D-T1 and the whole standard protocol with the following parameters: overall image quality and plaque components evaluation (intraplaque hemorrhage IPH, lipid core, calcifications, ulceration and fibrous cap rupture). Furthermore, the NASCET degree of stenosis was calculated on 3D-T1 and CE-MRA. Comparison between 3D-T1 and the standard protocol were performed using Mann-Whitney U tests and Pearson coefficients of correlation. Inter-observer agreements were assessed by Kappa. Among these patients, 18 underwent carotid endarterectomy. Histological examination was performed. Sensibility and specificity of the 2 protocols for diagnosis of vulnerable plaque features were calculated. Correlation between histological and MRI results were assessed using Spearman’s rank correlation test.

**Results:**
Four patients were excluded due to artifacts on the standard protocol and one on the 3D-T1. 3D-T1 showed a better image quality in comparison with the standard protocol (3.59 +/-1.02 vs 3.27 +/-1.01; p<0.05). For the stenosis degree, correlation between 3D-T1 and CE-MRA was excellent (R=0.93) despite a trend for T1-3D to overestimate it (8.9%; IC: -11.95-29.82). Interobserver variability showed a good agreement between observers (kappa>0.87). Sensibility and specificity for IPH diagnosis was 50% and 100% for the standard protocol and 100% and 83% for the 3D-T1 sequence. Sensibility and specificity were similar between 3D and 2D sequences for diagnosis of the others plaque features. Histological correlation was better with 3D-T1 than with standard protocol for IPH (0.87 vs 0.57) (Fig.). There was no difference for lipid core and calcification (0.66 and 0.88). For ulceration and cap rupture, correlation was slightly better with the standard protocol (0.86 vs 0.72).

**Conclusion:**
The 3D-T1 sequence without gadolinium injection allows a reproducible measure of carotid stenosis in comparison of CE-MRA with a slight overestimation. The 3D-T1 sequence also allows a reliable and faster carotid atherosclerotic plaque characterization, in comparison with the reference protocol with an improvement of IPH diagnosis.
35: Risk Scoring System to Predict Life Expectancy after CEA in Patient with Asymptomatic Carotid Artery Stenosis
Ospedale San Carlo Borromeo, Milan, Italy
I Barbetta, D Bissacco, M Carmo, M Bonzini, V Catanese, S Di Gregorio, PG Settembrini

Introduction:
Surgical treatment of asymptomatic carotid stenosis is currently debated. Reduction of the risk of stroke is partially counterbalanced by perioperative events. Therefore, recent guidelines recommend exclusion of patients without a minimum life-expectancy of 3-5 years. Purpose of this study is to identify factors associated with a higher mortality during long-term follow-up after carotid endarterectomy (CEA). Subsequently to design a scoring system for stratifying the expected survival of candidates to CEA, based on each patient’s risk factors.

Methods:
From 2002 to 2013, 648 asymptomatic patients underwent CEA. Data on preoperative comorbidities and postoperative complications were extrapolated and converted to dichotomous variables. Hazard Ratios (HR) were calculated for each risk factor using Cox regression models. We assigned to each risk factor a score based on the weight of their beta coefficients in a uni-variate analysis using the lowest value as reference. For each patient we calculated total risk score as the sum of all risk factors. Kaplan-Meyer’s survival curves were designed after grouping patients according to their level of pre-operative risk, based on their individual risk score.

Results:
42 males (66%) and 219 females (34%) with a mean age of 74 years (range 47-93) were operated in the study period. Combined 30-days postoperative stroke/death rate was 1.23%. Patients were followed for a median of 56 months (IQR 27-84). 5-years survival was 84%. The following coefficients were assigned to factors that negatively influenced life-expectancy after surgical procedure: 8 points to dialysis (HR 7.74; P=.005) and age ≥80 (HR 7.43; P=.001) 4 points to Creatinine ≥1.5 mg/dL (HR 3.03; P=.001) and age 70-79 (HR 3.22; P=.004) 1 point to COPD (HR 1.42; P=.23) lack of statins on treatment (HR 1.55; P=.08) any therapy for diabetes mellitus (HR 1.36; P=.17) and CAD (past MI or coronary intervention) (HR 1.30; P=.34) 5-years survival rate was 97% for patients with score 0-3, 89% for score 4-8, 79% for score 9-12, and 66% for score 12-16 (P<0.0001).

Conclusion:
In our experience with asymptomatic CEA, we report a low rate of perioperative events and a high proportion of patients surviving more than 5 years after the procedure, in accordance with current literature. Our scoring system is a simple clinical tool for prediction of post-operative life expectancy that could be easily implemented to conventional perioperative risk assessment for selection of asymptomatic patients who would benefit from CEA.
SCIENTIFIC SESSION 6 Thursday 25 September 08:00-09:30

36: Carotid Artery Atherosclerosis among 65 year old Swedish Men - a Population Based Screening Study
Institution of Surgical Science, Uppsala, Sweden
D Högberg, B Kragsterman, M Björck, J Tjärnström, A Wanhainen

Introduction:
Ischemic stroke is the most common cause of handicap in adults and the third most common cause of death in Sweden. Large-artery atherosclerotic disease accounts for 20% of ischemic stroke and is the most common cause in middle-aged patients. Well known risk factors for carotid atherosclerotic disease are: smoking, older age, male sex, hypertension, hypercholesterolemia, coronary artery disease and diabetes. Multiple risk factors increase the likelihood of carotid disease, but the cumulative effect of multiple risk factors has been addressed only in small population studies. There are limited epidemiological data on the prevalence of the disease in the general population, with most studies being outdated or utilizing various definitions and exclusion criteria. The aim of this study was to determine the prevalence of and risk factors associated with carotid artery atherosclerosis among 65 year old men.

Methods:
All 65 year old men in the County of Uppsala, Sweden, who attended screening for abdominal aortic aneurysm (AAA) 2007-2009, were invited to a duplex scanning of both carotid arteries.

Results:
Of 4801 men invited, 4657 (97%) accepted. A carotid plaque (>2x6mm) was observed among 1169 (25%) men, 94 (2.0%) had a carotid stenosis (50-99%). and 15 (0.3%) had an occluded carotid artery. In a multivariate logistic regression model, smoking (odds ratio 1.7, 95% CI 1.5-1.9). hypertension (1.5, 95% CI 1.3-1.7). diabetes mellitus (1.2, 95% CI 1.0-1.5). and coronary artery disease (1.5, 95% CI 1.3-1.8) were associated with prevalence of carotid atherosclerosis (plaque and/or stenosis). The use of antiplatelet agents and statins in subjects with a carotid plaque was 20% and 29% respectively. The corresponding figures in subjects with a stenosis were 42% and 41%.

Conclusion:
This study offers contemporary data on the prevalence of carotid atherosclerosis in a population based cohort of 65 year old men. Most of those at risk had no other clinical manifestation of atherosclerosis, and therefore had no secondary prevention.
SCIENTIFIC SESSION 6 Thursday 25 September 08:00-09:30

37: The Role of Transcranial Doppler Ultrasound in the Management of Patients with Carotid Disease: a Meta-analysis

*University College London Medical School, United Kingdom*

L Best

**Introduction:**

Carotid Endarterectomy (CEA) is a well-established surgical treatment for symptomatic carotid disease. The number of CEA procedures being performed is rapidly increasing. Current methodology of identifying patients is based on stenosis of the carotid artery which suffers methodological and conceptual problems meaning patient identification is suboptimal. Adjuvant markers of stroke risk could therefore provide clinical benefit to patients. Microembolic signals (MES: in the middle cerebral artery (MCA) reported by transcranial Doppler ultrasound (TCD) is a potential marker however its predictive role in stroke is yet to be firmly established.

**Methods:**

A search strategy was performed searching Medline (PubMed). Embase and The Cochrane Database for all relevant studies. A meta-analysis of all prospective studies reporting data on MES recorded by TCD was performed using stroke and transient ischaemic attack (TIA) or stroke alone as outcomes. Any data on temporal bone window availability found in selected papers was also extracted. Two review authors selected relevant papers. The metan command in Stata was utilised to analyse extracted data with a random effects model and Mantel-Henzel weights. Odds ratios with 95% confidence intervals (CI) were calculated. Information was separated by endpoint, either stroke and TIA or stroke alone. Each outcome was stratified by patient groups including: asymptomatic, symptomatic, perioperative dissection, perioperative cross clamp release and postoperative. High rates of MES were also investigated.

**Results:**

Of the 2850 papers identified by the search 25 provided data for analysis including 4483 individuals. For stroke or TIA as the endpoint MES were predictive in asymptomatic (OR 7.80 CI 2.73, 22.33). symptomatic (OR 8.21 CI 4.24, 15.90). perioperative dissection (OR 4.61 CI 1.15, 18.59) and postoperative patients (OR 4.03 CI 1.56, 10.45). For stroke alone MES were predictive in asymptomatic (OR 8.54 CI 4.35, 16.75) and symptomatic patients (OR 7.45 CI 1.89, 29.31). High MES counts were predictive of stroke or TIA in the perioperative dissection phase (OR 17.05 CI 6.1, 47.68: and postoperative period (OR 20.37 CI 5.54, 74.9). A temporal bone window was found to be present in 89.7% of 2190 patients.

**Conclusion:**

TCD can be widely used to predict stroke risk in patients with carotid disease by detection of microemboli. Utilisation may enable superior patient identification and assessment if correctly implemented. TCD seems to be of more value perioperatively and postoperatively when high microemboli counts are considered.
38: Urgent Carotid Artery Stenting Does not Increase the Risk for Periprocedural Complications - a Nationwide Population-based Registry Study

*Karolinska Institutet Dept of Clinical Science and Education, Södersjukhuset, Stockholm, Sweden*

M Jonsson, D Lindström, A Wanhainen, P Gillgren

**Introduction:**
Current ESVS guidelines recommend that patients with a significant symptomatic stenosis should be operated within 14 days of onset of symptoms. However, recent reports indicate that carotid endarterectomy (CEA) within 2 days after a neurologic event may be associated with a higher periprocedural risk of stroke. If urgent carotid artery stenting (CAS) carries a similar high risk is unclear. The aim of this study was to analyse if urgent CAS after a neurologic event increases the periprocedural risks.

**Methods:**
Retrospective analysis of all CAS registered in a validated nationwide registry between January 1st, 2005 and June 7th, 2013. Only symptomatic patients treated with CAS for a stenosis of the internal carotid artery were included. The rates of stroke and acute myocardial infarctions (AMI) were recorded at 30 days. Mortality data were collected from the national death registry. Patients were categorised according to time from index event until surgery; 0-2 days, 3-7 days, 8-14 days, and 15-180 days. A secondary analysis was performed for 0-7 days, 8-14 days, 15-28 days and 29-180 days. Primary outcome was 30-days combined stroke and death rate.

**Results:**
In total 269 patients had complete data and were included in the analysis. The demographic and clinical data were similar in the groups. The 30-day combined stroke and death rate did not differ significantly between the groups; 0% (0/12) in the group treated 0-2 days, versus 3.9% (3/76), 2.9% (2/68), and 5.3% (6/113) for the patients treated at 3-7 days, 8-14 days and 15-180 days respectively (p=0.759). The 30-day stroke and death rate in the secondary analysis were also similar between groups; 3.4% (3/88), 2.9% (2/68), 6.3% (3/48), and 4.6% (3/65) respectively, (p=0.813).

**Conclusion:**
In this national registry study, limited by small numbers, patients that underwent urgent CAS after onset of a neurologic event had no additional risk of suffering from a perioperative complication.
SCIENTIFIC SESSION 7 – Thursday 25 September 14:00-15:30
Chair: T Cohnert, P Balaz

Keynote speaker: Ron Balm, AMC, Netherlands: Evidence base for Rx of rAAA (balanced view point)

39: Local Diameter, Wall Stress and Thrombus Thickness Influence the Local Growth of Abdominal Aortic Aneurysms
*KTH Solid Mechanics, Stockholm, Sweden*
G Martufi, M Lindquist Liljeqvist, N Sakalihasan, G Panuccio, R Hultgren, J Roy, TC Gasser

40: Cost-effectiveness Analysis of Open and Endovascular Repair for Ruptured Abdominal Aortic Aneurysm
*Department of Cardiovascular Sciences, Leicester Royal Infirmary, United Kingdom*
A Aber, M Ali, E Choke, M Bown, R Sayers

41: Mid-term Survival and Reinterventions after Endovascular Versus Open Repair in Ruptured Abdominal Aortic Aneurysms
*Academic Medical Center, Amsterdam, Netherlands*
SC van Beek, AC Vahl, W Wisselink, JA Reekers, DA Legemate, R Balm

42: Post Implantation Inflammatory Response After EVAR for AAA. Influence on Patients 30-day Outcome
*Dept of Anesthesiology (1). of Surgery – Vascular Surgery Unit (2). of Microbiology (3). of Internal Medicine (4) and of Intensive Care Medicine (5). School of Medicine, University of Ioannina, Ioannina, Greece*

43: Long Term Results of Standard Suprarenal Fixation Endografts for Abdominal Aortic Aneurysms with Neck Length 5-10mm
*Vascular Surgery - University of Bologna, Italy*
E Gallitto, M Gargiulo, A Freyrie, C Bianchini Massoni, C Mascoli, R Pini, A Stella

44: Postoperative and Long-term Results of Total Laparoscopic Versus Conventional Aortic Bypass Surgery: A Propensity Analysis
*University of Poitiers, France*
JB Ricco, J Cau, A Valagier, F Biancari, F Schneider, M Desvergnes

45: Results of ECAR (Endovasculaire vs. Chirurgie dans les Anévrysmes Rompus: Trial
*Henri Mondor Hospital, Creteil, France*
P Degranges and the ECAR investigators
SCIENTIFIC SESSION 7 – Thursday 25 September 14:00-15:30

39: Local Diameter, Wall Stress and Thrombus Thickness Influence the Local Growth of Abdominal Aortic Aneurysms
KTH Solid Mechanics, Stockholm, Sweden
G Martufi, M Lindquist Liljeqvist, N Sakalihasan, G Panuccio, R Hultgren, J Roy, TC Gasser

Introduction:
Abdominal aortic aneurysms (AAA) size is related to growth rate, and thresholds for both are used to indicate AAA repair. Fast aneurysm growth could compromise the wall’s structural integrity and increases risk for rupture. Similarly, an intraluminal thrombus (ILT) weakens the aortic wall and influences growth rate. High wall stress accelerates metabolism in the aortic aneurysm wall, which also could increase growth rate and rupture risk. The present study investigated the influence of local diameter, ILT layer thickness and wall stress on the growth rate. This information could improve elective repair indication and individualize patient follow-up intervals.

Methods:
Patients (n=90) were retrospectively monitored between 6 and 24 months with contrast-enhanced Computer Tomography-Angiography (CT-A). Symptomatic patients were excluded and in total 200 CT-A scans were analyzed. The infrarenal aorta was reconstructed and biomechanically analyzed with A4clinics (VASCOPS GmbH, Graz, Austria). Each individual AAA Finite Element model was automatically sliced orthogonally to the lumen centerline, and represented by 100 cross-sections with corresponding diameter, ILT thickness and wall stress. An exponential growth model was used to extract the aneurysm expansion all along the centerline and significance was tested with Wilcoxon signed rank and Friedman’s tests.

Results:
Both maximum diameter (43.9 mm, IQR: 39.5 to 48.6 mm) and maximum wall stress (118.6 kPa, IQR: 104.3 to 131 kPa) were localized in the central aneurysm region, while maximum ILT thickness (7.80 mm, IQR: 4.06 to 10.8 mm) appeared in the distal part. Median growth of 3.06 mm/year (IQR, 1.21 to 4.32 mm/year) was recorded and aneurysm growth was continuously distributed all over the aneurysm sac. The growth rate was depended on the local baseline diameter, the ILT thickness and, for wall segments not covered by ILT, also on the wall stress level (all P<.001). For wall segments that were covered by a thick ILT layer, wall stress did not affect the growth rate (P=.08).

Conclusion:
Diameter is not only a strong global but also local predictor of growth. In addition, and independently from the diameter, also the ILT thickness and wall stress (for the ILT-free wall) influence local growth rate. Interestingly not all portions of the AAA enlarge over time; some were stable or even shrunk over time. Such a behavior cannot be predicted by a single property (like the local diameter) but requires multidimensional approaches incorporating more that geometrical properties.
SCIENTIFIC SESSION 7 – Thursday 25 September 14:00-15:30

40: Cost-effectiveness Analysis of Open and Endovascular Repair for Ruptured Abdominal Aortic Aneurysm

Department of Cardiovascular Sciences, Leicester Royal Infirmary, United Kingdom
A Aber, M Ali, E Choke, M Bown, R Sayers

Introduction:
Emergency endovascular repair (EVAR) for ruptured abdominal aortic aneurysm (rAAA) may have lower operative mortality rates than open surgical repair. Concerns remain that the early survival benefit after EVAR for rAAA may be offset by later interventions. The aim of this study was to analyse the cost-effectiveness of EVAR compared with standard open repair (OR) in the treatment of rAAA.

Methods:
A model-based cost–utility analysis was performed estimating mean costs and quality-adjusted life-years (QALYs) per patient in the UK National Health Service with a 1-year time horizon. A decision tree model was constructed and populated with probabilities, outcomes and cost data from IMPROVE, AJAX & NOTTINGHAM trials and NHS reference cost for rAAA for 30 days mortality. Probabilities, outcomes and cost data for long-term complications were obtained from published data on elective repair of AAA because of lack data for rAAA. This method of using the best available data to make reasonable assumption in economic models is a common method used by several groups. This is to make the economic model more credible and to capture the effects of long-term complications on the cost-effectiveness of EVAR vs OSR. The results from the model were assessed using one-way and probabilistic sensitivity analyses.

Results:
The cost of EVAR and open repair combined with the cost of the long term complications over one year were £5533.40 and £5963.75 respectively. Both treatments costs were well below the lower margin of the societal willingness to pay in the UK (£20000) for one gained QALY. The net monetary benefit (NBM) for OSR was £25448.3-47442.6 compared to EVAR with NBM £18198.5-36046.1. The NBM is a recommend method to assess cost-effectiveness by the national institute of health and care excellence (NICE).

Conclusion:
Performing OSR on rAAA is a cost effective strategy with better NBM when compared to EVAR. However both EVAR and OSR cost less than the societal willingness threshold for the QALYs gained.
SCIENTIFIC SESSION 7 – Thursday 25 September 14:00-15:30

41: Mid-term Survival and Reinterventions after Endovascular Versus Open Repair in Ruptured Abdominal Aortic Aneurysms

Academic Medical Center, Amsterdam, Netherlands

SC van Beek, AC Vahl, W Wisselink, JA Reekers, DA Legemate, R Balm

Introduction:
In elective aortic surgery, the mid-term risk of reinterventions is higher after endovascular aneurysm repair (EVAR) than after open repair (OR). In the present study we aimed to compare the mid-term reintervention free survival after EVAR and OR in patients with a ruptured abdominal aortic aneurysm (RAAA).

Methods:
An observational cohort study was carried out including all consecutive surgically treated RAAA patients between 2004 and 2011 in all ten hospitals of one ambulance region. The primary end points were death and reinterventions within five years after the primary intervention. The end points were reported as the 5-year reintervention free survival with use of Kaplan-Meier survival analyses and were compared using the logrank test. Two subgroup analyses were done. First, in patients who survived their hospital stay. Second, in patients randomised in a concurrent trial between EVAR and OR based on the intention-to-treat principle (AJAX trial).

Results:
Of 467 patients with an RAAA, 73 were treated with EVAR and 394 with OR. The median follow-up was 2.2 years (inter-quartile range 0.0 – 5.0 years) and only sixteen patients were lost to follow-up and censored at the last moment of contact. The 5-year reintervention free survival after EVAR was 19% (event rate 57/73, 95% confidence interval (CI: 10 - 29%) and after OR 30% (266/394, CI 25 - 35%) (P=.31). In 297 patients surviving their hospital stay, the 5-year reintervention free survival after EVAR was 30% (36/54, CI 17 – 43%) and after OR 60% (84/243, 53 - 66%) (P<.01). In 116 randomised patients, the 5-year reintervention free survival after EVAR was 19% (45/57, CI 8 – 29%) and after OR 35% (37/59, CI 22 - 48%) (P=.16).

