Update on Vascular Surgery

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May 2017

Aneurysm

- Elective / Emergency
- Open / Endovascular

Carotid artery

- Endarterectomy / stent

Limb salvage

- Bypass / stent
- Diabetic feet

Amputation

Diabetic foot infection

Trauma

Ulcers

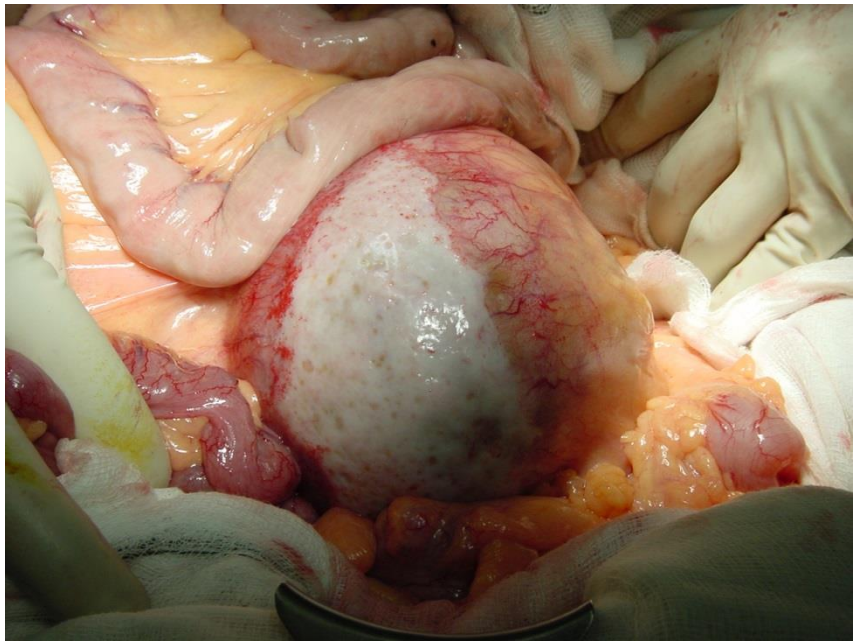
Varicose veins

Venous thrombosis / PE

Lymphoedema

Elective Aneurysm repair

- Open
  - Small aneurysm 5.8%
  - EVAR1 4.7%
- Endovascular
  - EVAR1 1.7%
- United Kingdom
  - 2008 Vascunet 8.0%



Framework for improving the results of elective AAA repair

Aim: **To halve the elective mortality rate for AAA surgery in the UK (to 3.5%) by 2013**

After consultation with the membership in March 2009, the Council of the Vascular Society of Great Britain and Ireland endorses the following framework for quality improvement in elective AAA surgery. Notes at the end of the guidelines will aid surgeons who may need to introduce changes to their vascular practice. A fuller version of the notes is available on the VSGBI website - www.vascularsociety.org.uk. The details of the framework are due for review in 2011.

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- All patients should undergo standard preoperative assessment and risk scoring, including cardiac, respiratory, renal, diabetes, peripheral vascular disease, as well as CT angiography to determine their suitability for EVAR[1].
- Each hospital should have defined pathways for the correction of significant medical risks (cardiology/renal/respiratory) before intervention.
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- Open AAA repair should include the following components: normothermia, cell salvage, rapid infuser, easy access to blood products (within 1 hour) and availability of haemostatic agents including glue[3].
- EVAR should only be undertaken in a sterile environment of theatre standard, with optimal imaging facilities. A range of rescue stents and devices should be immediately available, together with the expertise to deploy them[4].

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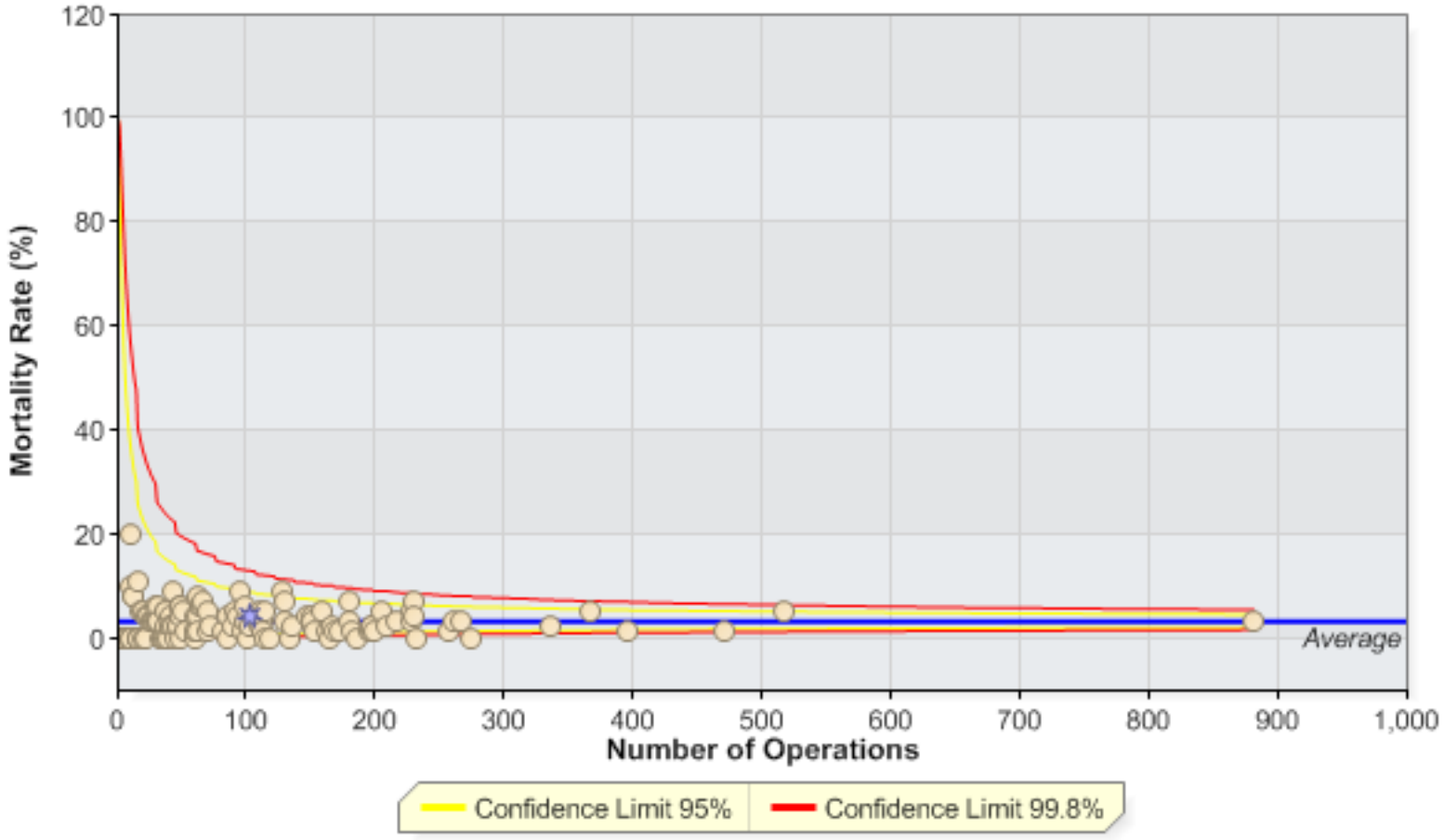
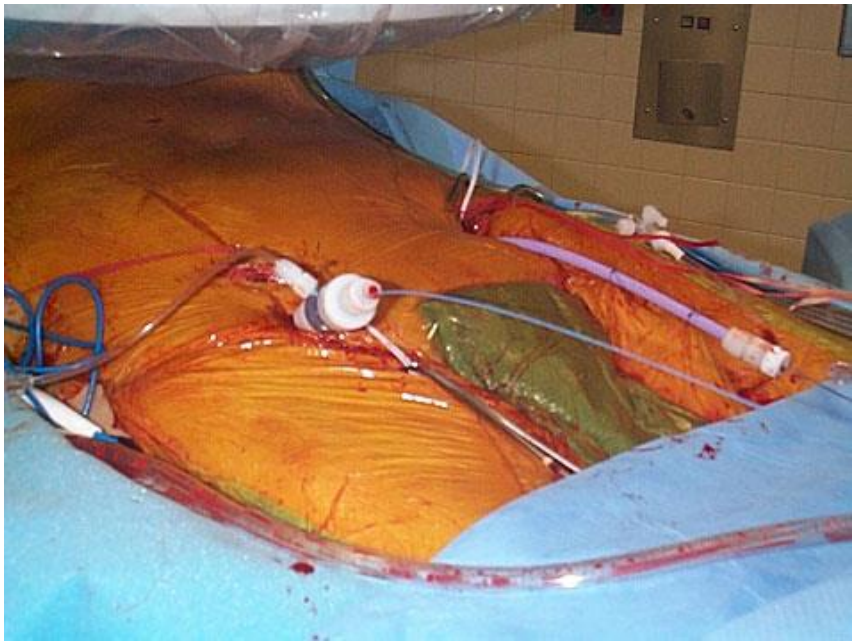
- Vascular centres
- Joint MDM
- Risk scoring
- Vascular anaesthetists
- Open & EVAR
- >20 operations / yr
- Aneurysm screening
- Audit by NVD

