Management of Aortic Graft Infections & OPAT
Dr Nick Price
Management of Aortic Graft Infection & OPAT

Dr Nicholas Price
Directorate of Infection
Guy’s & St Thomas’ NHS Foundation Trust
Talk outline

1. BACKGROUND
   - What’s the evidence?
   - What’s a case?

2. INVESTIGATIONS
   - Microbiology
   - Imaging

3. MANAGEMENT
   - Surgical
   - Medical (OPAT)

4. CONCLUSIONS
Background
Current consensus

- Rare condition: aortic graft insertion complicated by infection in 0.5-6%
- Serious: ≈100% mortality in 2-3 years
- Diagnosis made by a combination of clinical, surgical, radiological and laboratory findings
- Complete surgical removal of the infected prosthesis is highly desirable
- Use infection resistant graft material/conduit
- Antimicrobial therapy is a vital adjunct to surgery
Databases searches:
Medline, EMBASE, Cochrane Central Register of Controlled Trials (CENTRAL), published in *The Cochrane Library*.

Types of studies included:
- Randomised control trials (RCT)
- Controlled clinical trials (CCTs)
- Interrupted time series with ≥ 3 data points before & after implementation of the intervention (ITS)
- Controlled before & after studies (CBA).

Limiters:
- Human studies
- English language publications
- 1/1/05 – 22/6/16

Search terms:
1. Vascular
2. Aort*
3. Endo*
4. 1 OR 2 OR 3
5. Graft*
6. Stent
7. 5 AND 6
8. Infection*
9. 4 AND 7 AND 8
10. Management
11. Treatment
12. Surg*
13. 10 AND 11 AND 12
14. 4 AND 9 AND 13

*Terms starting searched.
Diagnosis & management of vascular graft infection

PROSPERO International prospective register of systematic reviews 2016

108 records identified through database searching
5 additional records identified through other sources

89 records after duplicates removed

89 records screened

81 records excluded

8 full-text articles assessed for eligibility
8 full-text articles excluded, with reasons

0 studies fulfil inclusion criteria

http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016038759
Complete removal of infected prostheses *not* easy...
20-30% mortality
The evidence

• No RCTs - better surgical studies are large case series
• Animal studies
• Radiological data descriptive
• Microbiological brief and insufficient
• No well-designed trials of optimum antimicrobial agents, method of administration, duration of treatment
• No reference to a diagnostic standard
• No clinical guidelines
Case definition

• Essential for entry into trials or case registries and evaluation of published data

• Management of Aortic Graft Infection Collaboration
  – Established 2012
  – Vascular surgeons, imaging & infection specialists
  – Birmingham Heartlands, Guy’s & St Thomas’, Leeds, Imperial, Royal Free, University Hospital South Manchester
  – First ever case definition - derived by expert consensus/ modified Delphi method
  – Definition used to determine entry to service evaluation database
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Pathogenesis of aortic graft infection

Microorganisms colonise vascular grafts by:
1. contamination at the time of surgery
2. direct extension from an adjacent site
3. haematogenous seeding (bacteraemia)
## Aortic Graft Infection Diagnosis: A case Definition by the Management of Aortic Graft Infection Collaboration (MAGIC)

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OTA Lyons et al, European Journal of Vasc & Endovasc Surg 2016: 52, 758-763
Standardised intra-operative sampling methodology
Aortic graft infection: causative organisms

75/85 patients (88%) had positive microbiology

41% polymicrobial
Aorto-enteric/oesophageal fistulae

**NO FISTULA**
Polymicrobial 33%

**FISTULA**
Polymicrobial 65%

### No Fistula
- Candida spp.: 2%
- Enterococcus: 8%
- Misc. non-gut orgs: 13%
- Strep. spp.: 8%
- Coag neg. Staph.: 25%
- Staph. aureus: 15%
- Pseudomonas: 6%
- Other gut orgs: 6%
- E. coli: 17%