Conclusion:
The 5-year reintervention free survival after endovascular and open repair for a ruptured abdominal aortic aneurysm are comparable and are relatively low. In patients who survive their hospital stay the reintervention free survival is much lower after EVAR than after OR.
SCIENTIFIC SESSION 7 – Thursday 25 September 14:00-15:30

42: Post Implantation Inflammatory Response After EVAR for AAA. Influence on Patients 30-day Outcome

Dept of Anesthesiology (1). of Surgery – Vascular Surgery Unit (2). of Microbiology (3). of Internal Medicine (4: and of Intensive Care Medicine (5). School of Medicine, University of Ioannina, Ioannina, Greece


Introduction:
Aim: To prospectively evaluate post implantation syndrome (PIS) after elective endovascular aneurysm repair (EVAR) of abdominal aortic aneurysms (AAA) and to investigate its association with various clinical and laboratory parameters, as well as the clinical outcome of the patients.

Methods:
From July 2009 till December 2012, 214 consecutive patients (72.3±8.1 years, 97% males) treated electively by EVAR for AAA were prospectively included. PIS was defined according to SIRS criteria. Complete blood count and high sensitivity C-reactive protein (hs-CRP) were measured preoperatively, at the 1st and 3d postoperative day. Demographics, aneurysm related factors, several intra- and perioperative characteristics as well as 30-day outcome were also recorded. Adverse events included any major cardiovascular event (MACE). acute renal failure, readmission and death of any cause. Multiple logistic regression analysis was used to assess the statistical significant effect of all parameters examined.

Results:
PIS was diagnosed in 77 (34%) patients. Preoperative WBC count values (p<0.001). endograft material (Polyester). (p<0.001) and heart failure (p=0.03) were independent predictors of PIS. Mean postoperative temperature (p<0.001). length of hospital stay (p<0.001) and ICU stay, as well as maximum postoperative WBC count (p<0.001) and hs-CRP values (p<0.001) were significantly higher in the PIS group. Postoperative hs-CRP (p=0.001) and duration of fever (p=0.02) independently predicted the occurrence of a MACE. Postoperative hs-CRP (p=0.004). maximum temperature (p=0.03) and the presence of PIS (p=0.01) were independent predictors of an adverse event during the first 30 days. As indicated by ROC analysis, a threshold of postoperative hs-CRP value of 125 mg/l was highly associated with the occurrence of a MACE, with a sensitivity of 82% and specificity of 75%.

Conclusion:
A systematic inflammatory response is observed in a significant number of patients after EVAR. The type of the endograft material seems to play a significant role in this inflammatory process. The intense of inflammation, as assessed mainly by the postoperative hs-CRP values, correlates with the presence of a cardiovascular or any other adverse event during the first 30 days after the procedure.
SCIENTIFIC SESSION 7 – Thursday 25 September 14:00-15:30

43: Long Term Results of Standard Suprarenal Fixation Endografts for Abdominal Aortic Aneurysms with Neck Length 5-10mm
Vascular Surgery - University of Bologna, Italy
E Gallitto, M Gargiulo, A Freyrie, C Bianchini Massoni, C Mascoli, R Pini, A Stella

Introduction:
To evaluate long-term outcomes of endovascular aneurysm repair using standard suprarenal fixation endograft (SF-EVAR) in abdominal aortic aneurysms with 5-10mm of infra-renal neck length (SN-AAA)

Methods:
From 2005 to 2010, clinical, morphological and surgical data of high-risk patients with SN-AAA, unfit for open repair (OR) and fenestrated endograft (FEVAR) were prospectively collected. Preoperative planning was assessed by thoraco-abdominal computed tomography angiography (CTA) and reconstructions using 3Mensio™. The neck length was measured on the Center-Lumen-Line as the distance between the lowest renal artery and the point where the neck diameter increased ≥50% of the aortic diameter at level of renal arteries. Follow-up was performed by duplex-ultrasound (US)/contrast-enhancement-US(CEUS) or CTA at 1, 6, 12 months and yearly thereafter. Primary endpoints were survival (S), proximal type I endoleak (ELI) and AAA-rupture/AAA-related mortality. Secondary endpoints were freedom from re-interventions (FFR) and AAA-shrinkage (>5mm). S and FFR were evaluated by Kaplan-Meier's analysis. The correlation between pre-operative clinical/anatomical features, ELI and re-interventions was assessed by Cox-regression

Results:
Sixty patients (mean age: 74.9±6.19 years, male 88.3%, ASAIII/ASAIV: 85/15%, hostile abdomen: 20%) were enrolled. Mean aneurysm diameter, neck length and diameter were 60.4±12.2mm, 8.4±1.6mm and 23.5±3mm respectively. Four (7%) patients were symptomatic and 15 (25%) had rapid AAA enlargement (>5mm/6months). Cook-ZenithTMFlex (32) and Medtronic-EndurantTM endograft (28) were implanted. Mean follow-up was 51±18 months. S at 1, 3 and 5 years was 97%, 87% and 70% respectively. There were 3 (5%) ELI (2 detected at 1 month and one at 36 months). One was sealed by an endovascular re-intervention and 2 (3.3%) underwent conversion to OR for AAA-rupture at 8 and 36 months. Both patients died (2/60 AAA-related mortality). Re-interventions were necessary for others 5 patients (8%) and they were not proximal neck-related. FFR at 1, 3 and 5 years was 97%, 93 and 90% respectively. Excluding the 3 ELI, in 48 (84%) cases there was an AAA-shrinkage, in 8 (14%) the AAA-diameter remains stable and in 1 (2%) case increased. At the Cox-regression severe proximal angle (α-neck angle ≥60°) was associated with ELI (p=0.010) and re-interventions (p=0.016). Neck length<7mm (p=0.030) was associated with re-interventions (p=0.030).

Conclusion:
SF-EVAR in SN-AAA with straight and 7-10mm aortic neck length can be considered safe and effective in patients unfit for OR and fenestrated endograft. For these cases, long-term data showed acceptable results in preventing aneurysm rupture and related mortality
SCIENTIFIC SESSION 7 – Thursday 25 September 14:00-15:30

44: Postoperative and Long-term Results of Total Laparoscopic Versus Conventional Aortic Bypass Surgery: A Propensity Analysis
University of Poitiers, France
JB Ricco, J Cau, A Valagier, F Biancari, F Schneider, M Desvergnes

Introduction:
This prospective study was designed to analyse the postoperative and long-term outcomes of total laparoscopic vs. open surgical repair of infra-renal aortic occlusive disease (AOD) and infra-renal aortic aneurysmal disease (AAA) in comparable groups of patients using propensity analysis.

Methods:
From January 2006 to January 2010, 228 consecutive patients who received an aortic bypass for AAA (n=139) or for AOD (n=89) were studied. Open repair was performed in 145 patients (AAA=109, AOD=36) and total laparoscopic repair in 83 patients (AAA=30, AOD=53). One-to-one propensity score matching between study groups was done according to a difference in the logit of propensity score of less than 0.04 between each patient pairs in the study groups. Logistic regression with the help of backward selection was used to adjust the effect of treatment method for propensity score as well as other variables in evaluating postoperative and long-term outcome. A p value < .05 was considered statistically significant.

Results:
When treatment method was adjusted for one-to-one propensity score, matching resulted in 59 pairs with similar preoperative characteristics as indicated by univariate analysis. Laparoscopic aortic repair was associated with a significantly higher risk of composite postoperative adverse events (bypass occlusion, bleeding, graft infection, reintervention) compared with open repair (OR 6.5, 95%CI 2.7-15.5, p<.0001). Adjusted analysis for propensity score, showed also that postoperative mortality risk tended to be higher after laparoscopic repair (OR 8.5, 95%CI 0.7-99.3, p=.09), but this difference did not reach statistical significance. Hospital stay was significantly shorter after laparoscopic surgery. Laparoscopic repair was also associated with a significantly higher risk of late composite adverse event (p<.001). This was likely due to a significantly higher risk of late reintervention after laparoscopic repair (p<.01). No other marked differences were observed in the other outcome end-points. The small number of patients with abdominal aortic aneurysm as well as the lack of any difference in terms of composite adverse end-point after laparoscopic repair in either conditions (abdominal aortic aneurysm 29.0% vs. aortoiliac disease 26.4%, p=0.80) prevented sensitivity analysis in these subgroups of patients.

Conclusion:
This study suggests that even for a trained laparoscopic vascular surgeon, the technical challenge of laparoscopic aortic surgery has a negative impact on the early postoperative period and on the late course of the patients.
SCIENTIFIC SESSION 7 – Thursday 25 September 14:00-15:30

45: Results of ECAR (Endovasculaire vs. Chirurgie dans les Anévrysmes Rupturés) Trial
Henri Mondor Hospital, Creteil, France
P. Degranges and the ECAR investigators

Introduction:
ECAR is a prospective multicenter randomized controlled trial including consecutive patients with ruptured aorto-iliac aneurysms (rAIA) who were eligible for treatment by either endovascular (EVAR) or open surgical repair (OSR). Inclusion criteria were hemodynamic stability and CT scan demonstrating aorto/iliac rupture, in order to exclude other pathologies and to confirm feasibility of EVAR.

Methods:
Randomization was done by week: patients were treated by OSR during the first week and subsequent odd-numbered weeks, and by EVAR during the second week and subsequent even-numbered weeks.
Primary endpoint was 30 day-mortality rate. Secondary endpoints were postoperative morbidity, length of stay in intensive care, amount of blood transfusion, and 6-month mortality.

Results:
From January 2008 to January 2013, 107 patients (97 male/10 female; median age 74.4 years) were enrolled in 14 centers: 56 (52.3%) in EVAR group and 51 (47.7%) in OSR group. Groups upon inclusion were comparable in terms of age, sex, consciousness, systolic blood pressure, Hardman index, IGSII score, type of rupture, use of endoclamping balloon and levels of troponin, creatinin, hemoglobin. Delay to treatment was higher in the EVAR group (2.9 vs. 1.3 hours; p<0.005). Mortality at 30 days and 6 months were not different between groups (17 % in EVAR vs. 25 % in OSR group at 30 days and 43% vs. 55% at 6 months).
Total ventilation time was lower in the EVAR group (59.3 hours vs. 180.3 hours; p=0.007) as well as the rates of pneumopathy (15.4 % vs. 58.6%; p=0.05). abnormal coloscopy (10.2% vs.19.2% p=0.05%). total blood transfusion (6.8 vs.10.9; p=0.02). and duration of ICU stay (7 days vs. 11.9 p=0.01).

Conclusion:
In ECAR study, EVAR fares equal to OSR in terms of 30-day and 6-month mortality. However, EVAR was associated with less severe complications and less consumption of hospital resources than OSR.
46: D-dimer levels are significantly increased in blood taken from varicose veins compared to ante-cubital blood from the same patient
*Imperial College, London, United Kingdom*
CR Lattimer, E Kalodiki, D Syed, G Geroulakos, J Fareed, D Hoppensteadt

47: Endovenous laser ablation for healing venous ulcers and risk factors for recurrence after three years
*Department of Vascular Surgery, Karolinska, Stockholm, Sweden*
H Sinabulya

48: Influence on Chronic Venous Insufficiency of Primary Absence of the Great Saphenous Vein in the Saphenous Compartment at the Thigh
*Riviera Veine Institut, Nice, France*
S Chastanet

49: Percutaneous Endovenous Intervention for Acute and Chronic Deep Venous Occlusion
*St George’s Vascular Institute, London, United Kingdom*
J Brownrigg

50: Factors Associated with Recurrence of Superficial Vein Thrombosis in Patients with Varicose Veins
*Department of Vascular Surgery, University Hospital of Larissa, Faculty of Medicine, School of Health Sciences, University of Thessaly, Larissa, Greece*
C Karathanos
46: D-dimer levels are significantly increased in blood taken from varicose veins compared to ante-cubital blood from the same patient

*Imperial College, London, United Kingdom*

CR Lattimer, E Kalodiki, D Syed, G Geroulakos, J Fareed, D Hoppensteadt

**Introduction:**

Patients with varicose veins have a slightly increased risk of superficial and deep venous thrombosis compared to healthy controls. This may be reflected in higher D-dimer levels when the blood sample is taken from the region of a potential thrombosis. The aim was to determine whether the D-dimer test was sensitive enough to detect the increase in local pro-thrombotic activity in varicose vein blood.

**Methods:**

Patients, n=24, 17 male, age 45(25-91) awaiting varicose vein laser treatment were compared to matched controls, n=24, 17 male, age 42(24-89). The CEAP classification of the patients was: C2=6, C3=4, C4a=1, C4b=6, C5=5, C6=2, with a median (range: venous clinical severity score of 6(4-10) and a median (range: diameter of a reflexing saphenous vein of 8.2(6-12) mm. Five mL of venous blood was withdrawn from the ante-cubital fossa. A concurrent sample was withdrawn from a calf varicose vein in patients and an ankle vein in controls. The samples were centrifuged at 3,500 rpm for 10 minutes and frozen at -20° C for batch analysis. D-dimer levels were measured using a commercially available ELISA method.

**Results:**

The median (inter-quartile range) D-dimer (ng/mL) was significantly greater in the ankle than the ante-cubital blood of the same patient at 319(164-631) versus 281(167-562). p=0.003, Wilcoxon. This did not occur in the controls at 269(80-564) versus 262(106-526). p=0.361, Wilcoxon. Furthermore, the ankle-cubital D-dimer ratio (ACDR) was significantly greater in the patients, p=0.018. Increasing age correlated significantly with increasing D-dimer levels, irrespective of whether the samples were withdrawn from the arm (r=0.536, p<0.0005) or the leg (r=0.649, p<0.0005). Spearman. However, there was no correlation with ACDR and age, r=0.252, p=0.085.

**Conclusion:**

This is the first study to show that the D-dimer test was sensitive enough to detect a significant increase in pro-thrombotic activity in the leg veins of patients with chronic venous insufficiency. This supports the clinical observation of a small risk of venous thrombosis in the legs of these patients. The ACDR is unaffected by age or measuring assay. Since D-dimer is a screening test for the detection of deep vein thrombosis (DVT) with 94% sensitivity and 50% specificity, a local sample providing the ACDR might improve the specificity of D-dimer in DVT detection. Future studies in patients with suspected DVT are required to support this hypothesis.
SCIENTIFIC SESSION 8 - Thursday 25 September 16:00-17:30

47: Endovenous laser ablation for healing venous ulcers and risk factors for recurrence after three years

*Department of Vascular Surgery, Karolinska, Stockholm, Sweden*

H Sinabulya

**Introduction:**
The standard treatment of a venous ulcer is compression, but the recurrence rate is high. The ESCHAR study showed that superficial venous surgery reduced the recurrence rate compared with compression therapy only. The long-term ulcer recurrence rate after endovenous laser (EVL) treatment for superficial venous insufficiency is scarcely reported. The aim of this study is to investigate the long-term treatment outcomes of patients with venous ulcers treated with EVL and to determine the risk factors for non-healing or recurrence of venous ulcers.

**Methods:**
Two hundred consecutive patients with a healed or open venous ulcer treated with EVL are invited to a follow up, including Duplex, ankle-brachial index, clinical severity and quality of life (QoL) score using EQ5D. Risk factors such as age, gender, BMI, smoking habits and concomitant diseases are noted. Non-parametric testing was used to show normal distribution and multivariate analysis of variance was used to detect significant risk factors.

**Results:**
In an interim analysis 99 patients have been examined after a mean follow up time of 44 months. 83 patients had healed ulcers (Group 1) without recurrence during follow-up, 2 patients never healed after EVL and 14 had a recurrence (Group 2, 16 patients). The mean age was 64 and 68 years respectively (NS). The number of women/men was 54/29 in group 1 and 8/8 in group 2 (NS). Significant risk factors for non-healing and or recurrence were ankle stiffness (p=.006), perforating vein insufficiency (PVI) in the ulcer area (p=.013), previous deep venous thrombosis (DVT) (p=.018), diabetes (p=.031) and deep venous insufficiency (p=.034). Patients in Group 2 had a lower QoL score (p=.010).

**Conclusion:**
In this interim analysis of 99 patients the recurrence rate of venous ulcer 44 months after EVL was low. Risk factors for recurrence were ankle stiffness, PVI in the ulcer area, previous DVT, diabetes, and deep venous insufficiency.
SCIENTIFIC SESSION 8 - Thursday 25 September 16:00-17:30

48: Influence on Chronic Venous Insufficiency of Primary Absence of the Great Saphenous Vein in the Saphenous Compartment at the Thigh

Riviera Veine Institut, Nice, France
S Chastanet

Introduction:
In patient with no history of saphenous ablation the absence of the great saphenous vein (GSV) within the saphenous compartment in a intrafascial situation at the thigh (SCT) is not rare. However it is unclear if this anatomic situation has an influence on the hemodynamic and clinical status of the patients with chronic venous insufficiency.

Methods:
We reviewed the clinical, anatomical and hemodynamic data of patients whom consulted in our center between January 2010 and July 2012 and whom never had any saphenous ablation procedure. We considered two different anatomic situations: - Absence of the GSV within the SCT below the upper third of the thigh (GSV1); - Presence of the GSV within the SCT below the upper third of the thigh (GSV2). We also reviewed the treatments performed and the number of zones treated by phlebectomy (NZT) in these patients.

Results:
We included in the study 1,433 patients among whom 1,950 lower limbs were assessed for signs or symptoms of venous insufficiency. A GSV1 was present at least in one LL in 208 patients (14.5%) and it concerned 299 LLs (15.3%). Patients with GSV1 were younger (47.4 vs 50.0 yrs P< .05) and had a higher BMI (27.8 than 24.6 P< .05) than patients with GSV2. In presence of varicose veins with GSV1 the frequency of C3 and C4 was higher (16.1% and 6.2% vs 8.1% and 2.4% P< .05). the presence of symptoms was more frequent (81.0% vs 55.3% P< .05). the sapheno-femoral junction was more frequently refluxing (66.7% vs 30.1% P< .05) and as well as the upper third of the GSV (95.2% vs 69.1% P< .05) with a larger mean diameter (7.6 vs 5.0 P< .05). A saphenous ablation by stripping or radiofrequency was more frequently carried out in LLs with GSV1 than in LLs with GSV2 (22.3% vs 6.0% P< .05) with a higher NZT (7.0 vs 6.2 P< .05).

Conclusion:
The absence of the GSV in the saphenous compartment at the mid-thigh was associated with a younger age and a higher BMI, with a higher frequency of symptoms, edema and skin changes in patients with chronic venous insufficiency. This anatomic situation was also correlated with a worse hemodynamic and anatomical status of the proximal GSV, leading to a more frequent saphenous ablation in patients with varicose veins.
49: Percutaneous Endovenous Intervention for Acute and Chronic Deep Venous Occlusion
St George’s Vascular Institute, London, United Kingdom
J Brownrigg

Introduction:
Accumulating evidence supports the role of percutaneous endovenous intervention (PEVI) in the treatment of both acute and chronic deep venous occlusions. In the acute setting of acute proximal deep venous thrombosis, randomised trial data have demonstrated superior outcomes for PEVI in combination with anticoagulation compared to anticoagulation alone. Furthermore, endovenous stenting has largely replaced bypass surgery in the treatment of chronic ilio-femoral venous obstruction. A comprehensive multi-disciplinary team (MDT) programme for deep venous disease management was started at our institution in June 2013.

Methods:
Consecutive patients undergoing percutaneous intervention for deep venous occlusion during a nine-month period were included. Decisions regarding both intervention and anticoagulation strategies were made by the MDT, comprising haematologists, interventional radiologists and vascular surgeons. Data on mode of presentation, CEAP (Clinical-Etiology-Anatomic-Pathophysiologic) score, procedural variables and post-intervention surveillance imaging were collected prospectively. Decisions regarding anticoagulant agents were made on a case-by-case basis.