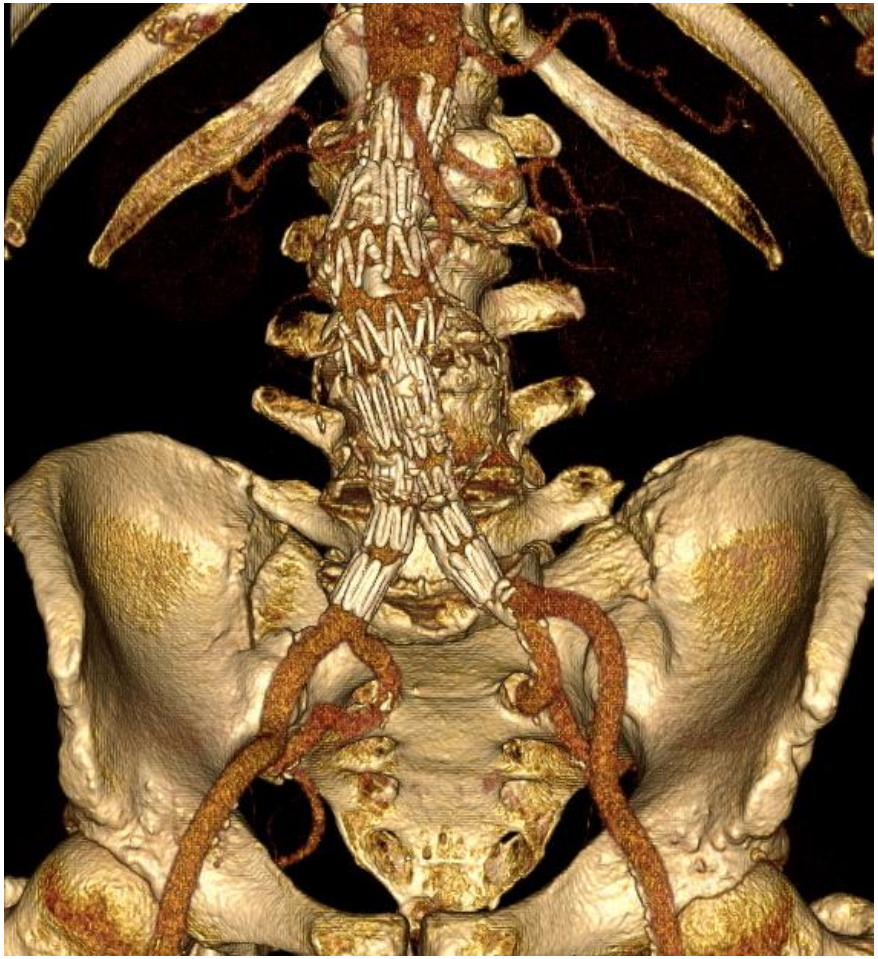
Elective AAA mortality

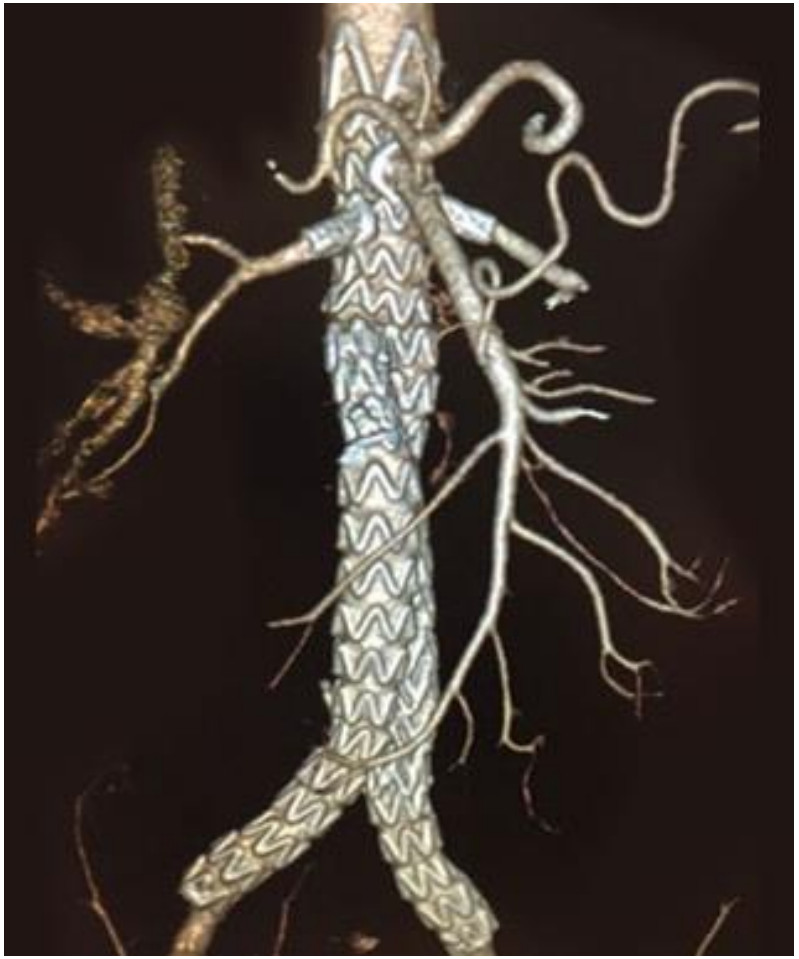


EVAR

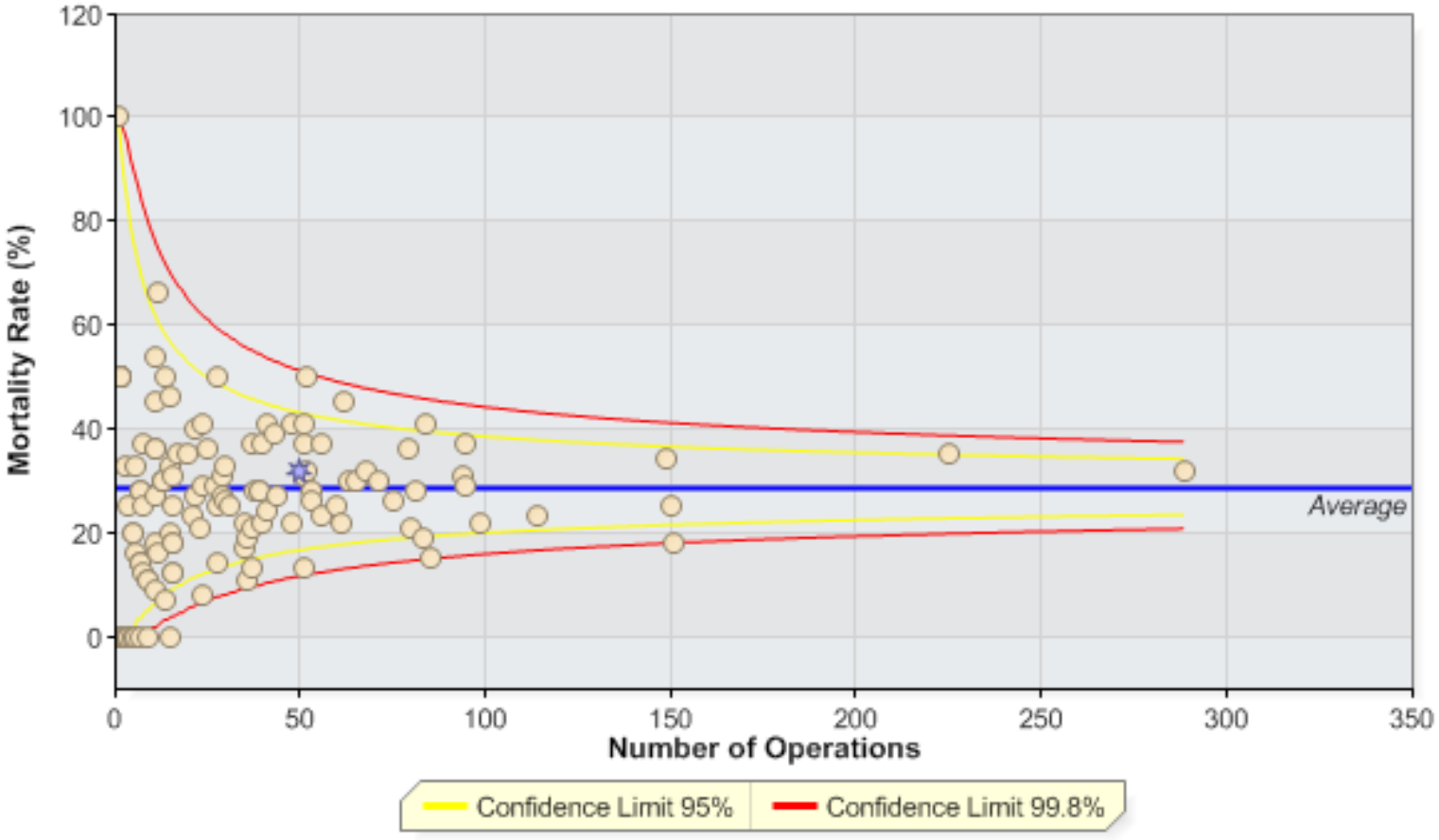


EVAR / FEVAR





Ruptured AAA mortality



Ruptured AAA mortality 32% n=50

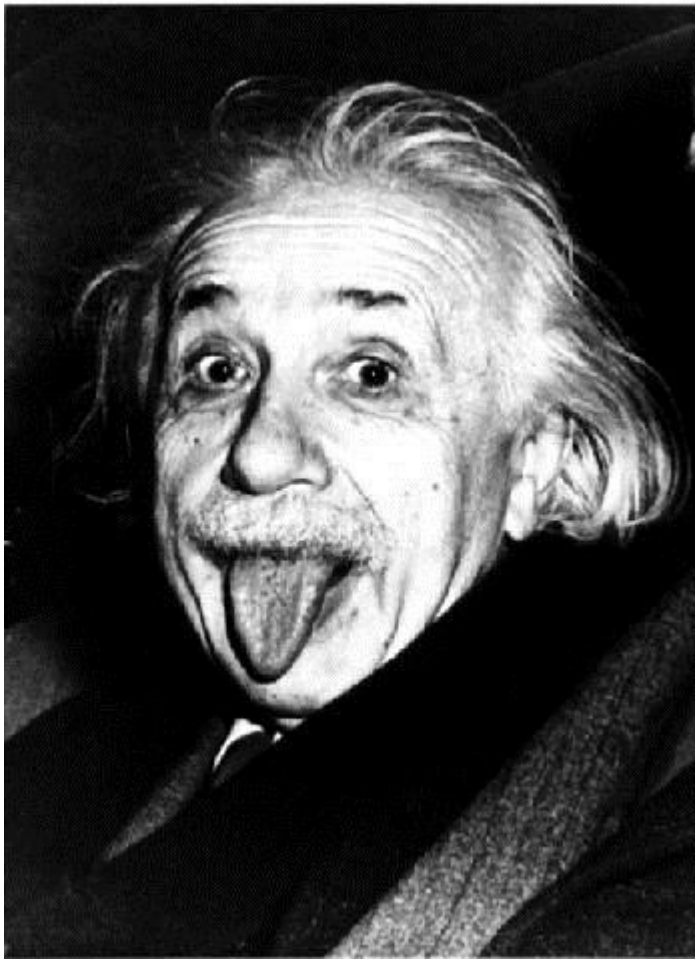
Screening

- East & West Kent
- Men on 65th birthday invited
- Prevalence 3%
- Over 65 yr may request scan
- Surveillance

  3.0-4.4cm: 1 yr

  4.5-5.4cm: 3 months

  >5.5cm vascular network



1879-1955

Carotid Endarterectomy

- Indications for CEA
  - Symptomatic
  - >70% stenosis
- 15-25% of TIA develop CVA
- ECST NNT 20
- NASCET NNT 15

Hieronymus Bosch 1450-1516

Carotid Endarterectomy

Effect of “delay in CEA” on 5 yr ipsilateral stroke rate

	>2 weeks	2-4 weeks	4-12 weeks	>12 weeks
Absolute Risk Reduction (%)	18.5	9.8	5.5	0.8
Number Needed to Treat	5	10	18	125
Strokes prevented /1000 CEA	185	98	55	8
“Unnecessary” Procedures	815	902	945	992

The Lancet 2004; **363**:915-924

Quality Improvement Framework for Major Amputation Surgery

Aim: **To reduce the perioperative mortality rate after major amputation surgery to less than 5% by 2015**

Amputation for vascular disease and diabetes should only be undertaken after formal investigation of the arterial system by angiography (DSA, CTA or MRA) or specialist ultrasound imaging, except when the leg is clearly beyond salvage.

Major amputation is indicated when:

1. Revascularisation is not a realistic option
2. Amputation is expected to save or prolong life and/or improve quality of life

The framework

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- All patients should be assessed and managed by a multidisciplinary vascular specialist team (that regularly undertakes limb amputation)
- Pain should be controlled, and the pain team involved as needed
- The agreed decision with the patient to amputate should be timed and recorded in the notes