### Fistula
- Candida spp.: 17%
- Enterobacter cloacae: 11%
- Misc. not-gut orgs: 11%
- Staph. aureus: 6%
- Coag neg. Staph.: 15%
- Other gut orgs: 15%
- E. coli: 8%
- Enterococcus: 17%
## Presentation vs Pathogen

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<tr>
<th>Onset</th>
<th>Organism</th>
<th>Presentation</th>
</tr>
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<tbody>
<tr>
<td><strong>EARLY</strong> (&lt;4/12)</td>
<td><em>S. aureus</em></td>
<td>• Acute, fulminant, fever</td>
</tr>
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<td></td>
<td></td>
<td>• Wound infection</td>
</tr>
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<td></td>
<td></td>
<td>• Graft dysfunction e.g. bleeding, thrombosis</td>
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<td></td>
<td></td>
<td>• Positive BC</td>
</tr>
<tr>
<td><strong>LATE</strong> (&gt;4/12)</td>
<td>Skin flora (CNS) (polymicrobial)</td>
<td>• Indolent, no fever</td>
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<td></td>
<td></td>
<td>• Graft complications e.g. fistula, false aneurysm etc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Negative BC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Biofilm formation</td>
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Seabrook et al, 1990, J Vasc Surg
Early vs Late infection

Early Graft Infection vs Late Graft Infection

31 early: 28 late
# Pneumococcal mycotic aneurysms

<table>
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<tr>
<th>Patient</th>
<th>Sample type</th>
<th>Culture result (Penicillin MIC)</th>
<th>Molecular result</th>
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<tr>
<td>1</td>
<td>Blood Culture</td>
<td><em>Strep. pneumoniae</em> (&lt;0.06 mg/L)</td>
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<tr>
<td>2</td>
<td>Blood culture</td>
<td><em>Strep. pneumoniae</em> Serotype 23B (0.25 mg/L)</td>
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<td>3</td>
<td>Aneurysm tissue</td>
<td>Negative</td>
<td><em>Strep. pneumoniae</em> pbp-2b target NOT detected: penicillin <strong>RESISTANCE?</strong></td>
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<td><em>Strep. pneumoniae</em> lytA gene detected: penicillin <strong>RESISTANCE?</strong></td>
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<td>Vertebral body/disc biopsy</td>
<td>CNS only</td>
<td><em>Strep. pneumoniae</em> lytA gene detected: penicillin <strong>RESISTANCE?</strong></td>
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<td>4</td>
<td>Pus (leg)</td>
<td>Negative</td>
<td><em>Strep. pneumoniae</em> lytA gene detected: penicillin <strong>SUSCEPTIBILITY?</strong></td>
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*Seet et al, Ann Vasc Surg. 2019*
Q fever

Pre-treatment

**SUV\textsubscript{max}** 8.2
CRP 56
Phase 1: IgG 1:5120; IgA 1:1280
Phase 2: IgM negative

After doxy + HCQ

6 months:

**SUV\textsubscript{max}** 3.8
CRP 1

4 months:

Phase 1: IgG 1:5120; IgA 1:640
Phase 2: IgM negative
Imaging
Aortic Graft Infection Diagnosis: A case Definition by the Management of Aortic Graft Infection Collaboration (MAGIC)

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OTA Lyons et al, European Journal of Vasc & Endovasc Surg 2016: 52, 758-763
Imaging: CT

- Sensitivity 55-100% / Specificity 85-100%
- Depends on what diagnostic criteria and how advanced?
- **Peri-graft fluid at ≥3 months**
- **Peri-graft gas (fistula or gas-forming organisms) at ≥4-7 weeks**
- **Pseudoaneurysm in 25%**
- Local complications:
  - Discitis
  - Hydronephrosis
  - Bowel wall thickening (fistula?)
Peri-graft fluid

Early post-op fluid and absorption at 1 year

Peri-graft gas

Aorto-bronchial fistula
Discitis/vertebral osteomyelitis
FDG PET-CT

Dr Tara Barwick, Imperial College
Diagnostic Performance of $^{18}$F-FDG-PET/CT in Vascular Graft Infections