Results:
A total of 47 patients (22 male) underwent PEVI with a mean age of 39±17 years. A total of 24/47 patients (51%) presented with acute ileo-femoral or inferior vena cava occlusion, of whom four patients presented with co-existing pulmonary embolus. Recanalisation was achieved with catheter directed thrombolysis (CDT) in all 24. An endovenous stent procedure was required in 19/24 (79%) on completion of lysis to maintain patency. One patient required common femoral vein endophlebectomy. Primary and secondary stent patency rates, at a median of 6 months (IQR 3-9), were both 95% (18/19). One death occurred secondary to progression of an underlying malignancy. The remaining 23 patients presented with chronic deep venous occlusion; venous stenting was attempted in 22 (96%). One patient, who presented with occluded stents placed 4 years previously underwent a femoro-caval bypass procedure which remains patent at 6 months follow-up. Technical success in crossing the occlusive lesion was achieved in 20/22 (91%). Primary and secondary stent patency rates at a median of 3 months (IQR 1-5) among this group were 80% (16/20) and 85% (17/20) respectively.

Conclusion:
Deep venous intervention can be performed with low morbidity in the short-term and may offer substantial clinical improvements relative to anticoagulation alone. The long-term outcomes of PEVI in a relatively young cohort of patients will determine how widely these interventions are considered in a broad spectrum of symptomatic patients.
SCIENTIFIC SESSION 8 - Thursday 25 September 16:00-17:30

50: Factors Associated with Recurrence of Superficial Vein Thrombosis in Patients with Varicose Veins

Department of Vascular Surgery, University Hospital of Larissa, Faculty of Medicine, School of Health Sciences, University of Thessaly, Larissa, Greece

C Karathanos

Introduction:
Patients with varicose veins (VVs) often experience recurrent episodes of superficial vein thrombosis (SVT). The objective of this study was to investigate the possible related factors for recurrence of SVT in patients with VVs.

Methods:
Ninety-seven consecutive patients with VVs and first episode of SVT were followed up for a mean period of 55 months (range 40-63 months). All patients were subjected to thrombophilia screening including Factor V Leiden, prothrombin G20210A (F II), methylenetetrahydrofolate reductase and plasminogen inhibitor-1 mutations, protein C, protein S, antithrombin III, plasminogen deficiencies, A2 Antiplasmin levels, activated protein C resistance and lupus anticoagulant. Patients demographics and co-morbidities including age, gender, body mass index, smoking, hyperlipidemia, diabetes mellitus were also recorded. According to CEAP classification patients were categorized in two subgroups: moderate disease (C2, 3) and severe disease (C4,5,6).

Results:
Thirteen patients out of 97 (13.4%) had recurrence of SVT over the follow up period. Recurrent SVT was associated with hyperlipidemia (OR 5.5, p=0.011, 95% CI 1.5-20) and mutations in F II (OR 4.6, p=0.046, 95% CI 1.03-21).

Conclusion:
Hyperlipidemia and mutations in F II are factors associated with SVT recurrence in patients with VVs. These findings may have clinical implications as they may be used to select those patients with VVs that will be most benefited from VVs surgery.
POSTER SESSION 1 - 24 September 14:00-15:00

Posters will be on display throughout the meeting on the balcony over the exhibition and judgement will take place in two sessions of those posters, which participate in the competition.

P1: A Multicentric Registry-based Score for Identifying Patients with Critical Limb Ischemia who Might Benefit from the Use of a Heparin-bonded ePTFE graft
Dept. of Vascular Surgery, University of Florence, Italy
C. Pratesi, R. Pulli, W. Dorigo On behalf of the Italian Propaten® Registry Group

P2: Amplatzer Plug to Occlude the Internal Iliac Artery During Endovascular Aortic Aneurysm Repair: a Large Scale Study
CHU Clermont-Ferrand, France
E Warein, H Payrot, P Feugier, V Moin, S Malikov, M Benezit, X Chaufour, M Bartoli, J Picquet, P Chabrot, E Steinmetz, E Rosset, AURC

P4: Comparison of Systolic Model of Abdominal Aortic Aneurysms based on Finite Elements Analysis with Reference Data from Magnetic Resonance Images
Department of General and Vascular Surgery, Poznan, Poland Institute of Control and Information Engineering, Faculty of Electrical Engineering, Poznan University of Technology, Poznan, Poland
H Stepak, Z Domagala, P Drapikowski, G Oszkinis

5: Corrosion and Metal Release from Arterial Stents (Single and Stent in Stent: under Mechanical and Electrochemical Stress – an Experimental Study
Department of Clinical Science, University of Bergen, Norway, Haukeland University Hospital, Norway
PJ Høl, NR Gjerdet, G Jenssen, T Jonung

P6: Cranial Perfusion and Risk of Adverse Outcomes During Surgical Intervention for Carotid Artery Disease
1 Department of Vascular Surgery, University Hospital Limerick, Limerick, Ireland. 2 Department of Mechanical, Aeronautical and biomedical engineering, University of Limerick, Limerick, Ireland
A Elrasheid. H Kheirelseid1, AG Lynch2, E Kavanagh1, P Burke1, MT Walsh2

P7: Early Results of Carotid Endarterectomy after Recanalization Without Pharmacological Thrombolysis of Symptomatic Occlusions
assistance publique hopitaux de Marseille, France
M Bartoli, M Gaudry, A Flavian, V Omnes, R Soler, G Sarlon, PE Magnan

P8: Elasticity of the Carotid Artery Walls as a Prognostic Factor for the Occurrence of Restenosis after Surgical Narrowing of the Common Carotid Artery
Department of Vascular Surgery and Angiology The Centre for Postgraduate Medical Education, Poland
A Eberhardt, W Staszkiewicz, G Madycki, W Hendiger
POSTER SESSION 1 - 24 September 14:00-15:00

Division of Vascular Surgery, Department of Surgery and Clinical Science, Yamaguchi University Graduate School of Medicine, Japan
M Samura

P10: Endovascular Treatment of Patients with Hostile Infrarenal Aortic Aneurysms: Safety and Midterm Results
Russian Cardiology Research and Production Complex, Moscow, Russia
IA Pokidkin, RS Akchurin, MR Osmanov, AA Magizov, EV Belokon, TE Imaev, MI Generalov, DN Mayastrenko

P11: Experience in the Use of Thrombolytic Therapy in the Treatment of Patients with Acute Deep Vein Thrombosis in Vena Cava Inferior System in the Later Stages
O.O. Bogomolets National Medical University, Kyiv, Ukraine
VG Mishalov, DS Mirgorodskii, LY Markulan

P12: Experimental Pilot Study Regarding the Graft Healing in an Animal Model
1st Surgical Clinic, Targu Mures County Hospital, Romania
E Russu, B Cordos, L Toma, A Muresan, D Popa, C Copotoiu

P13: Finite Elements Analysis to Identify Patients with a Higher Risk Abdominal Aortic Aneurysm
Hospital de la Santa Creu i Sant Pau, Spain
B Soto, S Bellmunt, S Hmimina, JM Romero, L Vila, JR Escudero

P14: Five-year Experience with a Fast Track Carotid Endarterectomy Program
Department of Surgery, Vascular and Endovascular Surgery Unit “San Giovanni di Dio” Hospital, Florence, Italy
E Chisci, L Ercolini, F Passuello, E Barbanti, P Frosini, E Romano, N Troisi, S Michelagnoli

P15: Haemodynamic Evidence that Large Iliac Arteries Increase the Risk of Limb Migration following Endovascular Aneurysm Repair
Royal Liverpool Hospital, United Kingdom
SM Jones, A England, RJ Poole, SR Vallabhaneni, RG McWilliams, RL Williams, RK Fisher
POSTER SESSION 1 - 24 September 14:00-15:00

1: A Multicentric Registry-based Score for Identifying Patients with Critical Limb Ischemia who Might Benefit from the Use of a Heparin-bonded ePTFE graft

Dept. of Vascular Surgery, University of Florence, Italy
C. Pratesi, R. Pulli, W. Dorigo On behalf of the Italian Propaten® Registry Group

Introduction:
The aim of this study was to retrospectively analyse the results of below-knee bypasses performed with a bioactive heparin-treated ePTFE graft in patients with critical limb ischemia in a multicentric registry and to create a score for identifying the patients who might benefit from the use of this graft.

Methods:
Over a eleven-year period, ending in December 2012, a heparin bonded prosthetic graft (HePTFE) was implanted in 530 patients undergoing below-knee revascularization for critical limb ischemia in seven hospitals. In the same period of time 423 below-knee bypasses with ipsilateral saphenous vein were performed. Data concerning these interventions were prospectively collected in a multicenter registry with a dedicated database. A simple score for the risk of graft failure on the basis of univariate analysis for graft patency and limb salvage in HePTFE patients was created; linear regression analysis with ANOVA test was performed to identify the cut-off value. Patients were divided into two subgroups on the basis of such value and the results in terms of primary patency and limb salvage were compared with Kaplan-Meier curves and log rank test.

Results:
The factors included in the risk score were gender (male 1 point, female 2 points), the kind of intervention (primary intervention 1 point, reintervention 2 points), the level of distal anastomosis (below-knee 1 point, tibial 2 points), the run off score (1 vessel 2 points) and the Rutherford’s class (class 4 1 point, class 5 2 points, class 6 3 points). The cut-off score value for thrombosis and/or amputation was 7.502 (p<0.001; R=0.09). Seven-year graft patency was higher in patients with a risk score <7 (50.8%) than in patients with a ≥7 score (28%; p=0.002, log rank 9.3). and the same was for limb salvage (87% and 71%, respectively; p=0.004, log rank 8.2). When comparing 7-year graft patency and limb salvage rates in patients with ≤7 score and in patients operated on with autologous saphenous vein, no differences were found (p=0.4, log rank 0.6 for graft patency; p=0.09, log rank 2.8 for limb salvage)

Conclusion:
The use of the proposed risk score could be an useful tool to predict results of HePTFE graft and to individuate patients who could primarily benefit from the use of that graft even in the presence of a suitable autologous vein

2: Amplatzer Plug to Occlude the Internal Iliac Artery During Endovascular Aortic Aneurysm Repair: a Large Scale Study

CHU Clermont-Ferrand, France
E Warein, H Payrot, P Feugier, V Moin, S Malikov, M Benezit, X Chaufour, M Bartoli, J Picquet, P Chabrot, E Steinmetz, E Rosset
POSTER SESSION 1 - 24 September 14:00-15:00

Introduction:
During endovascular repair of abdominal aortic aneurysms (EVAR), in the absence of a
distal iliac landing zone, the Amplatzer plug (St. Jude Medical, USA) is increasingly
being used to replace other techniques to embolize the internal iliac artery (IIA). To
date, no large-scale studies have reported the short and long-term results of this
technique.
Aim of the study: To analyze the technical success, occurrence of complications, and
durability of the Amplatzer plug to embolize the IIA

Methods:
From January 1, 2007 to December 31, 2013, all patients from 10 academic vascular
surgery departments (AURC), who underwent internal iliac embolization with an
Amplatzer plug during EVAR were included. There were 169 patients, 160 men and 9
women, with a mean age of 75 +/- 9 years, treated with unilateral (158 cases, 93%) or
bilateral (11 cases, 7%) embolization of the IIA, performed either prior to (49 cases,
29%) or during EVAR (120 cases, 71%). Patients were followed up clinically and by
CT-scan and/or US scan at 1 month after treatment and yearly thereafter. The
inclusions were done retrospectively but the series was continuous and consecutive.
Data were collected and analyzed using acquisition RED Cap software (University of
Vanderbilt, USA).

Results:
The technical success rate was 97.8%. Failures consisted in device migration (n = 1).
navigation failure (n = 2) and release outside the target zone (n = 1). The average
amount of contrast agent used in the embolization procedure was 111 +/- 51 mL and
the radiation dose was 127,777 +/- 89,529 mGy / cm². The total fluoroscopy time was
854 +/- 538 seconds. No repermeabilization of the IIA trunk was observed during follow-
up. Complications were buttock claudication (n = 41, 24.3%), resolving in 27 cases
(n=27, 66%) at the first follow-up, and intestinal ischemia requiring limited bowel
resection in 2 cases. Neither gluteal necrosis or spinal cord ischemia was observed.
The mean duration of clinical and imaging follow-up were 18 +/- 14 months and 17 +/- 13
months, respectively. Nineteen patients died during follow-up.

Conclusion:
This multicenter study is the largest published to date and demonstrates the efficiency
and reliability of the Amplatzer plug used to embolize the IIA during EVAR, with few side
effects.

4: Comparison of Systolic Model of Abdominal Aortic Aneurysms based on Finite
Elements Analysis with Reference Data from Magnetic Resonance Images

Department of General and Vascular Surgery, Poznan, Poland
Institute of Control and Information Engineering, Faculty of Electrical Engineering, Poznan University of
Technology, Poznan, Poland

H Stepak, Z Domagala, P Drapikowski, G Oszkinis
POSTER SESSION 1 - 24 September 14:00-15:00

Introduction:
Finite element models (FEM) can be used for patients with abdominal aortic aneurysm (AAA) to predict peak wall stress and peak wall rupture index. It allows an assessment of an individual risk and location of rupture of AAA. FEM models were assessed ex vivo through mechanical studies with mean values of these parameters taken into account for rupture risk estimations. The aim of the study was to verify the correctness of biomechanic model of AAA in systolic and diastolic phase with reference geometry reconstructed from Magnetic Resonance Angiography (MRA) data.

Methods:
9 consecutive patients hospitalized electively for AAA repair in October 2013 at the Department of General and Vascular Surgery in Hospital of the Lord’s Transfiguration, Poznan University of Medical Sciences, underwent contrast enhanced MRA of the aorta. Aneurysms models were made on basis of the section between the renal arteries and the bifurcation at the iliac arteries. For each patient, systolic and diastolic models of aneurysms were created by using of an Active Contour method helpful in routing the closed curve on the boundary of areas with varying degrees of brightness on the image. Dedicated software was developed for reconstruction of the 3D models of aneurysms. The final stage of the study was to compare the reference geometry of an abdominal aortic aneurysm with the shape of the aneurysm based on FEM analysis. Comparisons of the aforementioned models were made using free software GOM Inspect (GOM mbH - Gesellschaft für Optische Messtechnik , Germany).

Results:
For each patient a reference model and the model subjected to computer simulation were created. Finally, the geometry of both models were compared. The average error for all analyzed cases was 4.11%. This value allowed to establish the correctness of the presented research methodology.

Conclusion:
The finite element analysis is a reliable tool to predict the behavior of abdominal aortic aneurysm.

5: Corrosion and Metal Release from Arterial Stents (Single and Stent in Stent) under Mechanical and Electrochemical Stress – an Experimental Study
Department of Clinical Science, University of Bergen, Norway, Haukeland University Hospital, Norway
PJ Høl, NR Gjerdet, G Jenssen, T Jonung

Introduction:
Many factors have been suggested to contribute to restenosis in intra arterial stents. Observations of stent fractures, stent compression, accumulation of immune competent cells around stents have led to an interest in stent surface design and the possibility of immunologic reactions to the stents. Stents are often placed inside stents for extension or for treating a restenosis. Skin patch testing indicates a prevalence of nickel allergy in 7-16% of the population. The potential association between skin metal allergy and intra vessel allergy remains uncertain. This study examined the corrosion and metal release from stents with and without mechanical pulsative strain and electrochemical stress.
Methods:
The stents studied were EverFlex/Protege 6x40 mm nitinol alloy (NiTi) and Visi-Pro 7x37 mm 316 L stainless steel (SS). The testing was comprised of single and partially overlapping NiTi stents and fully overlapping stent-in-stents of different types (SS inside NiTi). The stents were mounted on silicone tubing and immersed in a PBS solution at 37°C, pH 7.4. Pulsative strain was created by air pulses to the tubing (1 Hz). Testing was initially done at open circuit with a diametral strain of 2.5% for 3600 pulses. This was followed by potentiostatic voltage of +200 mV above the open circuit potential at two different pulsative strains (2.5% and 8%, 2000 pulses each). Release of nickel (Ni) and titanium (Ti) ions was measured in the test medium by ICP-MS at the end of the test. Stent corrosion was evaluated by optical microscopy.

Results:
Strain with weak electric voltage caused pronounced stent corrosion, especially with overlapping stents. Single stents after pulsatile load released the lowest amount of ions (Ni) range: 3.1-215.5 μg/L). The combination of stents of the same material had the highest nickel release (range: 1382-2906 μg/L). NiTi formed visible deposits of Ti-oxides but with low concentrations of ions in the solution (range: 1.6-24.8 μg/L).

Conclusion:
Stent corrosion occurred quickly. It may be of immunological relevance that the combination of two stents caused significantly higher release of metal ions than single stents. There is a need for further development of international standards for in vitro stent corrosion tests that correlates better with equivalent in vivo situations. The clinical implication of metal allergy needs to be clarified.

6: Cranial Perfusion and Risk of Adverse Outcomes During Surgical Intervention for Carotid Artery Disease
1 Department of Vascular Surgery, University Hospital Limerick. 2 Department of Mechanical, Aeronautical and biomedical engineering, University of Limerick, Ireland
A Elrasheid. H Kheirelseid1, AG Lynch2, E Kavanagh1, P Burke1, MT Walsh2

Introduction:
Hemodynamic complications during surgical intervention for the treatment of carotid artery disease (CAD) can occur due to a number of reasons. A key contributory factor however, is variability in the geometry of the circle of Willis (CoW). This study was designed to identify the subpopulation of patient with specific CoW configurations that may be unable to tolerate ICA occlusion during surgical intervention. In addition, we investigated stump pressure (SP) measurement as an objective indicator of cerebral perfusion and need for shunting during carotid endarterectomy.

Methods:
A generic representative model of CoW was created and the artery segments were varied to represent the 20 commonest CoW anatomical variations highlighted in the literature. A computational flow study was conducted on all the 20 variations to determine their effect on cerebral perfusion. Static and dynamic auto-regulation model was also incorporated in this model. Thereafter, 3-scale flow phantom of generic CoW geometry was used to experimentally validate the findings of the computational analysis. The experimental model was developed using stereolithography. IBM SPSS® 22 was used for statistical analysis.
Results:
Specific CoW variations were identified as high risk for brain ischemia during internal carotid artery (ICA) occlusion. These variations estimated to correspond to 25% of the population. Moreover, autoregulation mechanism was found to have a significantly lower recovery effect on cerebral perfusion in this group of patients due to lack of collateral circulation (p=0.018, student-t-test). In addition, analysis of stump pressure identified a strong positive correlations between mean SP and middle cerebral artery (MCA) flow rate (correlation coefficient=0.998, p<0.0001 for left ICA mean SP and left MCA flow rate; correlation coefficient =0.972, p<0.0001 for right ICA mean SP and right MCA flow rate). This correlation was seen in all CoW variations and suggested that a mean SP threshold of 45 mmHg is appropriate to ensure sufficient cerebral perfusion.

Conclusion:
Morphological variations of the CoW can limit its ability to operate effectively as a collateral pathway during ICA occlusion and may identify a specific cohort of patient at high risk for peri-procedural complication.

7: Early Results of Carotid Endarterectomy after Recanalization Without Pharmacological Thrombolysis of Symptomatic Occlusions
assistance publique hopitaux de Marseille, France
M Bartoli, M Gaudry, A Flavian, V Omnes, R Soler, G Sarlon, PE Magnan

Introduction:
The aim of our study was to analyze the postoperative results of carotid endarterectomy performed early after recanalization without pharmacological thrombolysis of a symptomatic occlusion of the internal carotid extra cranial.

Methods:
Among patients who had surgery for symptomatic carotid stenosis between January 2006 and December 2013 in our department, we have included all those who had on the supra aortic trunks CT scan performed at admission a carotid occlusion secondarily recanalized without pharmacological thrombolysis before surgery. The diagnosis of occlusion of the initial extra cranial internal carotid was confirmed by an independent radiologist.