- A named individual should be allocated preoperatively to each patient for support, and to co-ordinate care, rehabilitation and discharge planning[2]
- All patients should have formal clinical assessment (risk assessment) including review by, or in consultation with a consultant anaesthetist
- Controllable risk factors should be optimised[2]
- Antithrombotic prophylaxis should be prescribed from admission unless contra-indicated, and continued at least until discharge from hospital
- Discharge planning and rehabilitation should be considered at this stage, and review by the rehabilitation team encouraged

Perioperative

- Operation should ideally be undertaken on a planned operating list during normal working hours (target 75% of all major amputations) [3]
- Patients not booked on a planned list should have their amputation done within 48h of decision to operate, and no patient should have their operation deferred more than once, unless there are new medical contraindications

A more detailed version of this document, the footnotes, and the data supporting the framework can be found on the VSGBI website:

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- Multidisciplinary team
- Mortality < 5%
- Unit with 24/7 vascular cover
- Ratio BKA:AKA>1
- Local rehabilitation
- Pain team

Amputation pathway

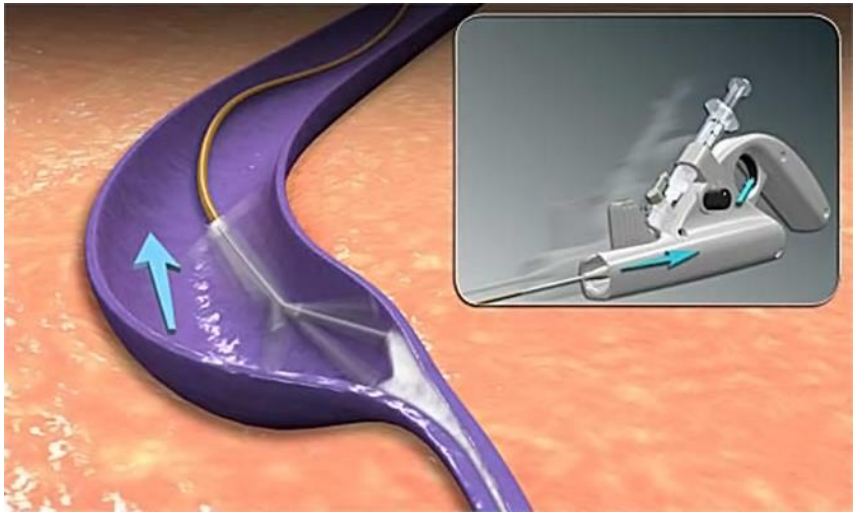
- Malmö
- Skew myoplastic flap
  - Silicone sleeve
  - Improved time to fitting prosthesis 9 days
    (43-34)
  - LOS reduced by
    10 days (59-50)
- Disablement Services
  - On site
  - Prostheses

Varicose Veins

- CCG/LPP
- CEAP
  - Skin changes
    - C0 No veins
    - C1 Telangectasia / reticular
    - C2 Varicose veins
    - C3 Oedema
    - C4 Pigmentation / LDS
    - C5 Healed ulcer
    - C6 Active ulcer
  - Bleeding
  - Thrombophlebitis