B.-R. Sah $^{a,e}$, L. Husmann $^{a,e}$, D. Mayer $^b$, A. Scherrer $^c$, Z. Rancic $^b$, G. Puippe $^d$, R. Weber $^c$, B. Hasse $^{c,*}$, the Vasgra Cohort

$^a$ Department of Medical Radiology, Division of Nuclear Medicine, University Hospital of Zurich, Zurich, Switzerland
$^b$ Clinic for Cardiovascular Surgery, University Hospital and University of Zurich, Zurich, Switzerland
$^c$ Division of Infectious Diseases and Hospital Epidemiology, University Hospital and University of Zurich, Zurich, Switzerland
$^d$ Institute of Diagnostic and Interventional Radiology, Department Medical Radiology, University Hospital of Zurich, Zurich, Switzerland

• 34 cases of suspected AGI

• Combined functional & morphological PET CT analysis:
  – Intensity of FDG uptake ($\text{SUV}_{\text{max}}$)
  – Uptake pattern along the graft i.e. focal vs. diffuse
  – Suggestive CT findings e.g. fluid, gas

• Results
  – Sensitivity 100%; Specificity 86%
  – PPV 96%; NPV 100%; Accuracy 97%

5 point scale:
1. Normal background activity
2. Mildly increased BUT diffuse
3. Focal BUT mild OR strong diffuse
4. Focal AND intense (+/- diffuse)
5. Focal intense AND fluid collection

Useful for monitoring response to antibiotic therapy?
Surgical management
Surgical strategies

• Objectives of surgery
  – Sepsis source control
  – Re-establish circulation

• Tube grafts
  – Extra-anatomical or in situ (anatomical)?
  – Material - biological/artificial?

• Stent grafts/ EVAR
  – Transformational - less invasive
  – Temporizing or ‘bridging’ stent
14-year experience with aortic endograft infection

13 abdominal stents
- 10 infra-renal devices explanted (AxBifem)
- 70% survived median 29 (range 12-45) months

9 thoracic stents
- All retained/ 3 extended for rupture
- 7 patients dead by 24 months

100% overall mortality from aortic disease with retention; 10/12 dead ≤15 months
Extra-anatomical repair

- Axillo-bifemoral bypass + oversew of aorta
- Bilateral axillo-femoral & axillo-SFA/popliteal bypass
- Long operation
- Patency:
  - ≈ 70% at 3 years
  - ≈ 55% at 5 years
- Amputation: 20-30%
- Stump “blow out” (<30%)
Anatomical/ in situ repair

Straight/ Aorto-bi-femoral/Aorto-bi-iliac
Graft material options

Artificial
- Dacron or PTFE
- Silver-impregnated
- Rifampicin-soaked

Autologous
- Deep femoral vein
- Spiral LSV graft
- Lowest infection risk

Cryopreserved/ Fresh Allografts
- Expensive & needs pre-ordering
- Chronic rejection (13%)
- Rupture (“cracking”)

Bovine pericardium
- New for aortic grafts
- Minimal experience
### Meta-analysis of 37 MEDLINE reports since 1985

**Clinical studies involving prosthetic aortic graft infection/mycotic aortic aneurysm**

<table>
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<tr>
<th>Outcomes</th>
<th>Extra-anatomic repair (n=459)</th>
<th>Rifampicin-bonded (n=96)</th>
<th>Cryo-preserved (n=616)</th>
<th>Autogenous vein (n=219)</th>
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<tr>
<td>Amputation</td>
<td>0.08*</td>
<td>0</td>
<td>0.03</td>
<td>0.08</td>
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<td>Conduit failure</td>
<td>0.25*</td>
<td>0.02</td>
<td>0.09*</td>
<td>0.17</td>
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<td>Re-infection</td>
<td>0.06*</td>
<td>0.07</td>
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<td>Early mortality</td>
<td>0.18*</td>
<td>0.07*</td>
<td>0.14</td>
<td>0.10</td>
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<td>Late mortality</td>
<td>0.24</td>
<td>0.16</td>
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<td>All outcomes combined</td>
<td>0.16*§¥</td>
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*, §, ¥ denote $P < 0.05$