Results:
Among the 336 patients who underwent symptomatic stenosis of the internal carotid 9 patients (2.7%) were included. They all benefited a specific initial management involving anticoagulation and antiplatelet therapy, the maintenance of high blood pressure, a strict supine position and CT scan at 48 hours looking for signs of recanalization of the internal carotid artery. In five cases the internal carotid occlusion was initially associated with middle cerebral artery occlusion downstream. The median time between the onset of neurological symptoms and specific treatment was 5.5h [2-12]. The surgery was always performed after complete disappearance of intra carotid thrombus. In two cases the surgery was delayed due to an asymptomatic hemorrhagic transformation. The median time from onset of symptoms to surgery was 12 days [5-44]. During the 30 postoperative days, there were no new neurological events and no patient died. The median follow-up of these patients was 27 months. During this follow-up, there was no recurrence of stroke and no significant restenosis.
Conclusion:
Our study shows that symptomatic occlusion of the internal carotid artery can be recanalized without pharmacological thrombolysis with specific care. The residual stenosis that is unmasked can be surgically managed according to the usual criteria and with similar results of recommendations.

8: Elasticity of the Carotid Artery Walls as a Prognostic Factor for the Occurrence of Restenosis after Surgical Narrowing of the Common Carotid Artery

Department of Vascular Surgery and Angiology The Centre for Postgraduate Medical Education, Poland
A Eberhardt, W Staszkiewicz, G Madycki, W Hendiger

Introduction:
Restoration of patency in the carotid arteries is one of the most frequently performed operations in vascular surgery. One of the most important issues occurring both shortly and long after endarterectomy of the carotid arteries is their recurring stenosis. At present, in spite of well-developed image diagnostics and knowledge of the mechanisms of creation of atherosclerotic lesions, the mechanism of creation of restenosis still remains unclear. Patients with internal carotid artery atherosclerosis experience decreased elasticity of the intima-media complex and consequently increased stiffness of the vessel wall. The measurement of elasticity of carotid artery may become in the future a marker for the development of post-surgical stenosis occurring after endarterectomy both of the carotid artery and other peripheral vessels.

Methods:
180 patients selected on the basis of standard, ultrasound-based recommendations, had a classic endarterectomy of the carotid artery performed. The phenomenon of restenosis was examined using ultrasound techniques 6 and 12 months after the surgery. The measurement of elasticity of the carotid arteries was performed using a device called Vascular Echo Doppler. This instrument enables the noninvasive measurement of the elasticity of the carotid artery based on the logarithmic dependency of the cross-sectional area of the artery and blood pressure.

Results:
Group I (without restenosis) consisted of 156 patients (86.6%). group II (with restenosis: consisted of 24 patients (13.4%). 6 and 12 months after the surgery an increase of the elasticity of vessel walls (coefficient α) was observed in both groups, but the differences in the elasticity of the carotid arteries were not significant. 12 months after the surgery all the patients from group II (with restenosis) had a significantly increased value of coefficient α as compared to patients from group I (p < 0,001). The results of the study indicate that thanks to the noninvasive measurement of elasticity through VED, the endarterectomy for carotid stenosis can be planned more reliably and complications prognoses more accurately.

Conclusion:
The decrease of elasticity of the carotid artery walls measured using coefficient α can be associated with the process leading to the occurrence of restenosis after the surgery. Further research is required in order to confirm the conclusions presented in this paper and to explain the potential mechanisms of this phenomenon.
**POSTER SESSION 1 - 24 September 14:00-15:00**

**9: Embolization of the Bilateral Internal Iliac Arteries for Endovascular Aortic Aneurysm Repair: What Makes it Safe?**

*Division of Vascular Surgery, Department of Surgery and Clinical Science, Yamaguchi University Graduate School of Medicine, Japan*

M Samura

**Introduction:**
The success of endovascular aortic aneurysm repair (EVAR) highly depends on anatomical suitability, including adequate proximal and distal landing zones. However, approximately 20% of patients with abdominal aortic aneurysm have concomitant iliac artery aneurysms. Such aortoiliac aneurysms lack a suitable common iliac artery landing zone and require extension of the iliac limb into the external iliac artery. To prevent type II endoleaks caused by retrograde perfusion of the internal iliac arteries (IIAs). embolization of the unilateral or bilateral IIAs may be required. However, the latter remains controversial. This study presents the clinical outcomes of patients who underwent coil embolization of the bilateral IIAs for endovascular aortoiliac aneurysm repair.

**Methods:**
The data from 234 patients who underwent EVAR between April 2007 and December 2013 were retrospectively analyzed. Thirty-one patients underwent simultaneous coil embolization of the bilateral IIAs for endovascular aortoiliac aneurysm repair. The 19 men and 12 women had a median age of 77.0 years (range, 60–91 years). Twenty-nine patients (93.5%) had a patent inferior mesenteric artery (IMA). and none of the patients lacked a connection between the superior mesenteric artery (SMA) and IMA on preoperative computed tomographic (CT) angiography. Postoperative colonoscopy was performed in all patients to evaluate colonic ischemia.

**Results:**
No severe ischemic complications such as colonic ischemia and buttock necrosis were encountered, and the preoperative IMA was patent in almost all the patients. The collateral flow to the ipsilateral IIA was detected in 77.4% of the patients (24/31) by intraoperative arteriography and postoperative CT angiography. Collateral flow to the IIA was divided into three patterns as follows: circumflex femoral artery/circumflex femoral artery, 58% (8/24); circumflex iliac artery/circumflex femoral artery, 33% (8/24); and circumflex iliac artery/circumflex iliac artery, 8% (2/24). The median follow-up period was 19.6 months (range, 7.9–38.4 months). Postoperative buttock claudication occurred in 35.5% (11/31) of the patients but disappeared within 3 and 6 months after the procedure in 63.6% (7/11) and 36.4% (4/11) of the patients, respectively. New-onset buttock claudication did not occur in any patients during the follow-up period.

**Conclusion:**
Embolicization of the bilateral IIAs was safely performed, possibly due to collateral circulation in the pelvis and IIAs, such as the SMA and branches of the deep femoral artery. As such, preoperative evaluation of collateral flow to the pelvic circulation is important in the safe embolization of bilateral IIAs.
POSTER SESSION 1 - 24 September 14:00-15:00

10: Endovascular Treatment of Patients with Hostile Infrarenal Aortic Aneurysms: Safety and Midterm Results
Russian Cardiology Research and Production Complex, Moscow, Russia
IA Pokidkin, RS Akchurin, MR Osmanov, AA Magizov, EV Belokon, TE Imaev, MI Generalov, DN Mayastrenko

Introduction:
To study the safety and midterm outcome of patients with infrarenal aortic aneurysms (AAA) with severe neck angulation and iliac tortuosity treated with the Aorfix endoprosthesis.

Methods:
This was a non-randomized prospective observational study of 53 patients (median age -69 years). All patients had several comorbidity and been unfit for open surgery. The mean AAA diameter was 70 ± 23mm and mean angulation of proximal neck was 77±13 and iliacs- 70±18 degree. Outcomes were primary technical success, 30 day and midterm (up to 3 years) clinical success, morbidity at 30 days and in follow-up period and etc.

Results:
Aorfix endoprosthesis was successfully implanted in 98%(learning curve matters). There was statistically significant freedom from endoleak(type 1, 3) at follow-up, no progression of aneurysm sac, migration, fracture or reinterventions were observed up to 3 years. There was no renal insufficiency due to infrarenal/transrenal fixation of endoprosthesis we believe. There was no 30-day’s mortality nor all-time mortality. No aneurysm-related rupture or death occurred.

Conclusion:
The results of this study support the trials data and FDA registration concept of only Aorfix permission for on-label treatment of highly angulated AAA neck and iliac nowadays. We received good clinical midterm outcomes after complex EVAR procedures. Further investigations for treatment of hostile AAA are needed for building practical recommendations for vascular society.

11: Experience in the Use of Thrombolytic Therapy in the Treatment of Patients with Acute Deep Vein Thrombosis in Vena Cava Inferior System in the Later Stages
O.O. Bogomolets National Medical University, Kyiv, Ukraine
VG Mishalov, DS Mirgorodskii, LY Markulan

Introduction:
Validity of thrombolytic therapy (TLT) for deep-vein thrombosis persisting more than 10 days (DVT) was discussed. The aim was to evaluate the effectiveness of TLT for patients with acute lower extremity DVT in the later periods.
POSTER SESSION 1 - 24 September 14:00-15:00

Methods:
72 patients with DVT were studied in the period of 2010 - 2013. The term for DVT was 1 - 28 days. Conducted a comparative evaluation of the effectiveness of TLT (t-pa 100 mg) and heparin therapy (HT) (heparin 30000 U intravenously on a drip for 48 hours) following Rivaroxabane 20 mg/day. The TLT and HT groups were represented according to the terms of DVT. The final research stage was thrombosis recanalization (full and partial).

Results:
The thrombosis recanalization was obtained in 15 patients (100%) of TLT group with DVT less than 7 days and in 3 patients (21.4%) of HT group (p<0.05). No one had thrombosis recanalization in the HT group having DVT more than 7 days, although positive dynamics was observed in every patient: the reduction of pain and the affected limb excessive circumference. Recanalization was obtained in 6 patients (75%) of TLT group with DVT duration 7 - 14 days, in 5 patients (62.5%) with DVT duration 15 - 21 days, in 2 patients (35%) with DVT duration up to 28 days.

Conclusion:
The TLT effectiveness in the complex treatment for acute DVT reduces with the disease term prolongation. At the same time TLT provides venous blood flow improvement for 67% patients with DVT up to 21 days, and in 35% - up to 28 days, whereas the recanalization in that period for patients of HT group was not registered (p<0.05).

12: Experimental Pilot Study Regarding the Graft Healing in an Animal Model
1st Surgical Clinic, Targu Mures County Hospital, Romania
E Russu, B Cordos, L Toma, A Muresan, D Popa, C Copotoiu

Introduction:
Since the Vinyon N revolution back in the 1950s, there has been a permanent preoccupation to fully understand the graft healing, mostly because of the fiercely complication in our daily practice, which is the infection and its results. In this study we created an animal model to observe the initial phases of protein adsorption and smooth muscle cell ingrowth, comparing different types of prosthetic graft materials. Also, we observed the damage of skin infection(proximity infection)to the graft healing.

Methods:
We implanted four types of synthetic materials: simpla woven Dacron, gelsoft Dacron, ePTFE and silver coated Dacron in the dorsal skinfold of Wistar rats(n=12 per group) to study inflammation and cell proliferation, over a 30-day period. A n=4 rats from each group were infected with a common Staphylococcus aureus strain at the site of implantation.

Results:
These are preliminary results, as the study is ongoing. We can predict a better performance of the silver coated Dacron graft.

Conclusion:
We shall draw the conclusions at the end of the summer, hopefully demonstrating the superiority of the silver coating in an infected environment.
POSTER SESSION 1 - 24 September 14:00-15:00

13: Finite Elements Analysis to Identify Patients with a Higher Risk Abdominal Aortic Aneurysm
Hospital de la Santa Creu i Sant Pau, Spain
B Soto, S Bellmunt, S Hmimina, JM Romero, L Vila, JR Escudero

Introduction:
The maximum diameter of the aorta in patients with abdominal aortic aneurysms (AAA) is used today to manage follow up and to determine indications for surgery. We aimed to find a finite element value able to predict aneurysm growth in order to help in decision-making in the treatment of these patients.

Methods:
We performed a repeat measures analysis to analyse a cohort of patients who were diagnosed of infrarenal aortic abdominal aneurysm (AAA) and who had two separate CT scans from follow up. We excluded symptomatic or complicated aneurysms. AAA measurements were maximum diameter and total volume. We also recorded biomechanical properties such as peak wall stress and peak wall rupture risk and cardiovascular risk and clinical features. Statistical analyses were performed using descriptive variables, simple regression and ROC curves.

Results:
From 2009 to 2012 we recruited 58 patients with AAA for whom two CT scans of 450 days difference were available. The mean initial diameter was 48.6mm and the second diameter was 51.23mm, representing a 5.36% increase. The mean volume growth was 17.93 cm³. We found an increase of over 5% in the aortic diameter in 29 patients. This significant increase was related to a higher initial PWS (p=0.029) and greater peak wall rupture risk (p=0.014). The initial peak wall stress and peak wall rupture risk did not predict the increase in maximum diameter over time, but they did predict the increase in the total volume of AAA (p=0.026 and 0.019 respectively). The area under the curve (AUC) of PWS related to the increase in maximum diameter was 65% (p=0.051) and the AUC of peak wall rupture risk was 69% (p=0.014). A peak wall rupture risk larger than 0.378 had a specificity of 81% to detect a high risk of aneurysm growth.

Conclusion:
Our findings suggest a higher peak wall stress and peak wall rupture risk in a CT-scan of a patient with AAA is associated with a greater growth during follow up.

14: Five-year Experience with a Fast Track Carotid Endarterectomy Program
Department of Surgery, Vascular and Endovascular Surgery Unit “San Giovanni di Dio” Hospital, Florence, Italy
E Chisci, L Ercolini, F Passuello, E Barbanti, P Frosini, E Romano, N Troisi, S Michelagnoli

Introduction:
To investigate whether a patient undergoing elective carotid endarterectomy (CEA) could be discharged safely within twenty-four hours according to a definite treatment protocol (fast track surgery).
POSTER SESSION 1 - 24 September 14:00-15:00

Methods:
This is a five-year prospective study. Consecutive patients suffering from ≥70% carotid artery stenosis were treated with a standardized CEA procedure. Treatment protocol consisted of a pre-operative assessment on an office basis, eversion CEA under general anesthesia and intraoperative electroencephalography and somatosensory evoked potential monitoring with selective intraluminal shunting whenever possible. Medical therapy was standardized on the pre, intra and post-operative period. Discharge was scheduled the day after the procedure at noon. Outcomes analyzed were 24-hour discharge rate, 30-day major adverse event rate (composite of stroke, death, and myocardial infarct; MAE). death, stroke, disabling stroke, myocardial infarct (MI) rate, minor adverse event rate (neck hematoma, cranial nerve injury; MIAE) and readmissions in hospital at 30-days. Mean costs were investigated.

Results:
1115 elective CEAs were included in the study. 100 urgent CEAs and 43 patients were post-operative ICU needing was predicted before intervention were excluded. Eversion CEA was always performed apart from those cases needing shunting (n=67;6%). Mean LOS was 2 days (SD:0.5). 24-hour discharge rate was 49.9% (n=556) without any 30-day in hospital re-admissions (5 readmissions in patient s with a LOS>1). For 30-day outcomes, there were no deaths, fourteen MAEs (1.2%). seven strokes (0.6%) 6 minor, 1 disabling stroke). seven MI (0.6%). and fifty-eight MIAEs (5.2%). On a multivariate logistic regression analysis, LOS>1 was significantly associated with the symptomatic status (minor stroke: OR=2.5, 95% CI=1.6-4. p<0.001). the occurrence of a MIAE (OR=3, 95% CI=1.6-5.4. p=0.0002). the patients’ American Society of Anesthesiologists (ASA) physical status (ASA III vs. ASA II) OR=1.2, 95% CI=1-1.6. p=0.03). dual antiplatelet treatment (OR=2, 95% CI=1.2-3.5. p=0.009). and patch angioplasty after CEA (OR=8.1, 95% CI=1-65. p=0.008). Protective factor for 24-hour LOS was statin treatment (OR=0.4, 95% CI=0.3-0.5. p<0.001). Mean total costs were 4646 Euros per CEA procedure (calculated on a mean LOS=2 with cost per day of 700 Euros). Almost 390,000 Euros were saved with the application of this program.

Conclusion:
Elective fast track CEA program was feasible and safe in nearly 50% of unselected patients. This approach is of increasing interest in the current era of medical cost containment.

15: Haemodynamic Evidence that Large Iliac Arteries Increase the Risk of Limb Migration following Endovascular Aneurysm Repair
Royal Liverpool Hospital, United Kingdom
SM Jones, A England, RJ Poole, SR Vallabhaneni, RG McWilliams, RL Williams, RK Fisher

Introduction:
Migration of iliac limb extensions following endovascular aneurysm may occur at a rate of approximately 10% and is opposed by fixation force which has been reported at 9.5Nfor the distal seal zone of a Zenith limb extension (Cook Medical Ltd, Bloomington, USA). Acting against this to encourage migration is the haemodynamic distraction force.
POSTER SESSION 1 - 24 September 14:00-15:00

Our aim was to determine whether distraction force acting on iliac limbs extensions following their deployment was greater in those that would subsequently develop migration and to identify any morphological features that may be associated with this increased risk.

Methods:
Computer models of 37 modular fenestrated stent-grafts were constructed from the 1st post-operative CT scan (ScanIP software). Blood flow was simulated using Computational Fluid Dynamics with boundary conditions representative of peak systole based on pre-operative blood pressure. Distraction force was obtained for iliac limb extensions and complete stent-grafts. The extent of iliac limb migration between the first and last available CT scan was measured using a central luminal line technique. Iliac limb components and complete stent-grafts were grouped according to the presence or absence of migration defined as movement of ≥4mm between imaging episodes.

Results:
Thirty seven stent-grafts comprised 43 iliac limb components of which 4 migrated ≥4mm. Median imaging interval was 26 months (range 4-72 months). Distraction force acting on the iliac limb extensions was significantly higher in the migration group versus the no migration group (Median 2.9N, range 2.7-6.3N vs 1.6N, range 0.4-3.8N, p=0.003, MWU). Median distraction force acting on complete stent-grafts in the migration group was 6.0N (range 2.4-13.1N) versus 5.4N (2.1-7.8N) in the no migration group (p=0.747, MWU). Cross-sectional area of the distal iliac limb extension was significantly larger in the migration group (Median cross-sectional area 183mm², range 123-380mm² vs 95mm², range 25-254mm², p=0.018, MWU).