Treatment of Varicose veins

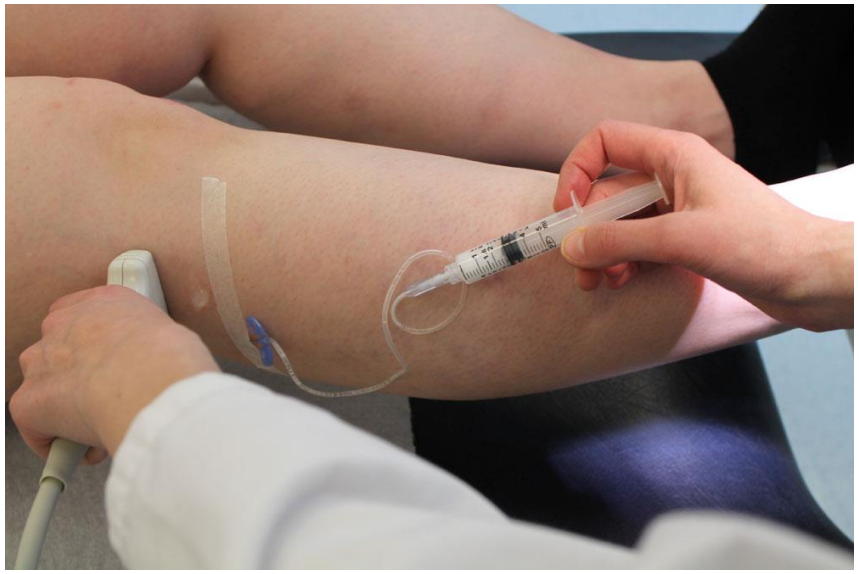
- LSV strip + MA
- Radiofrequency ablation
  RFA
- Endovenous laser
  EVLT
- Foam sclerotherapy
- MechanicOChemical Ablation
  MOCA Clarivein
- SEPS
- Photocoagulation



MOCA-Clarivein

Radiofrequency ablation

Foam Sclerotherapy



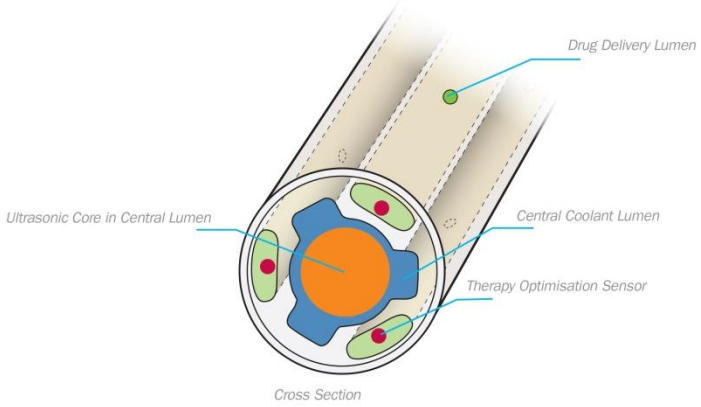
SEPS

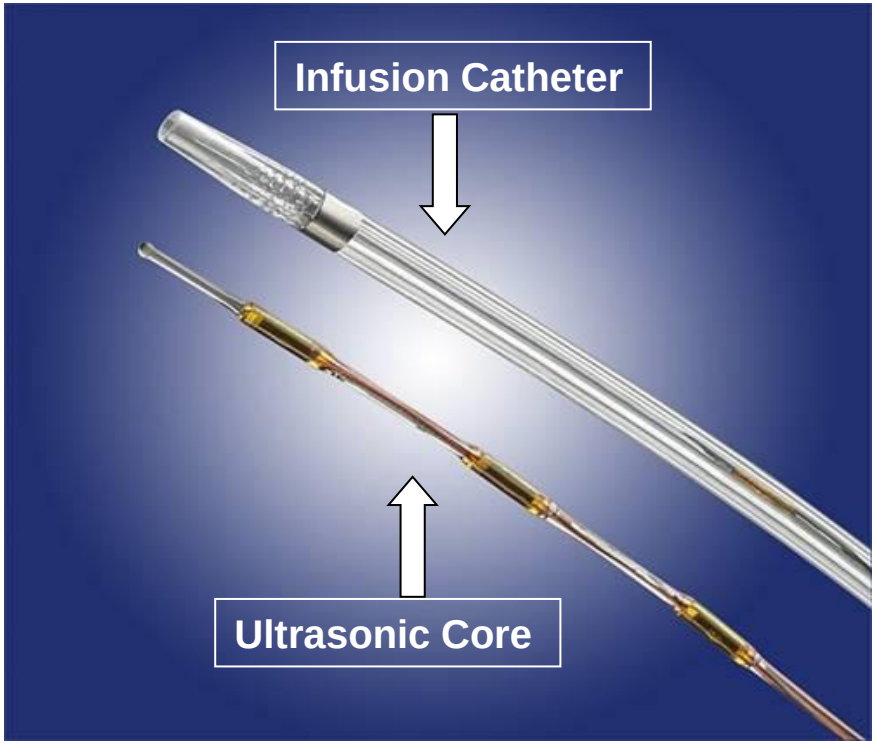
Catheter directed thrombolysis

- Acute ischaemia
  - Arterial embolism
  - Arterial thrombosis
- Occluded bypass grafts
- Ileo-femoral DVT
- Pulmonary embolism
- Pharmacomechanical therapies EKOS
  - Ultrasound break up fibrin
- Requires HDU bed