*O’Connor et al, J Vasc Surg. 2006*
Past 5-year experience with biological conduits for aortic graft infection at GSTT

Survivors (26/33 patients): PET SUV_{max} <3.8, CRP normal, 25 standard Abx protocol

- 5 deaths (all fistulae initially)
- 2 deaths (unrelated)
- 23 abdominal grafts; 10 thoracic or thoraco-aortic grafts
- In situ repair: 16 autol. vein; 16 bovine; 1 cadaveric
- Mean op. time 8-9h. ↓1.5h if no DV harvest (i.e. bovine)
- No conduit failure, new infection, amputation; 1 DVT 7 wks

Updated from Gradinariu G et al, EVS Meeting, Madrid, 2018
Autologous - Spiral LSV graft
Neo-aorto-iliac system (Bovine & composite grafts)
Endovascular aortic repair (EVAR)/Stent grafts

Source: wiki
### Aortic Graft Infection Diagnosis: A case Definition by the Management of Aortic Graft Infection Collaboration (MAGIC)

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OTA Lyons et al, European Journal of Vasc & Endovasc Surg 2016: 52, 758-763
Staph. aureus, 20%  
Salmonella, 12%  
Strep., 11%  
Misc., 19%

- 16 centers/8 European countries  
- 123 mycotic aortic aneurysms/EVAR  
- Blood cultures positive 62%

**Salmonella:**  
- 90% 5-year survival

**Non-salmonella:**  
- 5-year survival 41%  
- 50% deaths infection-related

**Culture -ve**

Salmonella
Non-Salmonella

Follow-up (months)
0.0 0.2 0.4 0.6 0.8 1.0
Cumulative Survival

Circulation 2014; 130:2136-2142
Stented Mycotic Aortic Aneurysms

Salmonella enteritidis  Staph. aureus
Medical management
Medical management

• Monthly multidisciplinary meeting: surgeons, ID/micro, imaging, pharmacy, nurse specialists
• Monthly Vascular-ID clinic
• OPAT service essential
• What’s the aim? cure versus suppression?
  – Partial vs. complete explanation
  – Type of repair (in situ/extra-anatomical/stent)
  – Organisms involved (chronicity, biofilm)
  – 2 stage planned?: (i) ‘bridging’ stent → (ii) open repair
**AORTIC GRAFT INFECTION**

- Control bleeding/sepsis
  - Extensive peri-graft infection or MRSA, or Pseud or MDR orgs?
    - No
      - In situ reconstruction
    - Yes
      - Graft excision with extra-anatomic repair

- 6/52 IV Abx then 4-6/12 PO Abx

- Extensive peri-graft infection or MRSA, or Pseud or MDR orgs?
  - No
    - Observe off Abx
  - Yes
    - Lifelong Abx

---

**VASCULAR GRAFT INFECTIONS**

**Background**

The use of synthetic material for reconstructive vascular surgery was first reported during the early 1960s. Infection involving vascular graft prostheses is an infrequent but devastating complication of reconstructive vascular graft surgery and its associated surgical procedure. Risk factors for infection include technical and patient-related factors, including the use of native versus synthetic grafts, placement of the graft at a site with poor blood supply, and the presence of the anastomosis.

**Frequency**

The frequency of graft infection varies between 1% and 4% depending on the practice setting and the definition used for infection. Graft infection is most common when the graft is infected with Methicillin-resistant Staphylococcus aureus (MRSA) or Pseudomonas aeruginosa. The incidence of graft infection increases with the duration of follow-up and decreases with the use of antibiotic prophylaxis.