Conclusion:
This in-silico study shows that proximal migration of iliac limb components may occur in the presence of distraction forces smaller than the reported fixation force. Iliac limbs exposed to greater distraction force are more likely to undergo migration and the size of the distal sealing zone is significantly associated with this. These results indicate that care should be taken when planning stent-graft deployment in large, ectatic iliac arteries.
POSTER SESSION 2 - 25 September 12:00-13:00

Posters will be on display throughout the meeting and judgement will take place in two sessions of those posters, which participate in the competition

P16: Hybrid Operations for Intermittent Claudication and Critical Ischemia are Effective and Durable  
*Department of Vascular Surgery, St. Olavs Hospital, Trondheim University Hospital, Norway*  
M Altreuther, E Mattsson

P17: Intravenous Targeted Microbubble Contrast Agents Carrying Urokinase Versus Urokinase Alone in Acute Peripheral Arterial Thrombosis in a Porcine Model  
*VU university medical center, The Netherlands*  
JH Nederhoed, HP Ebben, J Slikkerveer, AWJ Hoksbergen, O Kamp, GJ Tangelder, W Wisselink, RJP Musters, KK Yeung

P18: Outcome Following Salvage Interventions on Threatened Infra-popliteal Bypass Grafts in Patients with Critical Leg Ischaemia  
*Department of Vascular Surgery, Guy’s and St Thomas’ NHS Foundation Trust, United Kingdom*  
SD Patel, L Lympopoulos, V. Zymvragoudakis, T Lea, T Donati, S Padayachee, K Katsanos, H Zayed

P19: Posttraumatic Aneurysms of Aortic Arch Branches – Endovascular Treatment  
*(1: Clinic of Vascular Surgery, Institute of Haematology and Transfusion Medicine, Warsaw, Poland (2: 1st Chair and Clinic of General and Vascular Surgery, 2nd Medical Faculty, Warsaw Medical University, Warsaw, Poland)*  
P Szopinski (1,2: E Pleban (1). A Wiszniewski (1). P Ciostek (2: P

P20: Pre-operative Morphological Features Predict Late Distal Type I Endoleaks  
*Vascular surgery, University of Bologna, Italy*  
C Mascoli, E Gallitto, R Pini, M Longhi, A Freyrie, M Gargiulo, A Stella

P21: Reducing the Interventional Footprint with Endovascular Robotic Systems; Contact Force Evaluation in the Arch and Supra-aortic Vessels *  
*Imperial College London, United Kingdom*  
CV Riga, H Rafii-Tari, CJ Payne, SL Lee, A Darzi, M Hamady, CD Bicknell, GZ Yang, NJW Cheshire

P22: Safety and Accuracy of Endovascular Aneurysm Repair Without Preoperative and Intraoperative Contrast Agent  
*University Hospital of Nantes and Rennes, Signal and Image Processing Laboratory, INSERM unit 1099, France*  
A Kaladji, A Dumenil, Y Gouëffic, P Haigron, A Cardon
POSTER SESSION 2 - 25 September 12:00-13:00

P23: Selective Intra-procedural AAA-sac Embolization During EVAR Reduces the Rate of Type II Endoleak
_Vascular Surgery, University of Bologna, Italy_
C Mascoli, A Freyrie, M Gargiulo, E Gallitto, R Pini, GL Faggioli, C De Molo, A Stella

_Royal Free Hospital, London, United Kingdom_
H Hamilton, J Constantinou, P Jayia, K Ivancev

P25: Surgical Infrarenal "Neoneck" Technique, During Elective Conversion after EVAR with Suprarenal Fixation
_Vascular and Endovascular Clinic, Padova University, Italy_
S Bonvini, M Piazza, V Wassermann, M Menegolo, P Scrivere, F Grego

P26: The Relevance of Early Diagnosis for Women with Peripheral Arterial Disease
_North-Western State Medical University named after I.I. Mechnikov, St Petersburg, Russia_
MA Ivanov, PB Bondarenko, ED Podsuslonnikova, KV Myatechkina VV Zaytsev ZM Pikhanova

P27: The role of Venotonics in the Rehabilitation of Patients with Acute Varicose Thrombophlebitis after Radical Phlebectomy
_O.O. Bogomolets National Medical University, Kyiv, Ukraine_
VG Mishalov, LY Markulan, SV Beichuk, DS Myrgorodskii

P28: Transatlantic Multispecialty Consensus on Basic Endovascular Skills: Results of a Delphi Consensus Study
_Ghent University Hospital Belgium_
H Maertens, R Aggarwal, F Vermassen, I Van Herzele, on behalf of the FOundER group (Fundamentals Of Endovascular pRocedures:

P29: Treatment of Aortic Prosthesis Infections with Graft Removal and In Situ Replacement with Autologous Femoral Veins in Helsinki University Hospital
_Department of Vascular Surgery, Helsinki University Hospital, Helsinki, Finland_
I Heinola, I Kantonen, M Jaroma, A Albäck, P Vikatmaa, P Aho, M Venermo
POSTER SESSION 2 - 25 September 12:00-13:00

16: Hybrid Operations for Intermittent Claudication and Critical Ischemia are Effective and Durable

Department of Vascular Surgery, St. Olavs Hospital, Trondheim University Hospital, Norway
M Altreuther, E Mattsson

Introduction:
Hybrid operations combining open surgery and endovascular techniques are performed in an increasing proportion of patients. Recent studies show good short and medium term results when the hybrid approach is used for peripheral arterial insufficiency. The aim of this study was to analyze long-term results after open Trombendarterectomy (TEA) of the femoral artery simultaneously combined with proximal or distal endovascular intervention.

Methods:
Study data were retrospectively obtained from the electronic patient records and our local vascular quality registry which registers data prospectively. We identified 144 operations in 133 patients (1999 – 2012). Indication for surgery was intermittent claudication in 83 cases and critical ischemia with either rest pain or ulcer/gangrene in 61 cases. TEA was combined with proximal (iliac) endovascular intervention in 83 cases, femoropopliteal intervention in 47 cases and combined iliac and femoropopliteal intervention in 14 cases.

Results:
Primary technical success was 99 % (96/97) for iliac revascularization and 90,2 % (55/61) for the superficial femoral artery. There was no mortality within 30 days in after operation for intermittent claudication. 30-day mortality in critical ischemia was 8,2 % (5/61). Ten cases (6,9 %) needed re-intervention within 30 days. During follow-up, secondary interventions were necessary in 13,2% (19/144) cases. Primary patency / secondary patency at 5 years were 88% / 96% in operations for intermittent claudication and 65% / 84% in critical ischemia. Limb salvage in critical ischemia was 77% at one year and 71% at 5 years. Survival at 5 years was 76% in patients with intermittent claudication and 45 % in patients with critical ischemia. In patients with critical ischemia, amputation free survival was 65% at one year and 38% at 5 years.

Conclusion:
Hybrid operations combining TEA of the femoral artery with either proximal or distal endovascular intervention have a high rate of technical success in a challenging patient group with multilevel arteriosclerosis. Long term results show good durability and a fair level of limb salvage in critical ischemia. Patients with critical ischemia have significant perioperative mortality and poor long term survival, confirming the malignant nature of this disease. Hybrid operations for intermittent claudication or critical ischemia are a valid alternative for treatment of peripheral arteriosclerosis in the long-term perspective.
17: Intravenous Targeted Microbubble Contrast Agents Carrying Urokinase Versus Urokinase Alone in Acute Peripheral Arterial Thrombosis in a Porcine Model

VU university medical center, The Netherlands
JH Nederhoed, HP Ebben, J Slikkerveer, AWJ Hoksbergen, O Kamp, GJ Tangelder, W Wisselink, RJP Musters, KK Yeung

Introduction:
Intra-arterial catheter guided thrombolysis for acute peripheral arterial thrombosis can be accelerated with local application of ultrasound (sonothrombolysis). In vitro studies demonstrated further acceleration of thrombolysis when ultrasound contrast agents (UCAs) were added. UCAs are gaseous microbubbles that can be used as a carrier for a fibrinolytic agent. They can be targeted to adhere to thrombus and destroyed with high-intensity ultrasound, causing local release of the fibrinolytic agent. In this intervention-controlled feasibility study, we studied whether systemically administered targeted microbubbles (tMB) with incorporated urokinase and locally applied ultrasound accelerates thrombolysis compared to systemic urokinase combined with ultrasound alone.

Methods:
In 9 pigs a thrombus was created in the common iliac artery by mechanical occlusion of the vessel and intraluminal injection of thrombin. After removal of the occluding device, the animals were assigned to receive either tMB and urokinase (UK+tMB-group) or urokinase alone (UK-group). Urokinase was administered in a start-up dose of 500.000IU combined with 2 vials of tMB depending on group, followed by 3 doses of 50.000IU, combined with 1 vial of tMB in the UK+tMB-group. Duration of treatment was 1 hour, during which ultrasound was applied at the site of the occlusion. Blood flow in the iliac artery of the effected limb was continuously monitored using an ultrasonic flow probe. One hour after the last dose of urokinase, the animals were euthanized and autopsied to determine the weight of the thrombus and to check for adverse effects.

Results:
Five pigs were assigned to the UK+tMB-group, 4 to the UK-group. In the UK+tMB-group, median improvement of arterial blood flow was 5ml/minute (range 0-216). Improvement was seen in 3 out of 5 pigs, one reaching complete return to baseline flow. In the UK-group, median improvement of arterial blood flow was 0ml/minute (-10-18). with only slight improvement in 1 out of 4 pigs. Thrombus weight was significantly lower in the UK+tMB-group than in the UK-group (median 0,9383g (0,885-1,2809) versus 1,5399g (1,337-1,7628; P=0,016). No adverse events occurred during this study.

Conclusion:
Based on this experiment, minimal invasive thrombolysis using intravenously administered targeted microbubbles carrying urokinase combined with local application of ultrasound is feasible. This technique accelerates thrombolysis, which is potentially beneficial in patients with acute peripheral arterial thrombosis.
18: Outcome Following Salvage Interventions on Threatened Infra-popliteal Bypass Grafts in Patients with Critical Leg Ischaemia

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SD Patel, L Lymperepoulos, V. Zymvragoudakis, T Lea, T Donati, S Padayachee, K Katsanos, H Zayed

Introduction:
The incidence of critical limb ischaemia (CLI) is increasing along with that of diabetes and chronic renal failure. Infra-popliteal bypass is an established and effective method for limb salvage in these patients. Secondary interventions maybe required in order to maintain graft patency, however there is little evidence regarding the frequency and efficacy of such interventions. The aim of this study was to look at the outcome of infra-popliteal bypasses and the interventions required to maintain their patency.

Methods:
Consecutive patients undergoing bypasses onto the infra-popliteal vessels for CLI (Rutherford 4-6) at a single institution were analysed between 2009-2013. Patient demographics, operative variable, and secondary interventions were noted. Our institute has a surveillance protocol for all bypass grafts involving duplex scans prior to discharge and at 3,6,9 and 12 months. The primary end points were graft patency, limb salvage and amputation free survival at 12 months by Kaplan Meier analysis. Univariate and multivariate analysis was used to determine factors associated with re-intervention.

Results:
A total of 130 infra-popliteal bypasses were performed in 126 patients with a mean age 74 years (+/-12). Distal anastomosis was on to the anterior tibial (n=40), peroneal (n=28), posterior tibial (n=26), tibio-peroneal trunk (n=24) or dorsalis pedis artery (n=12). Technical success was 100%, and 12 month primary patency, assisted primary patency and secondary patency was 63%, 72% and 74% respectively. Initial limb salvage was achieved in 94% of patients. Amputation free survival was 72% at 12 months. There were 71 secondary salvage interventions performed on 50 (38%) threatened grafts detected on duplex surveillance. Salvage interventions included angioplasty of inflow/proximal anastomosis (28%) and outflow/distal anastomosis (31%). thrombolysis and angioplasty (23%). surgical intervention (18%). Median time from operation to first re-intervention was 6 (1-31) months with a technical success of 91%. Amputation-free survival was not significantly different between salvaged threatened grafts and non-threatened grafts at 12 months (Log rank test, P=0.5).

Conclusion:
Secondary intervention in threatened infra-popliteal bypass grafts is successful at maintaining graft patency. These salvage procedures appear to maintain an amputation free survival which is comparable to non-threatened grafts in patients with CLI. Our study shows that careful duplex surveillance of theses complex bypasses and timely intervention is associated with acceptable limb salvage rate.
19: Posttraumatic Aneurysms of Aortic Arch Branches – Endovascular Treatment

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P Szopinski (1,2) E Pleban (1). A Wiszniewski (1). P Ciostek (2)

Introduction:
Aneurysms of arteries arising from aortic arch are of different etiology: atherosclerotic, posttraumatic and mycotic. Treatment of this vascular pathology is a real challenge even for the most specialized vascular surgery centres due to immediate vicinity of surrounding structures and central nervous system. Endovascular treatment has emerged as an important potential alternative to conventional operative therapy. The aim of the study was to perform a retrospective review of the endovascular treatment of posttraumatic aneurysms of carotid and subclavian arteries.

Methods:
From 1983 to 2014 we treated 16 posttraumatic aneurysms of aortic arch branches in 16 patients (19M, 7F). aged 32-71 years (mean 53.5). Ten aneurysms were located at the ICA, two of them involved the CCA and four the subclavian artery. They were caused by blunt and penetrating trauma and one was iatrogenic. The diameters of the aneurysms ranged from 1.5 to 7cm. Six of the carotid and all of the subclavian aneurysms were qualified for endovascular treatment. Patients were qualified for interventions on the basis of ultrasonography, angioCT and angiography.

Results:
One Wallstent and the following stent-grafts were implanted: Jomed (3), Wallgraft (1) and Viabahn (5). All procedures were performed from femoral approach. Technical success was obtained in nine cases. In one patient control angiograms after stent-graft implantation to subclavian artery showed arterio-venous fistula with slow flow. It was excluded with percutaneous thrombin injection under ultrasound guidance. No neurological complications were observed. No intraoperative deaths occurred. The perioperative period and follow-up were uneventful except one. In this patient Wallstent damage occurred in subclavian artery seven years after implantation. The lesion was covered by Viabahn stent-graft. Fig 1 A. Initial angiography. Pseudoaneurysm of RICA. B. Control angiography after implantation of 6x25mm Viabahn. C. Control angioCT performed 2 years after the treatment. Fig 2 A. Initial angiography. Posttraumatic aneurysm of the left subclavian artery. B. Control angiography after implantation 10x50mm Wallgraft. Arteriovenous fistula with slow blood flow.

Conclusion:
Endovascular treatment appears as a promising, less invasive method and it is worth considering as a first line treatment specially in patients with comorbidities.
POSTER SESSION 2 - 25 September 12:00-13:00

20: Pre-operative Morphological Features Predict Late Distal Type I Endoleaks

Vascular surgery, University of Bologna, Italy
C Mascoli, E Gallitto, R Pini, M Longhi, A Freyrie, M Gargiulo, A Stella

Introduction:
Distal type I endoleak (ELIB) reduces the outcomes of endovascular repair (EVAR) for abdominal aortic aneurysm (AAA). Few dedicated experiences are reported in literature. Aims of the study were to evaluate incidence, presentation and treatment of late ELIB and to identify the relative risk factors.

Methods:
Between 2006 and 2012, data of patient underwent EVAR were prospectively collected. Follow-up was conducted by duplex-ultrasounds (US) or computed-tomography-angiography (CTA) at 1, 6, 12 months and yearly thereafter. Patients with late ELIB were retrospectively selected (Group1: G1). Pre-operative morphological aortic-iliac features and EVAR-implant details were evaluated. Measurements were performed after centre lumen-line reconstructions using dedicated software. A control group (Group2: G2), without ELIB, homogeneous for clinical conditions, endograft implanted and timing of follow-up, was selected among the remaining patient and compared with Group1. Pre-operative morphological aortic-iliac features and EVAR-implant details of G1 and G2 were analysed using χ2 Test and Logistic regression.

Results:
Six hundred and sixteen patients underwent EVAR between 2006 and 2012. ELIB was detected in 14 cases (2.3%) (G1) and mean follow-up was 37.4 ± 27.9 months. In 3 cases (21.4%) patients were symptomatic (AAA-rupture) 2; Pain: 1; while in 11 cases it was detected during the routinely follow-up (asymptomatic). They were successfully treated by 1 (7%) open surgical and 13 (93%) EVAR re-interventions (iliac leg extension). Hypogastric exclusion was necessary only for 2/14 (14%) cases. Thirty patients were included in G2 and compared with G1. The mean G2 follow-up was 44.3±18.5 months. Common iliac artery length < 4cm (OR:5.3, 95%CI:1.1-29.5, p=.05). diameter > 15mm (OR:3.5, 95%CI:1.2-10.9, p=.03). and severe thrombotic apposition (>50% of circumference: OR:5, 95%CI:1.2-19.2, p=.02). at the iliac sealing zone were independently associated with higher risk of ELIB; Oversize of the iliac leg diameter < 10% or its distal sealing > 1cm above the hypogastric origin were associated with ELIB (OR:5.4, 95%CI:1.3-21.5, p=.01 and OR:6.6, 95%CI:1.1-39.32.5, p=.03, respectively).

Conclusion:
Present data underline that ELIB is not negligible during EVAR long-term follow-up and re-interventions are always necessary; the endovascular solution is feasible and effective. According to the ELIB reported risk factors, an oversize of the iliac leg diameter > 10% and the extensive common iliac artery coverage < 1cm above the hypogastric origin are suggested to prevent this complication.
POSTER SESSION 2 - 25 September 12:00-13:00

21: Reducing the Interventional Footprint with Endovascular Robotic Systems; Contact Force Evaluation in the Arch and Supra-aortic Vessels

Imperial College London, United Kingdom
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Conflict of interest:
Author is a consultant of Hansen Medical
There is institutional support from Hansen Medical, Medtronic, Gore and Bolton

Introduction:
Conventional catheter manipulation in the arch and supra-aortic trunks is associated with significant risks. This study investigates the advantages of robotic navigation by proposing a platform for detailed quantitative analysis of contact forces exerted on the vasculature.

Methods:
An anthropomorphic phantom representing a type-I bovine arch was mounted and coupled onto a six-degree-of-freedom force/torque (F/T) sensor. Three-dimensional force readings provided an average root-mean-square modulus, indicating the total forces exerted on the phantom. The left subclavian(LSA), left common carotid(LCCA), and right common carotid(RCCA) arteries were cannulated in a simulated endovascular suite with conventional(n = 42) versus robotic techniques(n = 30) by two operator groups: experts and novices. The procedure path was divided into three phases and performance metrics corresponding to mean and maximum forces, force impact over time (FIT), and number of contact points above a defined threshold were extracted.

Results:
Robotic navigation resulted in significant reductions in the mean and maximum forces for each phase and for all targets. Significant improvements were also seen in FIT at the target vessel ostium, and for the more anatomically challenging procedural phases. Maximum contact forces were reduced from 1.20N IQR(0.98-1.56) to 0.31N (0.26-0.40; P <.001) for the RCCA; 1.59N (1.11-1.85) to 0.33N (0.29-0.43; P <.001) for the LCCA; and 0.84N (0.47-1.08) to 0.10N (0.07-0.17; P <.001) for the LSA. Force reductions using robotic technology were evident for both novice and expert groups.

Conclusion:
Robotic navigation can potentially reduce contact forces and catheter-tissue contact points in an in-vitro model, by enhancing catheter stability and control during endovascular manipulation.
POSTER SESSION 2 - 25 September 12:00-13:00

22: Safety and Accuracy of Endovascular Aneurysm Repair Without Preoperative and Intraoperative Contrast Agent

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A Kaladji, A Dumenil, Y Gouëffic, P Haigron, A Cardon

**Introduction:**
Severe chronic renal failure is a major limitation for endovascular aortic aneurysm repair (EVAR). The aim of this study was to assess the safety and the accuracy of fusion imaging to perform EVAR without preoperative and intraoperative contrast agent.

**Methods:**
From October 2013 to February 2014, every patient requiring EVAR and presenting severe chronic renal failure had a specific preoperative imaging assessment based on a non-enhanced CT-scan with a dedicated 3D workstation (EndoSize, Therenva). Centerlines were manually extracted and key points were placed at the landing zones. A dedicated imaging process (Signal and Image Processing Laboratory) allowed a virtual enhancement of the preoperative CT-scan. This home made software consisted in the contrast improvement between vascular structures and surrounding tissues by increasing the value of the vascular structure's voxels (500 Hounsfield units). EVAR was performed in a hybrid room (Zeego, Siemens) and the virtually enhanced CT-scan was used for the construction of fusion imaging. The 3D vascular volume with centerlines and key points were overlaid onto the 2D live fluoroscopic image. The alignment of this projection was checked at the beginning of the procedure by catheterization of the lowest renal artery.

**Results:**
Six patients (mean age 77.1 years) were treated for EVAR (5 abdominal aneurysm and 1 thoracic aneurysm) without contrast agent and using fusion imaging. Mean preoperative estimated glomerular filtration rate (eGFR) was 22.5 ml/min/1.73 m². Based on the preoperative sizing, the distance planned between an aortic branch (renal or sub clavian arteries: and the proximal landing zone (L1) was 3.8 mm and 8.2 mm with distal branches (hypogastric or coeliac trunk) and distal landing zones (L2). No contrast was used during the procedure. Mean fluoroscopic time was 21.1 min and radiation dose area was 8.1 mGy.m². No intraoperative endoleak was observed on duplex scan. No eGFR worsening was observed at 1 week (eGFR=21.7, p=0.49) and at 1 month (eGFR=21, p=0.28). One patient required definitive dialysis at 1 month in the context of a coronary endovascular revascularization. One month CT-scan did not show difference between the planned and the effective landing zone at the proximal and distal fixation site (L1=5.8 mm, p=0.18 and L2=10.6 mm, p=0.45 respectively). One type 2 endoleak was noted on duplex scan at 1 month.

**Conclusion:**
EVAR without preoperative and intraoperative contrast agent seems to be safe and accurate for patients with severe chronic renal failure.
**POSTER SESSION 2 - 25 September 12:00-13:00**

23: Selective Intra-procedural AAA-sac Embolization During EVAR Reduces the Rate of Type II Endoleak

*Vascular surgery, University of Bologna, Italy*

C Mascoli, A Freyrie, M Gargiulo, E Gallitto, R Pini, GL Faggioli, C De Molo, A Stella

**Introduction:**
Persistent type II endoleak (ELII) after endovascular abdominal aneurysm repair (EVAR) could be associated with adverse outcomes. In our preliminary study, the pre-treatment presence of ≥6 efferent patent vessels (EPV) from AAA-sac and/or AAA thrombus volume ratio (VR%) <40% were considered as positive predictive factors for ELII. Aim of the study was to evaluate the effectiveness of sac embolization during EVAR in patients with pre-treatment morphological risk factors (p-MRF) for ELII.