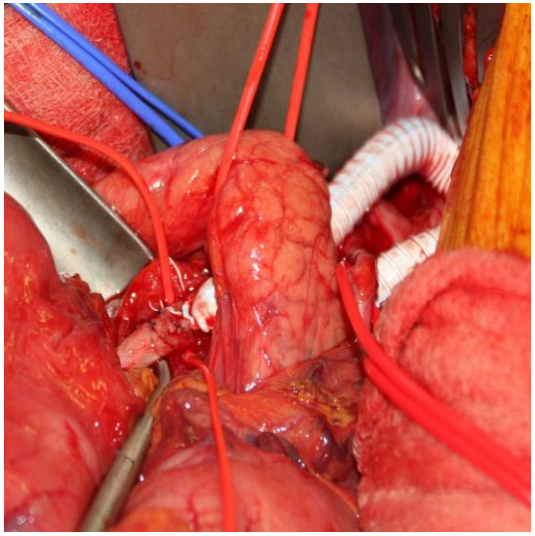
Venous ulcer

EKOS pharmaco-mechanical

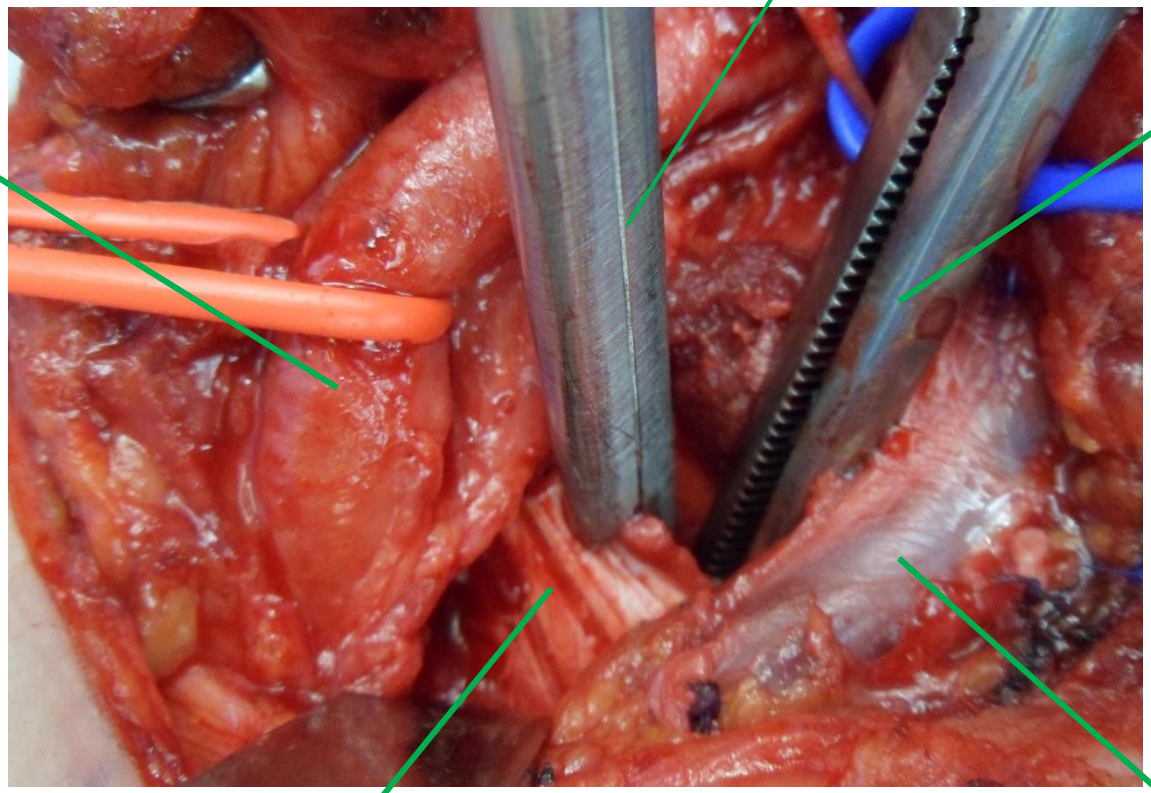




Chronic mesenteric ischaemia



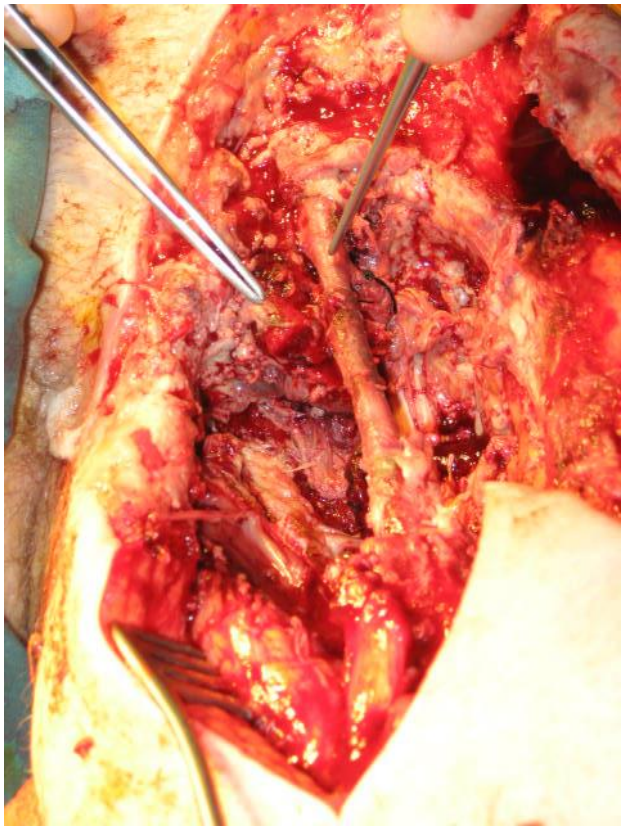
Thoracic outlet syndrome



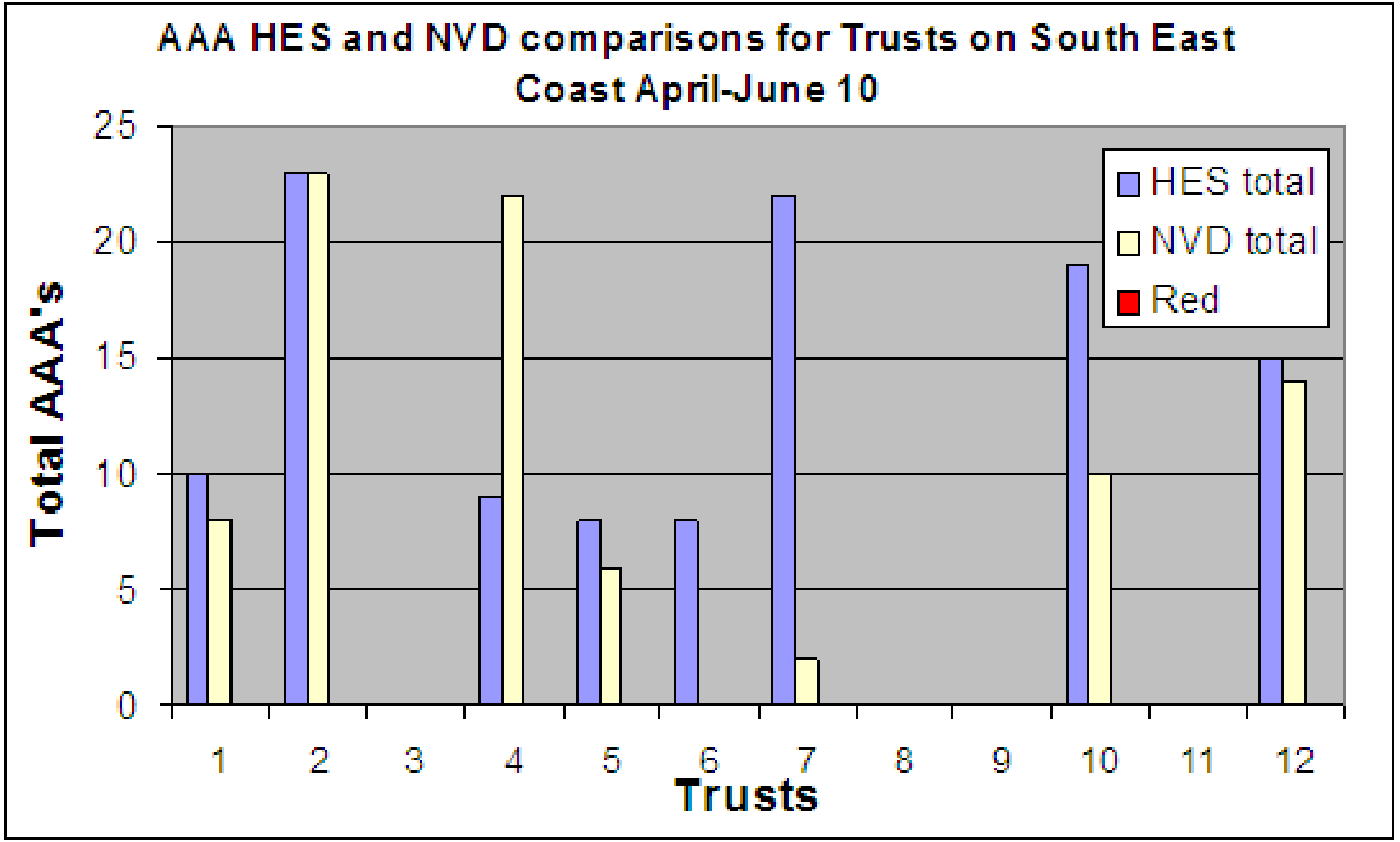
Intravenous drug use

Intra-arterial injection

Infected pseudo-aneurysm



Bean counting



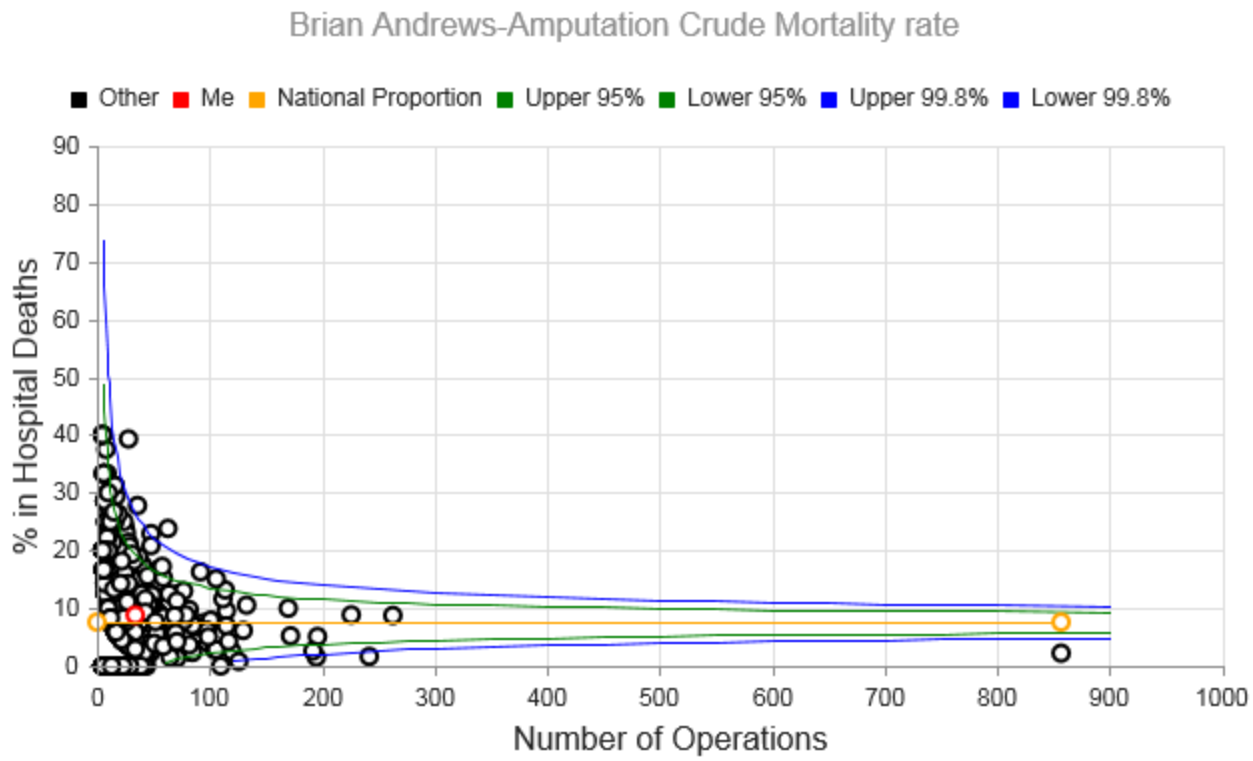
Deep vein thrombosis

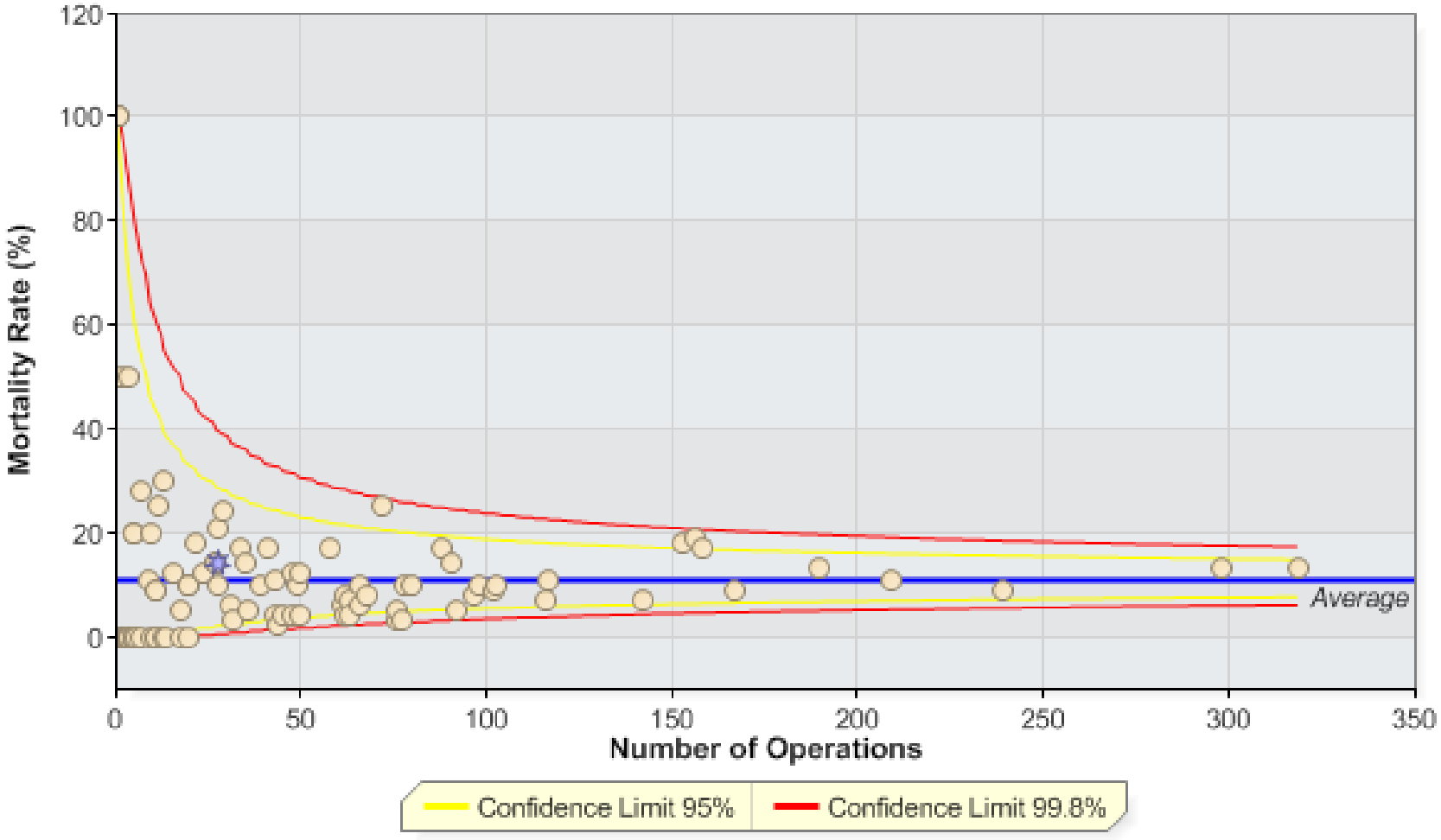
Carotid surgery at Medway

- Results 2008-2010
  - N=72