**Methods:**
Since January 2012 the intra-procedural AAA sac embolization with coils has been routinely performed in all consecutive patients presenting p-MRF. VR% (ratio between AAA total volume and AAA thrombus volume, X 100) was calculated by a dedicated vessels analysis software. Two groups with the same p-MRF (EPV ≥ 6 and/or VR% < 40%) were retrospectively selected and compared: patients underwent EVAR without intra-procedural sac embolization (GroupA, 2008-2010), and patients underwent EVAR and intra-procedural AAA sac embolization (GroupB, 2012-2013). The presence of ELII at 1 and 6 months was evaluated by Duplex-Ultrasound (DUS). Association of p-MRF, sex, age, anticoagulant therapy and AAA-sac embolization, with ELII were evaluated using multiple logistic regressions. Primary endpoint was the effectiveness of the intra-procedural AAA-sac embolization for ELII prevention. Secondary endpoint was the AAA-sac evolution at 6 months.

**Results:**
A total of 70 patients were analyzed: 44 GroupA and 26 GroupB. Both groups were homogeneous for clinical (age, sex, hypertension, smoke, anticoagulant/dual antiplatelet therapy, COPD) and morphological characteristics (EPV, VR% and AAA sac diameters). In GroupB the mean number of coils positioned in AAA-sac was 4.13±0.92. There were no complications related to the embolization procedures. The post-operative DUS revealed a significantly reduced number of type II endoleaks in GroupB than in GroupA (8/26 vs 33/44 respectively, P< 0.001) and this reduction was confirmed also at 6 months (7/26 vs 30/44 respectively, P= 0.001). At multivariate analysis intra-procedural AAA sac embolization was the only factor independently associated with freedom from ELII (OR= 0.018 with 95% CI, 0.05 - 0.62; P= 0.007). At 6 months mean AAA sac diameter shrinkage in both groups was similar (4.42mm ± 5.8 and 3.28mm ± 4.5, GroupA and B respectively).

**Conclusion:**
Our results suggest that the presence of p-MRF is related with a high incidence of ELII and the selective intra-procedural sac embolization in patients with p-MRF is safe and it could be an effective method to reduce ELII. Further studies are mandatory to support these results at mid-term follow-up.
POSTER SESSION 2 - 25 September 12:00-13:00

24: Spinal Cord Ischaemia in Thoracoabdominal Aortic Aneurysms treated by Endovascular Stent Grafts – Sac Perfusion Strategies Reduce Perioperative Spinal Cord Ischaemia

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H Hamilton, J Constantinou, P Jayia, K Ivancev

Introduction:
Spinal cord ischemia (SCI) is a tragic complication associated with open and endovascular thoracic aortic grafting. For more extensive aortic coverage in the endovascular treatment of thoracoabdominal aortic aneurysms (TAAAs) the incidence of SCI can be as high as 10-20% in open repair, and in endovascular thoracic treatment despite avoidance of aortic crossclamping, the collateral intercostal branches that perfuse the spinal cord are covered, so the risk of SCI is also significant.

Methods:
A series of patients with thoracoabdominal aortic aneurysms (TAAA) treated by thoracic endovascular grafting (TEVAR) was reviewed retrospectively to investigate the incidence and presentation of spinal cord ischaemia. The presentation, clinical outcome and associated perioperative strategies were reviewed.

Results:
Forty seven patients treated between 2008 and 2014 had thoracoabdominal aortic aneurysms treated by endovascular repair. Of these, twenty one (21) were type 2, fourteen (14) were type 3, and twelve (12) were type 4. The majority thirty six (36) had no postoperative spinal cord ischaemia, but nine (9) had varying presentations of postoperative cord ischaemia. Seven (7) were temporary, one (1) reversible and one (1) permanent. Of thirty six (36) patients that did not have spinal cord ischaemia postoperatively, eight (8) had a perfusion branch to maintain postoperative perfusion, with a view to secondary closure by delayed target vessel branching or fenestration. Four (4) had delayed target vessel branching where the branch was left open at the time of the major aortic coverage. Two patients were staged, in that only part of the device components were placed at any one time. Twenty two (22) of thirty six (36) patients without postoperative spinal cord ischaemia had no specific strategy to reduce the potential for spinal cord ischaemia. The patient who developed permanent neurological deficit had a Type 2 TAAA and no sac perfusion.

Conclusion:
We have used strategies of carotid subclavian bypass, interval staging of the length of aortic coverage, deliberate sac perfusion by leaving nonconnected branches for delayed reconnection, or the creation of deliberate type 3 endoleaks between thoracic endograft components, to reduce the severity of SCI perioperatively. This series suggests that these strategies may be useful in reducing SCI in patients with extended aortic coverage used to treat TAAAs by endovascular grafting.
**POSTER SESSION 2 - 25 September 12:00-13:00**

25: Surgical Infrarenal "Neoneck" Technique, During Elective Conversion after EVAR with Suprarenal Fixation  
*Vascular and Endovascular Clinic, Padova University, Italy*  
S Bonvini, M Piazza, V Wassermann, M Menegolo, P Scrivere, F Grego

**Introduction:**  
Surgical conversion of a previous endovascular aneurysm repair (EVAR) with suprarenal fixation, is a challenging surgical situation even if in an elective setting. The purpose of this study is to evaluate safety and efficacy of a technique based on the preservation of the first proximal endograft covered stent used as “neo-neck” for proximal anastomosis.

**Methods:**  
From January 2011, nine patients (8 men, 1 woman) underwent elective conversion of a previous suprarenal EVAR. Surgical approach was in all cases transperitoneal. Supraceliac clamping was applied in all cases, and a Reliant® balloon (Medtronic: preventively inserted through a limb of a standard Dacron bifurcated tube graft, was inflated at the level of the visceral aorta to avoid back bleeding. The infrarenal aorta was transected about 3 cm. distally to the lowest renal artery; after identification of the endograft, the fabric was cut after the first covered stent together with its native aortic wall, in order to create a long "neo-neck"; an Intergard Silver graft (Maquet) was then sutured to the neo-neck mimicking an endobending passing the stitches in to the first covered stent and in the aortic wall.

**Results:**  
The average age was 68 years (range, 58-84 years). Stent graft removed in these patients were 4 Zenith (Cook Medical, Bloomington, Ind). 3 Endurant II (Medtronic) and 2 E-vita (Jotec). Conversion to open repair was performed for Endoleak Type Ia (2 patients), type Ib (1 patient), type II (2 cases), complete endograft thrombosis (2 patients), and abdominal pain with sac enlargement with no radiological sign of endoleak (2 patients). Mean total blood loss was 1428 cc (range 500-3000). Mean visceral ischemic time to perform proximal anastomosis was 3.5min.±(2.3min). Mortality was 0% in the peri and postoperative period. Mean hospital stay was 14.50 days (range 5-40). Post-operative complication included 1 bleeding from the sac wall requiring surgical reintervention. The mean follow-up was of 22 (8-41) months. In all cases the CT angiogram demonstrated regular patency of the graft with no signs of leaks or anastomotic pseudoaneurysm.

**Conclusion:**  
Although the number of patient treated in our study remain fortunately low, this technique seems in our experience to be safe and effective. Surgical conversion after EVAR in cases of suprarenal fixation remains challenging. Preservation of the first covered stent is preferred over complete graft removal, simplifying the surgical approach. It reduces mortality and perioperative blood loss and visceral ischemic time if compared to the literature.
26: The Relevance of Early Diagnosis for Women with Peripheral Arterial Disease
North-Western State Medical University named after I.I. Mechnikov, St Petersbourg, Russia
MA Ivanov, PB Bondarenko, ED Podsuslonnikova, KV Myatechkina VV Zaytsev ZM Pikhanova

Introduction:
Incidences of peripheral arterial disease (PAD) in female occurs frequently and approach that of men. High tempo of modern lifestyle, psycho-emotional stress, dietary habits only stimulate severe atherosclerotic vascular disease. The hypothesis that female sex hormones have a protecting function is not confirmed. Moreover, the number of women suffering from complications of atherosclerosis is constantly increasing. However, the early diagnosis of PAD in women can make change and help to treat atherosclerosis with conservative means more effective.

Methods:
This study is based on monitoring of 80 female patients with PAD and symptoms of chronic ischemia. The control group consists of 30 female patients diagnosed PAD. We use clinical tests as well as modern methods of instrumental diagnostics: duplex ultrasound, CTA (computed tomography angiography), echocardiography, electrocardiography, and study of external respiration. Furthermore, we analyze stenotic and occlusive lesions at the level of the popliteal artery. The statistic based on gathered information has been formed with the help of Microsoft Office and distribution – free Pearson`s chi – squared test (X2). Obtained information has had statistic value if only the results have shown p<0,05.

Results:
1. Effect of dyslipidemia. The result shows the interaction between dyslipidemia and development of PAD. Occurrence of occlusive process is 2 times higher in the group of patients with dyslipidemia than among patients without the deviations in the lipid spectrum. 2. Effect of essential hypertension (EH). Occurrence of occlusive process is 72% among patients with EH at the 3d stage but 29% - EH at the 2B stage. 3. Effect of diabetes mellitus. In the course of study severe stenotic atherosclerotic process in peripheral arteries occurs in 77,78% of patients with diabetes mellitus, resistant to medicamental treatment. 4. Lesions of the coronary arteries. As noted changes in the peripheral arteries effect 53,3% of female patients with ischemic heart disease. 5. Effect of obesity on the degree of stenosis. The research of influence of obesity on the degree of stenosis shows that occlusive process occurs among 60% of patients suffering from obesity and less frequent (28%) among patients without it.

Conclusion:
The research shows that women with PAD have higher relative risk of suffering from such disease as diabetes mellitus, essential hypertension, dyslipidemia and severe course of ischemia. Using risk factors listed above for early PAD diagnosis provides better conditions for medicamental and nonmedicamental treatment of this disease.
POSTER SESSION 2 - 25 September 12:00-13:00

27: The role of Venotonics in the Rehabilitation of Patients with Acute Varicose Thrombophlebitis after Radical Phlebectomy

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VG Mishalov, LY Markulan, SV Beichuk, DS Myrgorodskii

Introduction:
Emergency radical phlebectomy (RPE) is the method of choice for the treatment of patients with acute varicose thrombophlebitis (AVTF). Unlike the conservative therapy, it provides a cure for varicose disease and reliably prevents thromboembolic complications. The role of micronized purified flavonoid fraction (MPFF) in the rehabilitation of patients with AVTF after RFE is poorly understood. The aim: evaluate the venotonics of the diosmin group effectiveness in rehabilitation of patients with AVTF during 6 months after the RPE.

Methods:
The study included 170 patients with acute AVTP of great saphenous vein (GSV), who received RFE treatment within 48 hours from the time of hospitalization. There were 56 men (32.9%). 114 women (67.1%). mean age – 46.2±0.8 years. 112 patients (65.9%) with type 1 by F. Verrel; 34 patients (20.0%) with type 2; 16 patients (9.4%) with type 3; 8 patients (4.7%) with type 4. I group included 58 patients (34.1%) who received conventional therapy in postoperative period; II group included 112 (65.9%) patients who were additionally appointed MPFF 100 mg 2 times a day during 5 days after surgery, then 1000 mg once day for three months.
The evaluation of the treatment effectiveness was carried out according to the venous clinical severity score (VCSS), after 1, 3, 6, 12 months after surgery.

Results:
The mean of indicator scale VCSS at admission in group I was 11.38±0.33; in group II – 11.12±0.92 points, p<0.05. In each of the following appointed dates (1, 3 and 6 months) the mean indexes were smaller than in the previous period in both groups, all p<0.05. In 1 and 3 months mean index values were significantly lower in group I than in group II: 3.72±0.24 points versus 4.72±0.51 points, respectively, p<0.01 and 3.10±0.22 points versus 4.38 points, respectively, all p<0.01. Performance in 6 and 12 months between the groups I and II did not differ: 1.37±0.09 points versus 1.42±0.12 points and 1.06±0.08 points versus 1.22±0.11 points respectively, all p<0.05. More rapid elimination of clinical signs of venous disease in Group I were associated with a significantly lower mean index of attributes, such as «Venous edema», «Pain», «Inflammation» in 1 and 3 months.

Conclusion:
Prescription of micronized purified flavonoid fraction after radical phlebectomy in patients with acute varicose thrombophlebitis provides more rapid postoperative rehabilitation.
POSTER SESSION 2 - 25 September 12:00-13:00

28: Transatlantic Multispecialty Consensus on Basic Endovascular Skills: Results of a Delphi Consensus Study

Ghent University Hospital Belgium
H Maertens, R Aggarwal, F Vermassen, I Van Herzeele, on behalf of the FOundER group (Fundamentals Of Endovascular pRocedures:

Introduction:
Although the term “Basic Endovascular Skills” is widely used, current literature does not explicitly describe what skills are included in this concept. Moreover, endovascular interventions are performed by several specialisms that may have contrasting perspectives on these fundamental skills. Defining Basic Endovascular Skills is needed for educational purposes and the development of future training curricula for endovascular procedures. The objective of this study was to establish an expert consensus on the skills that should be acquired in a fundamental endovascular skills program.

Methods:
A questionnaire was generated based upon expertise, literature review and discussion among consultants in vascular surgery and radiology who did not participate in the subsequent rounds. The questionnaire consisted of 50 statements describing ‘knowledge’ and ‘technical’ skills during endovascular procedures and ‘attitude’ skills concerning perioperative and peroperative functioning and communication. Participants were asked to rate if the skill should be obtained in a fundamental endovascular skills program on a Likert scale from 1 till 5 (strongly disagree to strongly agree). A two-round Delphi questionnaire approach was used.

Results:
Twenty-three of the 53 experts invited agreed to participate in the survey: 6 interventional radiologists (2 USA, 4 Europe). 10 vascular surgeons (4 USA, 6 Europe) and 7 interventional cardiologists and angiologists (4 USA, 3 Europe). The results show an excellent consensus among the responders. All proposed knowledge skills were considered fundamental, as well as the majority of the technical and attitude skills.

Conclusion:
An international transatlantic multispecialty consensus was achieved. This study indicates that an unambiguous opinion exists about the content of “basic endovascular skills” among interventional angiologists, interventional radiologist, interventional cardiologist and vascular surgeons. The consensus points reached by this study can serve as directive principles for developing an endovascular training curriculum.
POSTER SESSION 2 - 25 September 12:00-13:00

29: Treatment of Aortic Prosthesis Infections with Graft Removal and In Situ Replacement with Autologous Femoral Veins in Helsinki University Hospital

Department of Vascular Surgery, Helsinki University Hospital, Helsinki, Finland

I Heinola, I Kantonen, M Jaroma, A Albäck, P Vikatmaa, P Aho, M Venermo

Introduction:
Aortic prosthetic graft infection is a major challenge in vascular surgery carrying high morbidity and considerable mortality. Eradicating infection requires total prosthetic material removal, debridement and lower limb revascularization. For past 14 years, instead of traditional graft removal and axillofemoral bypass, we have used femoral veins for aortoiliac reconstruction. Purpose of this single-institution retrospective study is to present our results with in situ replacement of the infected aortic graft with autologous femoral veins.

Methods:
From October 2000 until March 2013 all patients operated for aortic prosthesis infection with graft removal and reconstruction with autologous femoral veins in Helsinki University Central Hospital were included. Primary outcome measures were 30-day mortality, long term graft-related mortality and re-infection rate. Secondary outcome measures were long-term all-cause mortality and event-free survival (graft rupture, reintervention, major amputation). We also evaluated the significance of lower extremity oedema.

Results:
During 13 year period 52 patients (39 male, 13 female) were treated using autologous femoral vein replacement for aortic graft infection. The mean follow-up was 30 months (range 1-133 months). The 30-day mortality rate was 10% (5 patients). After 30-days only 4 patients died due to graft-related reasons, making long term graft related death 9 (17%). All cause mortality during follow-up time was 23 (44%). Graft rupture appeared in 3 (6%) cases of which one was caused by recurrent aorto-enteric fistula (AEF). one after gastro-intestinal complications and in one case no specific reason was found. Recurrent AEF and graft rupture after peritonitis were considered as re-infection making the re-infection rate 4%. Four patients (8%) required major amputation during postoperative period and in one case amputation was bilateral. Out of five amputated legs, femoral profunda artery was used as single outflow vessel in 3 cases. 5 (10%) patients needed later intervention for vein graft limb problems, one graft limb was lost due to stenosis and another due to poor run-off and distal femoral occlusion. Edema from venous harvesting appeared in 6 patients (12%).

Conclusion:
In situ reconstruction of aortic graft infection with autologous femoral veins presents acceptable rates of mortality and morbidity remaining preferred operative treatment method for aortic prosthesis infection in Helsinki University Hospital. In case of preoperative superficial femoral artery occlusion use of homologous grafts and synchronous distal revascularization should be considered.
EVST Case Session – 23 September 13:30

Case 1: Early failure of femoral angioplasty in patients with pseudoxanthoma elasticum
*Department of Vascular and thoracic Surgery - University Hospital of Angers, France*
M Ammi, J Picquet, C Le Hello, K EA Hang-Korng, L Omarjee, L Martin, G Leftheriotis

Case 2: Reconstructive Surgery of the Large Intrathoracic Veins in Oncological Patients
*Hospital de Santa Marta, Centro Hospitalar Lisboa Central, Portugal*

Case 3: Aortic Hybrid Sutureless Anastomosis on Porcelain Aorta
*Vascular and Endovascular Clinic, Padova University, Italy*
S Bonvini, M Piazza, MM Zavatta, F Grego

Case 4: Adamkiewicz’s Artery Originating from an AAA – EVAR or Open Repair?
*Department of Cardiothoracic & Vascular Surgery, Mainz, Germany*
B Dorweiler, M Doemland, A Neufang, C Düber, CF Vahl

Case 5: Hybrid Technique in Management of Chronic Mesenteric Ischemia
Secondary to Aorto-Visceral Thrombosis: A Case Report and Literature Review
*Western Vascular Institute, Galway University Hospital, Ireland*
M Zaki Ali, W Tawfick, M Alawy, M Elkassaby, S Sultan

Case 6: Successful Treatment of a Very Rare Testicle Tumor Related Bilateral Iliofemoral and Inferior Vena Cava Thrombosis with Simultaneous Double Ekos Catheter
*Gulhane Military Medical Academy, Ankara, Turkey*
S Doganci, C Bolcal, V Yıldırım, U Demirkılıc

Case 7: Intra-arterial Thrombolysis with Ultrasonographic Waves for Aortic stent-graft Limb Thrombosis
*Atatürk Training and Research Hospital, Cardiovascular Surgery and Radiology Departments, Ankara, Turkey*
A Küçüker, M Canyigit, ŞA Küçüker, E Şener

Case 8: Tuberculous Aortitis, a case report
*Serviço de Cirurgia Vascular, Hospital de Santa Maria, Centro Hospitalar Lisboa, Portugal*
V Manuel, J Tiago, P Martins, C Martins, J Silva Nunesm, J Fernandes e Fernandes
Case 9: A Myocotic Forearm Pseudoaneurysm as an Unusual Complication of Infective Endocarditis
Hospital de Santa Marta, Centro Hospitalar de Lisboa Central, Portugal

Case 10: Situs Inversus Totalis Patient with De-Bakey Type 3 Dissection: Succesful Endovascular Replacement Treatment
University of Cukurova, Medical Faculty, Department of Cardiovascular Surgery, Turkey
U Gocen

Case 1: Early failure of femoral angioplasty in patients with pseudoxanthoma elasticum
Department of Vascular and thoracic Surgery - University Hospital of Angers, France
M Ammi, J Picquet, C Le Hello, K EA Hang-Korng, L Omarjee, L Martin, G Leftheriotis

Introduction:
Pseudoxanthoma elasticum is a rare genetic disorder characterized by calcifications of elastic tissue in the skin, the retina and the cardiovascular system. Peripheral arterial disease (PAD) is a common complication in PXE patient, leading to claudication. Obstructive arterial lesions preferentially involve medium and small-sized arteries, including the femoral. Although larger segments (i.e. iliac) are rarely involved. To date, treatment of PAD in PXE remains empirical and is limited to sparse cases reports. Herein, we present our experience of angioplasty/stenting performed in two PXE patients with PAD. This is the first report to our knowledge.