  - 0 Deaths
  - 1 CVA
- Medway 2008-2009 27% within 2 weeks of symptoms
- Vascular work plan
  - Tim Waite

Leg Ulcers

- Diabetic
- Venous
  - Deep post phlebitic
  - Superficial LSV SSV
- Arterial
- Vasculitic
  - Pyoderma
  - Rheumatoid
- Malignant

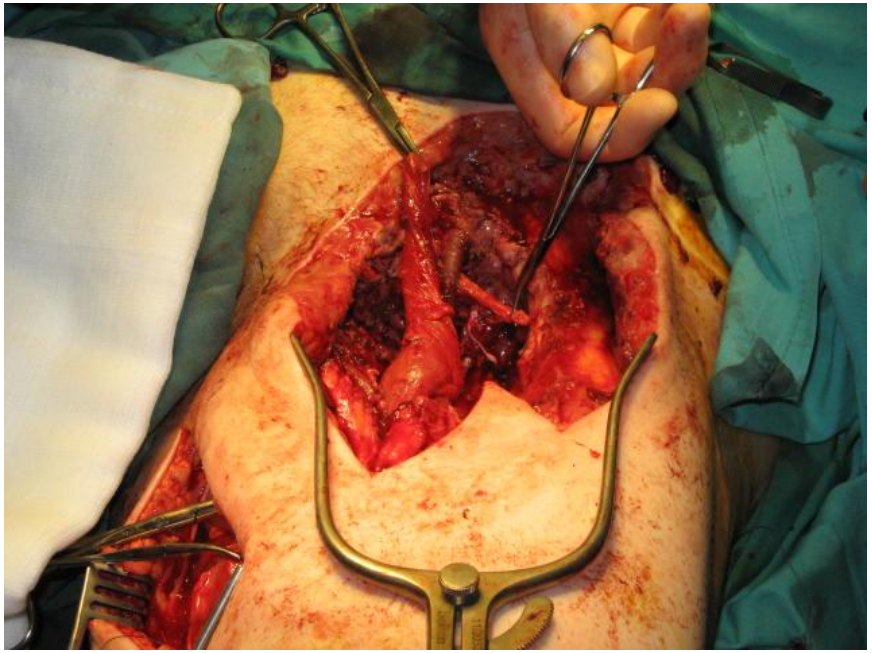

Brian Andrews-Amputation Crude Mortality rate
Other
Me
National Proportion
Upper 95%
Lower 95%
Upper 99.8%
Lower 99.8%
% in Hospital Deaths
0
10
20
30
40
50
60
70
80
90
0
100
200
300
400
500
600
700
800
900
1000
Number of Operations