Method:
Two women with PXE (mean age 65.5 years) presented with claudication due to superficial femoral arteries focal stenoses demonstrated in duplex scan, in both sides for the first patient and isolated for the second. They were initially treated with a medical treatment including antiplatelet drugs and statin. Aggravation of claudication and rest pain justified subsequent endovascular procedures. The two patients (3 SFA) were treated according to the same protocol. Endovascular procedures were performed under local anesthesia. Anterograde punctures of common femoral arteries were performed under duplex-scan. After intra venous heparin injection (50 UI/Kg), stenoses were crossed with hydrophilic catheters without technical difficulty allowing primary angioplasties with nitinol stent deployment. (Bard®, Lifestent® 6-20mm). Final angiographies were considered optimal for the three angioplasties. After the procedure, oral dual antiplatelet drugs (clopidogrel / aspirin) were introduced.
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Results:
The first patient treated on both sides suffered from recurrent claudication four weeks after procedure. A duplex-scan demonstrated bilateral intra stent occlusion. She didn’t accept other surgical treatment.
On the second case, early intra stent occlusion occurred the day after the procedure. Contra-lateral femoral puncture and cross over navigation, allowed successful intra-arterial thrombolysis with urokinase. No local cause of the thrombosis was discovered. Despite continuous intra venous heparin therapy (150UI/Kg/12h) and anti platelet treatment, iterative thrombosis was demonstrated on duplex scan on the following days. While critical ischemia persist surgical bypass is planned.

Conclusion:
PAD due to obstructive arterial lesions is a frequent complication in PXE, but surgical treatment is rarely mandatory. Despite perfect cosmetic results of percutaneous-balloon-angioplasty with stenting, the reason for the abnormal rate of early failure remains unknown and reveals specific traits of the arterial remodelling in PXE. Our experience emphasizes lake of data literature.

Case 2 Reconstructive Surgery of the Large Intrathoracic Veins in Oncological Patients

Hospital de Santa Marta, Centro Hospitalar Lisboa Central, Portugal

Introduction:
Resection and reconstruction of large intrathoracic veins is intended to treat symptoms of venous overpressure caused by the Superior Vena Cava (SVC) Syndrome and to allow resection of mediastinal tumors that invade the superior vena cava and the left and right innominate veins.

Method:
We present four clinical cases of mediastinal tumors involving the large venous vessels of the chest, submitted to surgery between 2010 and 2013. In all of the cases our purpose was to completely resect the tumor. We intended to evaluate the surgical results in terms of improvement of symptoms, permeability of bypass in the short and medium term and perioperative mortality and complications.

Results:
It was possible to achieve, in all cases, the complete excision of the tumors. We performed the following vascular reconstructions: - Y configuration bypass from the left subclavian vein and the left internal jugular vein to the left innominate vein; - Two bypasses from the beginning of the left innominate vein to the right atrial appendage; - Bypass from the left innominate vein to the right atrial appendix and a bypass from the right innominate vein to the SVC. All patients were discharged after 7-38 days. The longer hospitalization was due to nosocomial pneumonia. All the bypasses were patent at discharge and after 30 days. There were two cases of late thrombosis, both in the first year after surgery, but patients remained asymptomatic.
Conclusion:
Our series shows the feasibility of these technically complex procedures. We believe, therefore, that vascular invasion by tumor should not, in itself, be considered a contraindication to surgery with curative intent.

Case 3 Aortic Hybrid Sutureless Anastomosis on Porcelain Aorta

*Vascular and Endovascular Clinic, Padova University, Italy*
S Bonvini, M Piazza, MM Zavatta, F Grego

Introduction:
We describe an alternative method of hybrid sutureless anastomosis on porcelain aorta, using a single tubular endograft (Zenith Cook 18mm) to secure the proximal anastomosis.

Method:
The use of a surgeon modified endograft to perform a sutureless anastomosis in the distal aorta to perform an aorto-bifemoral by-pass is described in a 65 years old male patient, with a porcelain abdominal aorta occluded under the inferior mesenteric artery. Aortic clamping was achieved by inflating a reliant balloon (Medtronic) below the renal arteries using a left omeral artery access. A transperitoneal approach was used. The infrarenal aorta was washed. We prepared on bench a tubular zenith graft ESLE 18-55 (Cook Medical, Bloomington, Ind) by cutting the final tip. The endograft was manually inserted and deployed into the aorta. The stent graft was transected at the second covered stent. A standard Intergard Silver (Maquet) 16x8mm bifurcated graft was sutured to the endograft. The distal femoral anastomosis were performed in a traditional manner using an end-to-side anastomosis on the common femoral arteries.

Results:
The procedure was uneventful. Total blood loss were 200ml and overall time procedure was 190 minutes. A CT angiogram performed at 12 months after the intervention showed the patency of the graft and the stability of the anastomosis.

Conclusion:
Hybrid intervention in vascular surgery are becoming more and more frequent and vascular surgeons are more and more confident with the use of endovascular tools for open surgery. Sutureless anastomosis using surgeon modified endograft are easy to perform expanding the indication to those patient where standard surgical approach is at high risk. This approach seems to be safe, stable, and technically feasible

Case 4 Adamkiewicz’s Artery Originating from an AAA – EVAR or Open Repair?

*Department of Cardiothoracic & Vascular Surgery, Mainz, Germany*
B Dorweiler, M Doemland, A Neufang, C Düber, CF Vahl

Introduction:
Spinal ischemia is encountered as a rare but devastating complication in AAA treatment in open (0.1%) as well as endovascular (0.2%) therapy and can be caused by an atypical origin of Adamkiewicz’s artery from lumbar arteries. The choice of treatment modality open versus EVAR is difficult in such cases and we present our operative strategy in 3 patients with this rare coincidence.
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Materials:
At our institution, DSA and coil embolization of lumbar and inferior mesenteric artery is performed prior to EVAR to prevent type II endoleak. Between 2002 and 2012 we identified 3 patients with the rare combination of an atypical origin (L2-L4) of Adamkiewicz’s artery from the AAA. In those cases, we switched to open surgery with protective measures (distal perfusion) instead of EVAR.

Results:
In one case, the lumbar artery (L4) could be included in a beveled distal anastomosis (tube graft). In the other two cases, bifurcated grafts were placed and the lumbar artery (L2/L3) was either reimplemented in the prosthesis or revascularized by a separate vein graft. In all cases, distal perfusion was maintained through the femoral artery by means of a heart-lung-maschine during aortic/common iliac cross clamping. Additionally, cerebrospinal fluid drainage was initiated. There was no sign of postoperative spinal cord ischemia and patency of the respective lumbar artery was documented by angiography.

Conclusion:
Preoperative identification of Adamkiewicz’s artery fed by lumbar arteries of an AAA results in a difficult decision-making between open and endovascular treatment. In our experience, open surgery with protective measures (distal perfusion, cerebrospinal fluid drainage) and revascularization of the respective lumbar artery provides maximum safety for prevention of spinal cord ischemia.

Case 5 Hybrid Technique in Management of Chronic Mesenteric Ischemia Secondary to Aorto-Visceral Thrombosis: A Case Report and Literature Review
Western Vascular Institute, Galway University Hospital, Ireland
M Zaki Ali, W Tawfick, M Alawy, M Elkassaby, S Sultan

Introduction:
Visceral ischemia is a rare but serious condition affecting 2 to 3 cases per 100,000 population, presenting in a diverse array of conditions and syndromes as well as a broad etiological spectrum. The dramatic consequences of any delay in diagnosis and management have rendered it increasing attention in recent times. Patients with chronic mesenteric ischemia (CMI) typically present with symptoms of postprandial pain, which in turn can lead to food fear and weight loss. Additional symptoms may include diarrhea and malabsorption, both of which can exacerbate weight loss. Classically, CMI is caused by severe occlusive disease of at least two of the three primary mesenteric vessels (celiac, superior mesenteric, or inferior mesenteric arteries). usually from atherosclerosis. If left untreated, patients are at risk for developing intestinal necrosis.

Methods:
We present a case of progressive chronic mesenteric ischemia secondary to aorto-visceral thrombosis in a 70 year old patient managed by open surgical bypass using a quadrifurcated graft from the left common iliac to the hepatic, superior mesenteric, and both renal arteries. This was also combined with endovascular deployment of a covered aortic stent graft to exclude the high load aortic thrombus.
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Results:
Despite the unfavourable ultimate outcome, we discuss the surgical options, operative circumstances, lessons learnt, and a literature review about the choice of hybrid operative management in the era of endovascular prevalence.

Conclusion:
Endovascular management in CMI is gaining an increasing popularity in the endovascular era due to feasibility, better outcome and safer impact on patients; especially that the vast majority is in an unfavourable preoperative condition. However, surgical intervention remains a valid alternative, if not the sole option in a substantial array of cases. Although there are no definite guidelines for choice of intervention modality reported in recent literature, total occlusions - especially long segments- as well as heavy calcification and multilevel disease are preferably managed through surgical bypass provided that the patient’s general condition permits it. Owing to the complex and challenging nature of most of these cases, thinking out of the box and adopting a hybrid approach might be the superlative tactic to provide best outcomes with minimal complications.

Case 6 Successful Treatment of a Very Rare Testicle Tumor Related Bilateral Iliofemoral and Inferior Vena Cava Thrombosis with Simultaneous Double Ekos Catheter
Gulhane Military Medical Academy, Ankara, Turkey
S Doganci, C Bolcal, V Yildirim, U Demirkilic

Introduction:
Here we present a case of an acute bilateral iliofemoral and inferior vena cava thrombosis due to a very huge testicle tumor treated with simultaneous double Ekos catheter

Methods:
A 45 year old male patient was admitted with a venous claudication, severe bilateral leg edema, pain and huge right testicular edema. He had a history one week for the beginning of the leg edema, but he was unclear regarding with the testicular edema. On physical examination there was bilateral severe pitting edema on both legs. He was hardly mobilizing. There was an acute deep vein thrombosis (DVT) beginning form the distal end of femoral vein and extending to the inferior vena cava. Since he had a testicular pathology, we planned a computerized tomography (CT) for both to identify the any other tumor extension in another part and confirm the extension of the DVT (CT venography). CT revealed also intraabdominal tumor mass surrounding both vena cava and the aorta. DVT was extending till the renal veins level.
Due to extension of tumor and risks following surgical-chemotherapeutic treatment, we decided to insert a retrievable IVC filter. We placed the filter via right internal jugular vein to a suprarenal position. After placing the filter we decided to use Ekos catheter with a hesitation of probable pulmonary embolism with other mechanical thrombectomy devices due to the extension of the DVT, although we inserted a filter. Then we inserted two Ekos catheters from bilateral popliteal veins under C-arm scope guidance till the level of renal veins (Figure 1). Since the patient had also one kidney which is also detected first time with the preoperative CT. We did not use contrast media while inserting the catheters. Anatomical landmarks and the filter were used. We decided to treat the patients with two catheters for 48 hours. After the treatment period we performed a completion venography and found that all occluded veins completely opened. (Figure 2) Then patient underwent a right orchiectomy procedure and under chemotherapy now.

**Conclusion:**
Treatment of patients with extensive acute iliofemoral and cava thrombosis with interventional modalities is very important. Leaving such patients to their own faith with the anticoagulation only is not fair anymore. However decision making for right treatment option is still difficult and must be tailored for all individual patients.

**Case 7 Intra-arterial thrombolysis with ultrasonographic waves for aortic stent-graft limb thrombosis**

Atatürk Training and Research Hospital, Cardiovascular Surgery and Radiology Departments, Ankara, Turkey

A Küçüker, M Canyigit, ŞA Küçüker, E Şener

**Introduction:**
Acute arterial thrombosis may be managed by surgical approach or endovascular treatment modalities. Pharmacomechanical thrombolysis is a promising treatment modality for thrombus removal mainly for the deep venous system. The EKOS system is primarily used for deep venous thrombosis treatment with an acceptable technical and clinical success. However, experience with arterial thrombosis is limited yet. We here present a case of endovascular stent-graft occlusion treated successfully with intra-arterial mechanical device supported thrombolysis.

**Methods:**
A 51 years old man with a previous coronary bypass surgery history and a previous endovascular aorto-biiliac stent graft insertion for abdominal aorta aneurysm at our departments two years ago was admitted to hospital with right leg claudication with fifty meters long walk that has been lasting for about one month. Femoral and distal pulses were absent on physical examination without critical ischemia symptoms. A computerized tomographic angiography showed thrombotic occlusion of right endograft limb at the level of the aortic bifurcation lying through the right common and external iliac artery. Surgical femoral embolectomy was avoided since a chronic thrombus history, a previously placed stent graft inside the lumen, the patient was obese and had psoriasis disease. So he was planned for 27 thrombus, the thrombolysis was supported with ultrasonographic waves using an EKOS catheter.
Results:
A 12 cm EKOS catheter was placed via a right femoral artery puncture under ultrasonographic guidance. The guidewire and afterwards the EKOS catheter was passed from the native iliac artery through the thrombosed right limb of the stent graft up to the terminal aorta. The tip of the catheter was placed in the bifurcation of the aorta. 4 mg tissue plasminogen activator (tPA) was administered during the procedure. The patient was taken into the intensive care unit with tPA infusion inside the thrombosed graft limb. A dose of 0.5-1 mg/h tPA was administered through the EKOS catheter with a total dose of 44 mg in 48 hours. Distal pulses were positive with Doppler ultrasonography the next day. A CT angiogram was performed, and since a residual thrombosis was observed inside the proximal common iliac graft limb at bifurcation level, the therapy was prolonged to 48 hours. The distal pulses were palpable after the treatment was terminated.

Conclusion:
We herein presented a successful treatment of chronic thrombotic occlusion of an aortic stent-graft limb with intra-arterial thrombolysis supported with ultrasonographic waves using an EKOS system.

Case 8 Tuberculous Aortitis, a case report
Serviço de Cirurgia Vascular, Hospital de Santa Maria, Centro Hospitalar Lisboa Norte, Portugal
V Manuel, J Tiago, P Martins, C Martins, J Silva Nunesm, J Fernandes e Fernandes

Introduction:
Tuberculous aortitis was first described by Weigert in 1882 and constitutes an extremely rare entity, with less than 100 reported cases.

Methods:
The description of a recently treated infectious infra-renal abdominal aortic aneurism, secondary to tuberculous infection.

Results:
A 73 year old male, with smoking habits, ischemic cardiopathy and arterial hypertension, was the subject of regular imagiologic surveillance due to a 4 cm abdominal aortic aneurism. He was taken to the emergency department after routine CT examination for suspected contained aneurism rupture. The Angio-CT was repeated and an inflammatory mass surrounding the aneurism was identified, which enclosed the left renal artery ostium, without any signs of rupture. The laboratory analysis did not present any relevant changes or increased inflammatory parameters. The patient denied previous episodes of fever, shivers or abdominal pain, referring a 10 kg weight loss during the previous year. He was subjected to elective surgery, under supra-renal clamping the aneurism was partially resected and, using a bifurcated Dacron graft, an aorto-bifemoral interposition and a bypass to the left renal artery done. Several tissue samples were sent to histopathologic analysis, including aneurism wall fragments which had been infiltrated by the inflammatory mass and greyish adenopathies. The patient was discharged 8 days after the surgery, without any complications having taken place. The histologic analysis of the samples revealed aspects compatible with tuberculosis, having the patient been referred to the Pneumologic Diagnostic Center and being at the moment under tuberculostatic therapy.
Conclusion:
Aortic mycotic aneurisms secondary to tuberculosis are very rare and the combination of surgical treatment and long duration tuberculostatic therapy is the best treatment option, with the best long term results.

Case 9 A Myocotic Forearm Pseudoaneurysm as an Unusual Complication of Infective Endocarditis
Hospital de Santa Marta, Centro Hospitalar de Lisboa Central, Portugal
G Rodrigues, C Oliveira Amaral, A Quintas, H Rodrigues, R Abreu, R Ferreira, H Dias Valentim,
M Emília Ferreira, J Albuquerque Castro, L Mota Capitão

Introduction:
Mycotic pseudoaneurysms are an infrequent complication of infective endocarditis; most cases are secondary to arterial trauma. The commonest site involved is intracranial arteries, followed by abdominal aorta and then the peripheral vessels. Based on a case report, we provide a literature review on atraumatic mycotic forearm pseudoaneurysms.

Methods:
We report a case of a 36-year-old man, admitted in our institution for a subarachnoid haemorrhage, who presented with fever of unknown origin during his stay in the neurocritical care unit and whom was diagnosed infective endocarditis due to Meticillin Sensible Staphylococcus Aureus. Almost two weeks after antibiotic therapy was instituted, he presented a large, growing, pulsatile mass of the left forearm. A giant pseudoaneurysm (54mm of maximum diameter) arising from the radial artery was detected with ultrasound.

Results:
Surgical intervention was carried out. A large laceration of the posterior aspect of the radial artery was detected and an interposition with a vein graft was performed. Distal pulses were palpable at the operation site. The patient completed 6 weeks of antibiotic therapy and had an uneventful recovery. At the 6-month follow-up the vein graft was still patent.

Conclusion:
Forearm mycotic pseudoaneurysms are rare. A high index of suspicion is needed and they should always be borne in mind in the differential diagnosis of an extremity pain, swelling or motor-sensorial deficit after infective endocarditis.

Case 10 Situs Inversus Totalis Patient with De-Bakey Type 3 Disection: Successfull Endovascular Replacement Treatment
University of Cukurova, Medical Faculty, Department of Cardiovascular Surgery, Turkey
U Gocen

Introduction:
Situs inversus totalis is the condition in which the organ or organ systems are on the other side of the body, as in the mirror image, instead of their normal localisations. This is not a disease but this condition is rarely seen. De-Bakey type 3 disection is still a potentially life threatening condition. Standard surgery is still a significant mortality and morbidity along with the watches. Endovascular stent graft repair of aortic disease treatment that offers an alternative to conventional surgery.
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Methods:
A 74-year-old female who was referred to our department because of progressive back pain and dyspnea on effort. On physical examination blood pressure was 170/100 mmHg, pulse was 108 / dk, upper extremity pulses palpable but lower extremity pulses was weak. We were diagnosed De-Bakey Type 3 dissection and situs inversus totalis with CT Angiography (Figure 1). TEVAR was successfully performed with transfemorally approach in cath-lab (Figure 2).

Results:
The duration of the TEVAR application was 45 minutes. Follow-up 7 day after TEVAR application patient discharged uneventfully. He was seen in follow-up on postoperative day 14 and was doing very well. The endovascular treatment was successful and no case of perigraft leakage has been detected during a meaning follow-up of five months. There were no postoperative complications.

Conclusion:
TEVAR application for De-Bakey Type 3 Aortic dissection can be performed safely in patients with situs inversus totalis. Importance of patient with situs inversus totalis is careful attention to unfamiliar anatomic relationships. And good physical examination and diagnostic imaging of this patient is very important.
Programme for Nurses and Technicians

In cooperation with the Swedish Society for Vascular Nursing, the ESVS is pleased to announce that the programme for nurses and technicians is resumed in Stockholm.