n=38 mortality 14%

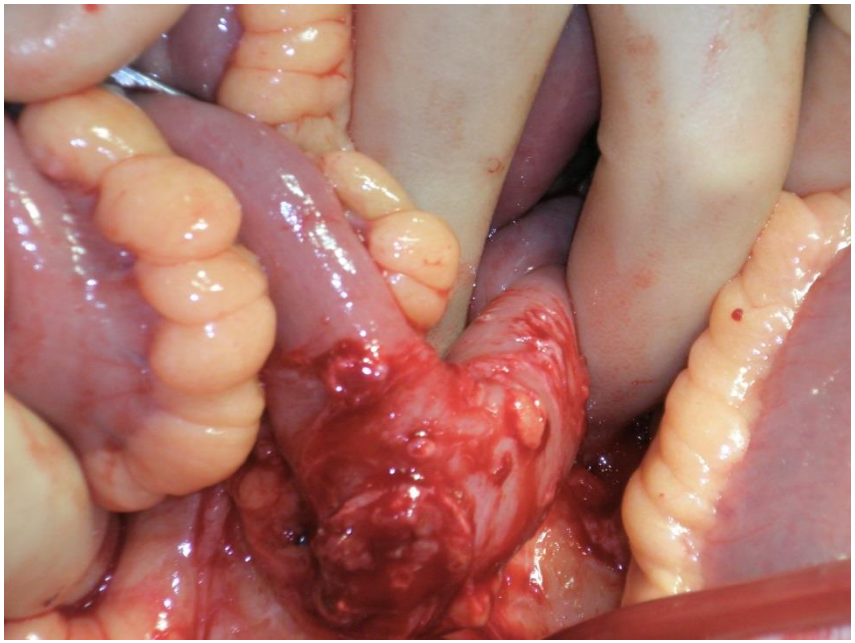
Complex procedures

Gracilis Flap



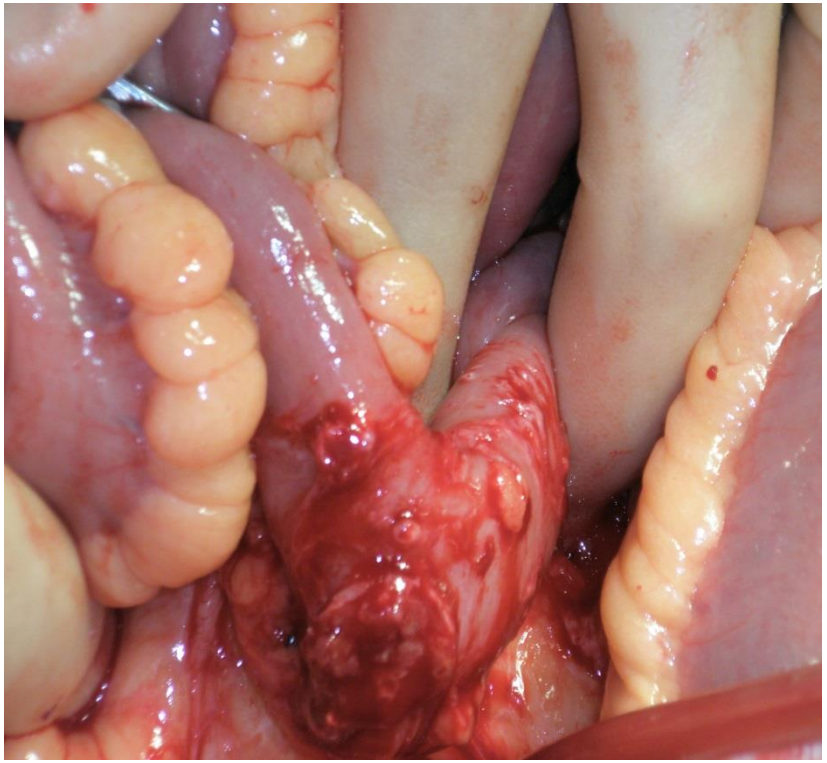
TFL Flap

Complex procedures



Complex procedures

- Infected aortic graft



Non Invasive Diagnosis

- One stop clinics
- Pre & Post exercise ABPI
- Segmental Pressure Measurements
- Duplex Ultrasonography

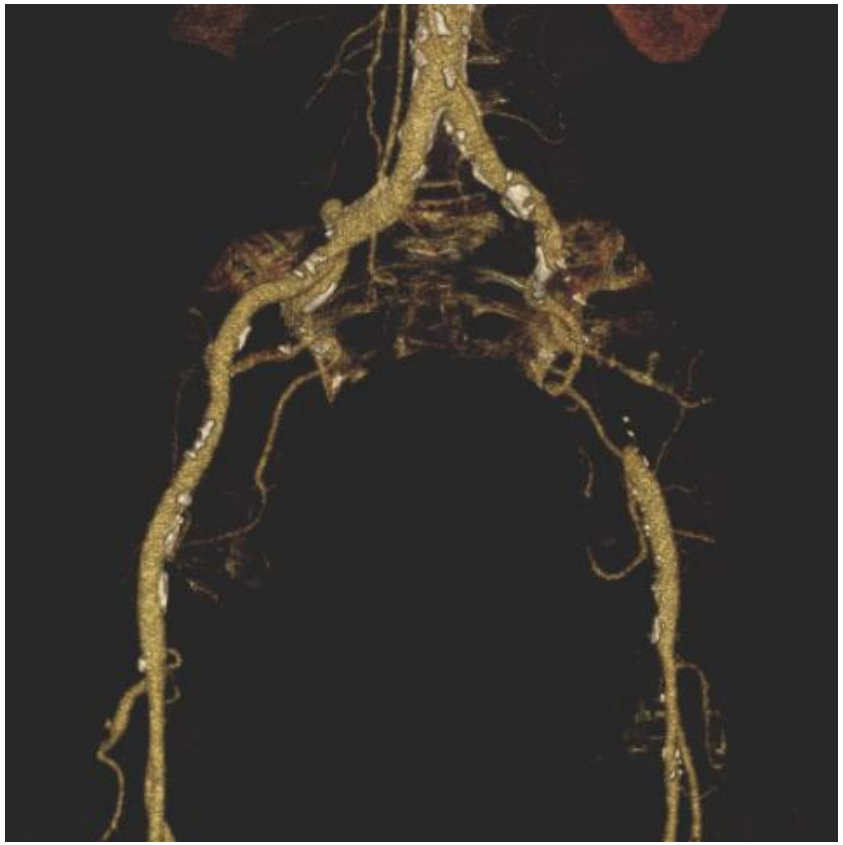
Complex procedures

- Redo aortic surgery

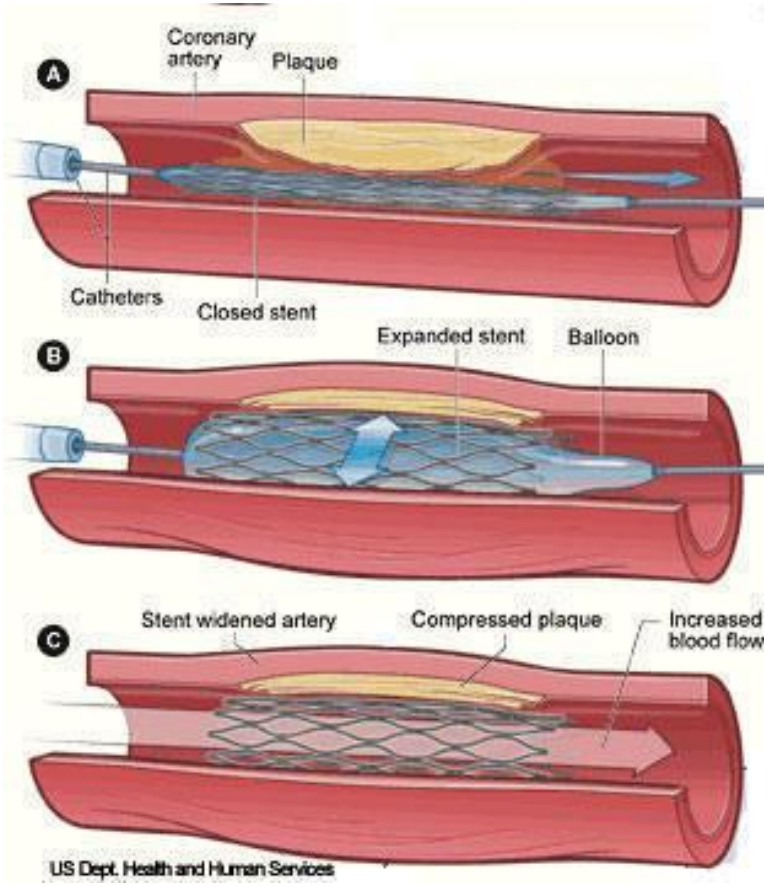
Angiography

DSA

CT angiogram

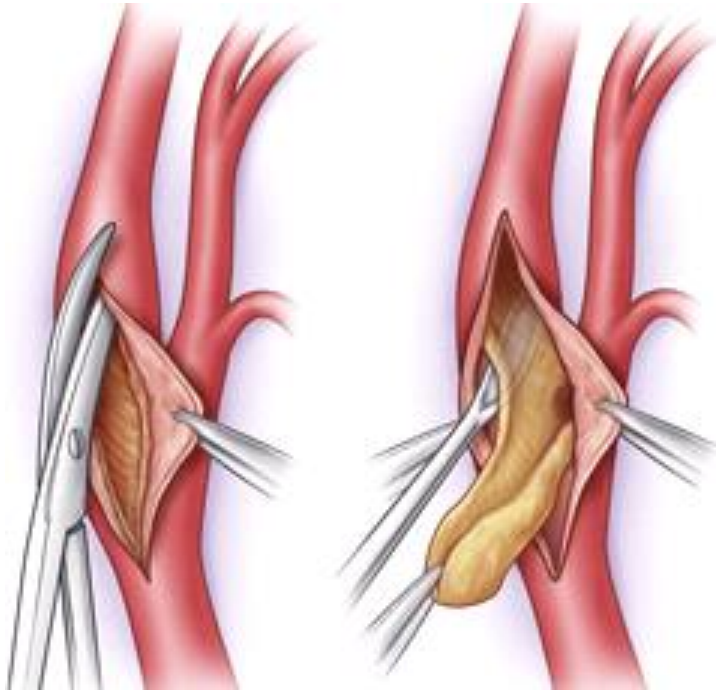


Angioplasty & Stent

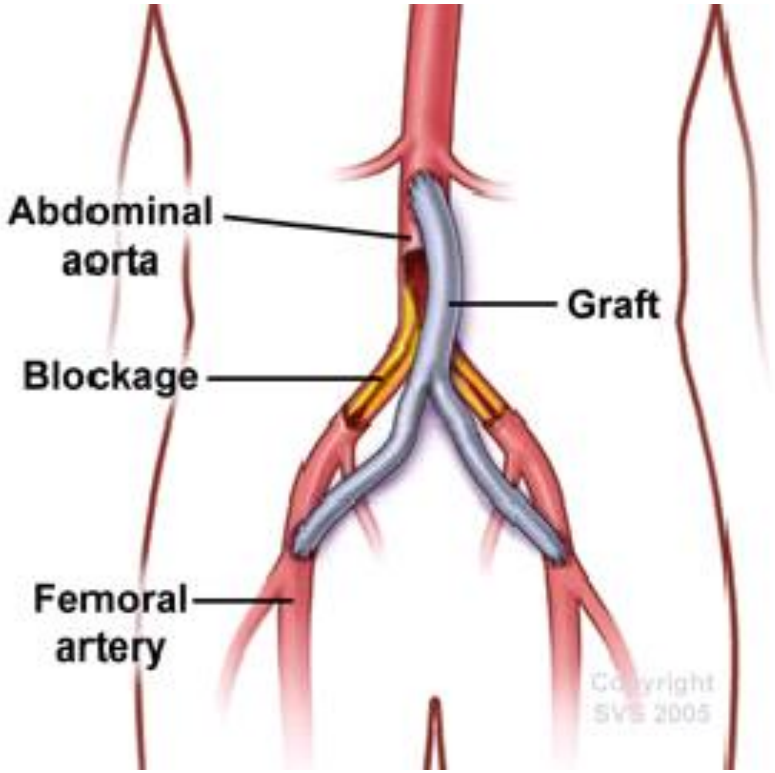


Vascular Surgery

Endarterectomy



Bypass



Rheumatoid Diseases

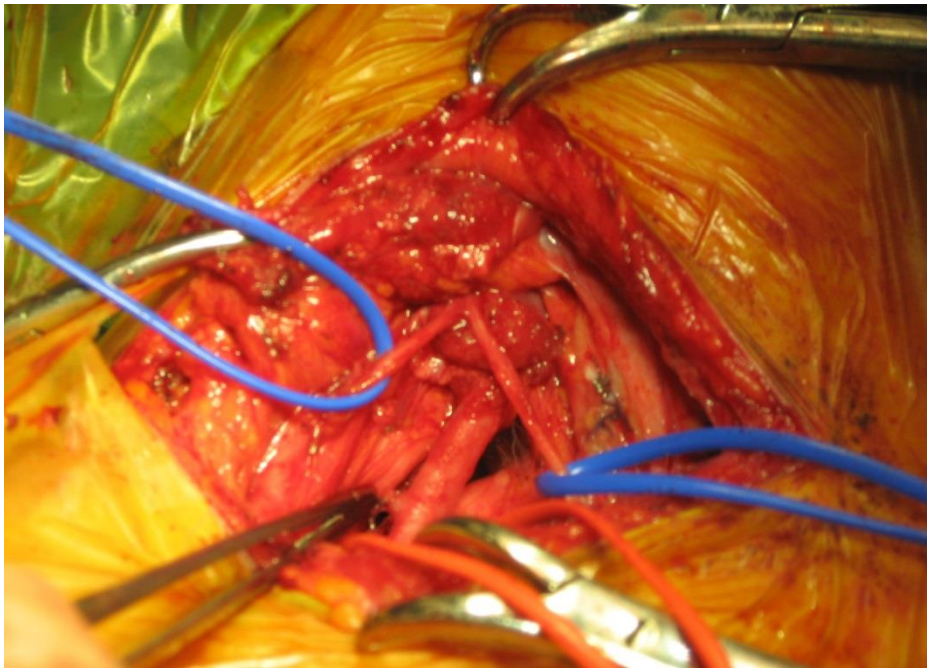
- Rheumatoid
  - Vasculitis
  - Ulcers
- Raynauds
- Erythromelalgia
- Buerger's

- Iloprost Infusions
- Sympathectomy

Thoracic Outlet Syndrome

- Neurogenic
- Arterial
- Venous

- Scalenectomy
- 1st rib resection



Treatment Options

- Conservative
  - Risk factor management (smoking, hypertension, diabetes, cholesterol)
  - Anti-platelet therapy (aspirin, clopidogrel, anticoagulants)
  - Intermittent claudication exercise programme
- Radiological intervention
  - Angioplasty/ Stents / Thrombolysis
- Arterial Surgery
  - Endarterectomy / Bypass / Embolectomy
- Amputation
  - Disablement Services Centre
- Palliative Care

Aortic Aneurysm Rupture

- Over 65yrs
- 2.1% male deaths
- 0.8% female deaths

- 30% die at home
- 50% postoperative mortality
- 82% mortality

West Kent Vascular Unit

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Vascular network

- Combined MDM
- East & West Kent
- Surgeon + Radiologist
- Videolink
- CT measurements
- Risk score
- EVAR or open repair

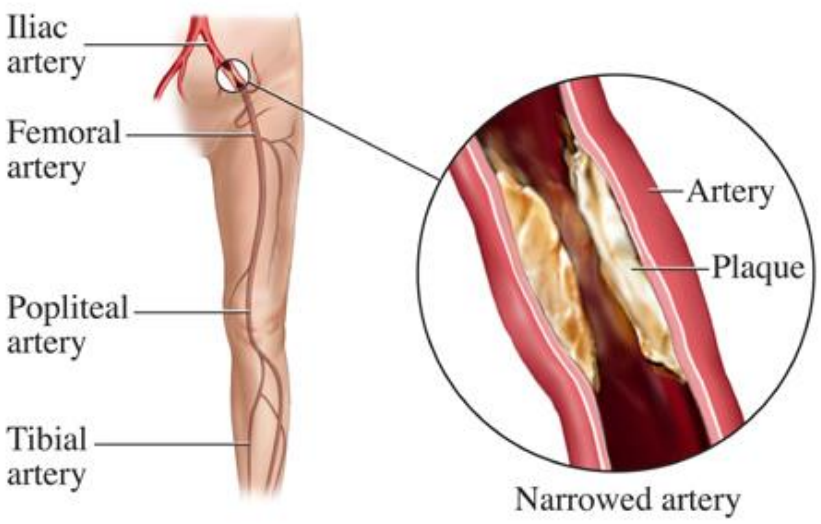
RACE

- Rapid Access Carotid Endarterectomy
- TIA & risk of CVA
  - Day1 17%
  - Day2 9%
  - Week1 43%
- Investigate and treat within 48hrs

Oxfordshire Community Stroke Project (OCSP)
Oxford Vascular Study (OXVASC)
UK TIA Aspirin Trial (UK-TIA) & ECST

Peripheral Arterial Disease

Atherosclerosis



Peripheral Aneurysms

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Clinical Presentation

- I Asymptomatic
- II Claudication
- III Rest Pain & Ulcers
- IV Gangrene