Wednesday 24 September

11.45-12.00 Welcome to nurses & technicians sessions
C Wann-Hansson, Malmö, Sweden

Session 1: Focus on the patient
Moderators: Christine Wann-Hansson & Simon Parvin
12.00-13.00 Patient empowerment/ patient education
13.00-14.00 Lunch

Session 2: Patient participation
Moderators: Lena Tängeskog & Carl Wahlgren
14.00-14.45 Patient participation - Broaden the View
Eva Jangland, RN, PhD, Sweden
14.45-15.30 Patient participation in the care of AAA patients
Monica Jensen, RN, Erney Mattsson MD, PhD, Norway
15.30-16.00 Coffee and exhibition

Session 3
Moderators: Theofanis Fotis & Erney Mattsson
16.00-16.45 Patient participation and patient education in PAD patients
Kathrine Hoffman Pii, Denmark

16.45-17.30 Abstract Session
- **AD Godfrey:** Vascular operating room MDT understanding of EVAR identification of team training needs
- **M Mozaffari:** Catheter directed thrombolysis therapy can be delivered safely on specialist wards
- **Nilsson:** Patients' Experience of Communication and Support During the Care Pathway of Abdominal Aortic Aneurysm Treatment
- **K Hofoss:** Screening for Abdominal Aortic Aneurysm by Nurses and Radiographers

19.00 Nurses and Technicians dinner at Gyldende Freden. Tickets available from the Registration Desk
Thursday 25 September

Session 4: Nursing research in the field of vascular surgery
Moderators: Louise Allen & Rebecka Hultgren
10.00-11.00 Identify safety failures in vascular surgery:
Rachel Lear, London, United Kingdom

11.00-11.30 Coffee and exhibition
11.30-12.15 Negative Pressure Wound Therapy - treatment outcomes and the impact on the patient's health-related quality of life
Ann-Marie Fagerdahl RN PhD, Stockholm, Sweden
12.15-13.00 Patients' experience of undergoing Vascular Interventional Radiology with focus on PTA, and nurse radiographers' experience of caring for these patients
Maud Lunden Radiology nurse, PhD, Gothenburg, Sweden

13.00-14.00 Lunch and exhibition

14.00-15.00 Abstract session
Moderators: Christine Wann-Hansson & Anders Wanhainen
- E Kofoed: A Prospective Non-randomised Study on the Impact on Cardiovascular Risk Factor in Rehabilitation for Patients with Intermittent Claudication (IC)
- A Conijn: Cognitions and Expectations about Disease and Treatment of Patients with Intermittent Claudication; a qualitative survey
- T Aherne: Supervised Exercise Therapy in the Management of Peripheral Arterial Disease: An Evaluation of Patient Compliance
- J Chlupac: Negative Pressure Therapy of Vascular Graft Infection: 5 Year Experience
- TB Santema: Inter-observer Analyses of the Megitt-Wagner and the University of Texas Wound Classification Systems

15.00-15.30 Concluding remarks, thank you and goodbye

15.30-16.00 Coffee and exhibition
Nurses and Technicians Programme – Abstracts

N&T 1: Vascular Operating Room MDT Understanding of EVAR... Identification of Team Training Needs

Dept of Surgery & Cancer, Imperial College London
AD Godfrey, R Lear, SA Milne, CV Riga, N Cheshire, C Bicknell

Introduction:
There is wide variation in where EVAR is performed and what combination of team members are involved- theatre scrub staff, radiology scrub staff, radiography, anaesthetics, cross-speciality trainees and the vascular surgical team. With multiple pressures on the vascular operating room MDT, in addition to multiple staff rotations, the reassurance of highly experienced staff is infrequently present. Combined with the march of technological advances, it would seem impossible for everyone to maintain their knowledge and skills.
We therefore surveyed all staff who work with the vascular surgical team to understand current training needs in elective EVAR.

Methods:
Preliminary study conducted at a single tertiary level centre by a single trained assessor. A delphi survey was conducted to identify operative EVAR steps, possible intraoperative complications and respective equipment requirements. Assessments were conducted in privacy and without prejudice. Staff were prompted using operative phase subheadings if required. Points were scored for every correct operative step, complication and equipment item.

Results:
20 staff have thus far been assessed in a single unit with on going expansion into a multi centre study with up to 100 staff. Operative step results indicate a wide range of scores (15% to 90%). not only between sub-groups (p=0.17) but also experience levels (p=0.32). Provisional results indicate that less than 25% of operative steps are known by the whole operative team, “Rupture” was identified as a complication by nearly all team members (90%). but most considered AAA rupture more than iliac (60% v 30%). Staff recognised complications including renal artery coverage (60%). type I/ III endoleak (40%) and significant iliac limb kinking (20%). 80% of staff were able to recall relevant equipment demands, the only subgroup difference being theatre scrub team tending towards an operative solution vs radiology team.

Conclusion:
These early stage results indicate wide divergence in vascular operating room staff knowledge of EVAR and associated risks. Ongoing multicentre studies will expand on these findings, but focused team training in EVAR appears to potentially improve knowledge, staff engagement and thereby patient safety.
N& T 2 Catheter Directed Thrombolysis Therapy can be Delivered Safely on Specialist Wards

St George's University of London, United Kingdom
M Mozzafari, L Stroud, A Char, B Patterson, S Black

Introduction:
Catheter directed thrombolysis (CDT) has proven effective in the treatment of both arterial and venous occlusion. Despite this there is a small but appreciable risk of serious complications, in particular bleeding complications such as intracranial haemorrhage. This has meant that local protocols often dictate patients should be monitored on high dependency units following CDT, adding both expense and administrative pressures. The aim of this study is to evaluate the safety of ward-based care following CDT.

Methods:
This was a retrospective single-centre study. We used radiological reports and discharge letters to evaluate treatment outcomes and post-procedure complications in patients (N=58) who had undergone CDT between 2010 and 2013 for both arterial (N=26) and venous (N=32) disease. All patients were given a 5mg bolus of Actilyse and an infusion started at 0.05mg/kg/hr. Complications noted were mortality, pulmonary embolus, bleed, stroke and other significant morbidity.

Results:
A total of 58 patients (M=34, F=24) underwent CDT between 2010 and 2013. The median age for patients undergoing arterial thrombolysis was 69 (range=46-81) and for venous thrombolysis was 31 (range=13-66). The median length of CDT was 24 hours (range=8-72) and the median length of hospital stay was 5 days (range=1-42). There were 8 recorded complications in total (14%). Bleeding complications occurred in 6 patients (10%). All bleeding complications followed arterial thrombolysis and 2 required admission to intensive care. 1 patient suffered a stroke following arterial thrombolysis. 1 patient developed compartment syndrome following arterial thrombolysis. There were no mortalities and no pulmonary emboli. Arterial interventions were significantly more likely to result in complications (OR 7.4, p 0.038). None of the complications that occurred were considered preventable if the patient was in an HDU. All were detected and managed appropriately by trained ward staff.

Conclusion:
This study demonstrates a low risk of post-procedural complications for patients undergoing ward-based CDT. This is particularly low for patients undergoing venous thrombolysis, with no recorded complication in 32 cases over 3 years. With a high dependency bed costing approximately £500 versus £180 for a bed on a clinical ward, this has important financial and administrative implications.
N&T 3 Patients’ Experience of Communication and Support During the Care Pathway of Abdominal Aortic Aneurysm Treatment

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O Nilsson

Introduction:
Being diagnosed with abdominal aortic aneurysm (AAA) is associated with decreased health-related quality of life. It is highly important that patients receive adequate information about the disease, treatment options and self-care at an early stage. However, the quality of available information is dubious. In order to improve the communication strategy, the individual needs of the patient should be addressed. The primary objective of the study was to explore patients’ experience of communication and support during the care pathway of AAA treatment. A secondary objective was to investigate patients’ learning needs and opinions on methods for patient education.

Methods:
Three audio-taped, semi-structured face-to-face focus group interviews were conducted with 14 patients who had undergone elective aortic repair 3 to 24 months prior to the interview. A chronological interview guide was used, with themes consistent with the study aims. The interview guide embraced the time period from initial diagnosis throughout surgical treatment and postoperative follow-up. The interviews were transcribed verbatim and analyzed using qualitative content analysis.

Results:
Five categories were identified as characterizing patients’ experience of communication and support in the AAA care pathway: meeting patients’ needs for information, the function of knowledge, participation in the care pathway, requiring support and managing anxiety. The preoperative information was described as essential for the patients’ wellbeing throughout the surgical treatment and the postoperative phase. Patients sometimes experienced the extensive information as torturous although they appreciated being fully informed. Personal suitability and continuity was valued in these contacts, as well as individualization and timing. A lack of knowledge of the condition undermined the ability to ask relevant questions. Previous experience from hospital care was identified as a facilitating factor for participation. Participation was mainly described as consenting to the recommended treatment. Patients relied on the health care staff to make informed decisions for them. The need for further support from a person with professional competence was expressed.

Conclusion:
Further improvements in the communication strategy should include individualized, targeted learning activities and support models for this patient group. The provided information material should be consistent and easily accessible for patients and their next of kin with the possibility for optimization of the information regarding different treatment methods. Future research should focus on the validation of such a tool in regards to physical and psychological parameters of AAA patients throughout their care pathway.
N&T 4: Screening for Abdominal Aortic Aneurysm by Nurses and Radiographers

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Introduction:
Approximately 2-5% of men 65-75 years will have an abdominal aortic aneurysm (AAA) (diameter ≥30 mm). Rupture mortality is high (70-80%). and the risk of rupture increases with aneurysm diameter. Literature reviews conclude that screening gives a significant decrease in AAA mortality for men. The screening is done using ultrasound (US) to measure the diameter of the abdominal aorta. To optimize the use of our department’s resources, nurses and radiographers were trained to perform the screening.

Methods:
Enabling nurses and radiographers performing US AAA screening was a decision made by the head of our department, and has been a matter of consensus among the vascular surgeons and radiologists. A selected group of experienced nurses and radiographers were trained to use the US equipment by vascular surgeons and radiologists. A team of one nurse and one radiographer screens up to 30 participants per day 2-3 days per week. A radiologist is available if the team needs a second opinion or immediate assistance. According to the size of the aorta, the participant is referred to further necessary controls. If the US identifies an aneurysm with diameter of 30-45 mm the participant is recommended another US in 1-2 years. If the diameter is more than 45 mm, the participant is referred to the outpatient clinic. If the diameter is ≥55 mm, the participant is referred to surgery.

All 65-years old male in Oslo are invited to the screening program. Participation is voluntary and free of charge. Approximately 70 % of those invited show up at the appointed time. Over a three year period 4700 participants have been screened.

Results:
In only a few of the 4700 screenings the team has demanded a second look by a radiologist. The usual causes of US interpretation problems are related to obesity or shadowing from the bowel. The prevalence of AAA in our study is 2.9%, so far. None of these have been proven false positive. Six of these have undergone successful treatment whether endovascular (EVAR) or open surgery.

Conclusion:
The screening program has been running efficiently without requiring much surgeon and radiologist resources. The participating nurses and radiographers report exciting and valuable professional development. Our department considers the use of nurses and radiographers performing US screening for AAA successful.
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N&T 5: A Prospective Non-randomised Study on the Impact on Cardiovascular Risk Factor in Rehabilitation for Patients with Intermittent Claudication(IC)
Sygehus Sonderjylland, Sygehus Lillebaelt, Denmark

E Kofoed, KC Houlind, ED Christensen

Introduction:
Risk factor intervention is often primary treatment for patients with IC. How does a 6 months supervised rehabilitation program affect on the quality of life(Qol).the physical function and cardiovascular risk factors(CVR) for this group of patients? Can peripheral arterial hospitalisations and mortality be reduced by optimising rehabilitation?

Methods:
Between May 2009 and January 2013 116 elderly patients with IC and inguinal pulses were included in a prospective nonrandomised controlled trial. The trial had a Control Group(CG) and a Rehabilitation Group(RG). A six months follow up(FU) from baseline(BL) was conducted. Power statistics was calculated for the development of maximal walking distance(MWD) and ankle brachial pressure index (ABPI). CG(n56): was given information by nurses and doctors in the Vascular Outpatient Clinic about CVR intervention and how to intervene on their own by exercising and stop smoking. A QoL questionnaire was filled. Ankle brachial blood pressure index, HbA1c, Cholesterols and a standardised treadmill walk on maximal walking distance (MWD) was measured at BL and FU. RG(n 61) underwent the same program, and obtained endurance and circuit training, and were supported on risk factor intervention and self-care in primary healthcare centres 3 hours week. Primary Outcome: 1: MWD prolonged with > 150%. 2: Total smoking cessation. 3: Increased ABPI 4: Less vascular hospitalisations and reduced mortality during a period of 1½ year from BL. 5: SF 36 screening on physical and mental health outcome of the two groups. Reduction in: 6: hospitalisation and 7: morbidity 1½ year from BL. Secondary Outcome: 8: Normalized blood pressure, LDL cholesterol and HbA1C.

Results:
CG: 1: MWD increased (median=m:47%. 2) ABPI (m: increased 3%, 3: 21%, 2% ceased smoking. 4) 18 had been hospitalised and had vascular surgical intervention up till one year after FU and 5: 2 had died. SF 36 results: 6: No significance from BL to FU.
RG: 8: MWD m: increased 390 %, 9: ABI increased 12 % (m). 10: 39, 3% ceased smoking. 11: 2 had been hospitalised for vascular reason one year after FU and 12: none had died. SF 36 results: 13: 27% reduction in the high-risk patient group. 14: Experienced increased physical strength. 15: Reduced body pain (BP. 16: Less depression. 17: Increased vitality and social function. 18: Further results were almost similar in the two groups.

Conclusion:
A program where primary and secondary healthcare collaborate and focus on guided physical activity and lifestyle intervention seriously at least 1½ year after inclusion.
N& T 6: Cognitions and Expectations about Disease and Treatment of Patients with Intermittent Claudication; a qualitative survey

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**Introduction:**
There are no studies on cognitions and expectations of disease and treatment in patients with intermittent claudication (IC). We conducted the first qualitative survey about the awareness of patients regarding the nature and etiology of their disease, and their expectations before and experiences after treatment.

**Methods:**
We interviewed 19 patients from 6 hospitals between February and June 2013. All patients participated in a randomized controlled trial (RCT) comparing percutaneous transluminal angioplasty (PTA) and supervised exercise therapy (SET) for IC due to an iliac obstruction. Patients were only included if treatment had been initiated between 6 and 18 months priorly. Interviews were structured in 4 domains; nature, etiology, expectations before and experiences after treatment. Interviews were transcribed verbatim and characteristic fragments were coded and sorted.

**Results:**
The majority of patients (79%) was unaware of the systemic nature of their disease.
‘...I am a healthy person. I rarely suffer from something serious (...) No scary diseases and... No heart disease or whatever.’ Patient 4
Despite the fact that 79% of patients indicated smoking as a causal factor, 50% of the patients also indicated they thought heredity to play a role.
‘You see, my father had the same issues, so it must be partly hereditary’ Patient 17
Half of the patients indicated lifestyle (unhealthy diet and lack of exercise) as a causal factor.

Expected walking distances after treatment ranged between 200 meters to 2 hours of hiking. The majority expected to be totally pain-free after treatment.
Most patients (68%) expected to be treated with PTA, not one expected SET, which was usually based on experiences from the patient’s social environment.

“You hear it a lot in your environment, right.. Clogged artery, guys, let’s quickly place a stent, do an angioplasty, and you’re good to go” Patient 16
The majority of patients (84%) was satisfied after treatment, both after SET and PTA.
Two patients who crossed over from SET to PTA indicated they were still positive about undergoing SET.

**Conclusion:**
Many misconceptions exist among patients regarding the etiology and nature of IC. This is striking because all interviewed patients participated in an RCT, and were counselled before they gave informed consent. Therefore, a more effective form of counselling is needed.
SET seems relatively unknown, while most patients expect PTA. However, in retrospect almost all patients were satisfied with their received treatment.
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N&T 7: Supervised Exercise Therapy in the Management of Peripheral Arterial Disease: An Evaluation of Patient Compliance
Royal College of Surgeons in Ireland, Dublin, Ireland
T Aherne

Introduction:
Peripheral arterial disease (PAD) is a common condition associated with considerable morbidity and mortality. Supervised exercise therapy (SET) has emerged as an effective, non-invasive option in the management of this patient cohort. Unfortunately, poor compliance is prevalent, negatively impacting patient outcomes. We aimed to assess patient SET compliance and the factors influencing initial and continued exercise participation.

Methods:
This single-centre retrospective cohort study was inclusive of all patients with confirmed PAD referred for SET between October 2010 and December 2013. Patient demographics and compliance data were extracted from medical records with phone interviews used to establish subjective outcomes.

Results:
In total 105 patients were referred for SET of whom 82% (n=86) were functionally suitable for inclusion. The mean age was 68.8 years with 19% of patients being female. Whilst referral is subject to patient agreement 37.2% of those referred did not attend at any point. Overall 64.0% (n=55) of patients dropped out prior to program completion. Compliance among the 36% (n=31) reaching completion was 63.1%. However, this dropped to 45.6% upon inclusion of all attendees. Significantly compliance deteriorated during the second month of therapy. (p=0.03).
Initial attendance and compliance was negatively influenced by transport problems, work issues and patient doubts as to its efficacy. No significant difference in ankle brachial pressure index was noted between the compliant and non-compliant post-intervention.

Conclusion:
Establishing exercise compliance continues to be challenging in the PAD cohort. Despite its undoubted benefits exercise uptake and maintenance remains poor.

N&T 8: Negative Pressure Therapy of Vascular Graft Infection: 5 Year Experience
Department of Transplant Surgery, Institute for Clinical and Experimental Medicine, Prague Czech Republic
J Chlupac, L Janousek, J Fronek

Introduction:
Treatment of vascular graft infection with topic negative pressure wound therapy (NPWT) is subject of controversy. Life-threatening complications are feared in such cases, however, complete graft excision may also be a high-risk redo surgery. The objectives were to evaluate retrospectively the efficacy and safety of NPWT as primary treatment of deep perivascular infection.
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Methods:
Twenty five wounds in 22 patients were treated using NPWT for perivascular infection between 1/2009 - 10/2013. Patients with prosthetic, autovenous or allogenous conduits and reconstructed native arteries were included.

Results:
Mean hospital stay was 23±17 days (7-65 days), mean duration of NPWT was 10±10 days (3-52 days) and mean follow-up was 389±300 days (25 days-3.4 years) respectively. Complete healing was achieved after 39±30 days. Adverse events, such as recurrence of infection was observed in 3 wounds (12.0%), serious bleeding occurred in 2 patients (8.0%), limb amputation in 4 patients (16.7%). Mortality was 13.6% (3 patients) and overall success rate was 76.0%.

Conclusion:
Treatment of vascular graft infection with topic negative pressure is feasible in selected group of patients. This method is relatively safe. Our outcomes are comparable to published series.

N&T 9: Inter-observer Analyses of the Megitt-Wagner and the University of Texas Wound Classification Systems
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Introduction:
Accurate classification of diabetic foot ulcers is essential for inter-clinician communication, assessment of healing tendency, and determination of vascular surgical treatment options. We studied the inter-observer agreement (IOA) and accuracy of the most commonly used classification systems for diabetic foot ulcers; the Megitt-Wagner (MW; appreciating wound depth) and the University of Texas (UT; appreciating wound depth, presence of infection and ischaemia) systems.

Methods:
We collected digital photographs of diabetic foot wounds in various stages of healing. Earlier research has shown that photographs can be used for wound assessment in a reliable way. An international expert panel selected 20 out of these photographs, based on the possibility to classify the wound without requiring in-vivo probing. Their judgment was taken as the reference standard. The final set was presented in a random order to doctors of the department of Surgery and to wound care nurses of several Dutch hospitals. Each photograph was presented for 30 seconds. The observers classified the wound depths along the MW and UT systems. We also collected basic observer characteristics. Inter-observer agreement was expressed as a Cohen’s Kappa (κ) coefficient, including 95% confidence intervals (CI). Agreement with the expert panel was calculated as the percentage ‘correctly’ classified photographs.
Results:
Twenty doctors and 75 nurses judged the photographs. IOA of the MW and UT systems was moderate among observers. Overall, the observers had a $\kappa$ of 0.415 (95% CI 0.413–0.418) for the MW system and 0.448 (95% CI 0.445–0.452) for the UT system. Agreement with the expert panel was 63.4% when using the MW and 69.8% using the UT system.

Conclusion:
The MW and UT classification systems show moderate agreement and limited accuracy when judging diabetic foot wound depths. Using photographs allows observers to simultaneously judge wounds at the same moment during their healing process, although in-vivo wound assessment may facilitate a better appreciation of wound depth. Even if so, a lower agreement and accuracy can be expected when also the presence of infection and ischemia are to be judged in the UT system.