**Microbiology**

The microbiological cause of graft infection is not well understood. Although Staphylococcus epidermidis is a common isolate, other organisms such as Pseudomonas aeruginosa and Enterococcus faecalis may also be present. The use of prophylactic antibiotics and the presence of a chronic medical condition may influence the choice of antibiotic therapy. Infection control measures, including the use of sterile technique and wound management, are essential to prevent graft infection.

**Management**

The management of graft infection includes surgical debridement, antibiotic therapy, and wound care. The decision to reoperate on the graft depends on the severity of the infection and the patient's clinical condition. In some cases, the infected graft may need to be removed and replaced with a new graft.

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**Key Points**

- No case definition
- IIa/IIb recommendations (conflicting)
- Level C evidence (consensus)
### How long to treat?

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<th>Duration</th>
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<td>Complete removal of infected prosthesis</td>
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<td>Partial removal of infected prosthesis</td>
<td>6 weeks IV + PO for life</td>
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<tr>
<td>EVAR deployed in infected field e.g. fistula or existing infected graft</td>
<td>6 weeks IV + PO for life</td>
</tr>
<tr>
<td>EVAR deployed for mycotic aneurysm</td>
<td>6 weeks IV + ≥12 months PO Stop if Salmonella +ve or BC –ve? (&amp; PET-CT negative &amp; CRP normal)</td>
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### What agents initially?

#### EMPIRIC TREATMENT

| Ceftriaxone + Metronidazole + Vancomycin* |

#### SPECIAL SITUATIONS

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<th>Severe sepsis/ unstable</th>
<th>Add gentamicin</th>
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<td>Enteric/oesophageal fistula</td>
<td>Add fluconazole</td>
</tr>
<tr>
<td>Pen allergy or MRSA colonised</td>
<td>Vancomycin + Gentamicin + Metronidazole</td>
</tr>
</tbody>
</table>

- Total OPAT Episodes = 881
- Total OPAT Days = 17544

- Vascular Graft Infection (including carotid patch)
- Spinal Infection
- Skin & Soft Tissue Infection (Diabetic)
- Skin & Soft Tissue Infection (Non diabetic)
- Diabetic Foot infection (Osteoarticular)
- ENT Infection (including Nec OE/ base of skull)
- Osteoarticular Infection
- Osteoarticular Infection (Prosthetic material / Metal related)
- Vascular infection (native)
- Urinary Tract Infection / Renal Collection
- Cardiac - Infective Endocarditis Including pacemaker associated infections
- Respiratory - Lower Tract including empyema
- Intra-abdominal Infection
- Other
OPAT: aortic graft infection target organisms (38 cases)

- Empiric, 9
- E. coli, 6
- CNS, 5
- MSSA, 4
- Pneumococcus, 2
- Mixed bowel, 7
- Mixed other, 3
- Misc, 2
- Misc, 2
- Misc, 2
- Misc, 2

(38 cases)
GSTT OPAT for Vascular Graft Infections

- Ceftriaxone IV
- Ertapenem IV + Teicoplanin IV
- Ertapenem IV + Teicoplanin IV + Fluconazole PO
- Ertapenem IV
- Ceftriaxone IV + Teicoplanin IV
- Ceftriaxone IV + Metronidazole PO
- Ceftriaxone IV + Linezolid PO + Fluconazole PO
- Cefazidime IV + Teicoplanin IV
- Daptomycin IV
- Daptomycin IV + Fluconazole IV
- Daptomycin IV + Ciprofloxacin PO + Fluconazole PO
- Daptomycin IV + Ertapenem IV + Fluconazole PO
- Ertapenem IV + Linezolid PO + Fluconazole PO
- Ertapenem IV + Clindamycin PO
- Teicoplanin IV
Outcome: 38 aortic graft infection-OPAT patients

Complications = 7 cases (14%)
- Line-related = 2
- Medication = 5

Re-admissions = 16 cases (32%)
- Emergency = 12
- 16.6% s

6/52 IV + LT PO 39%
6/52 IV + 6/52 PO 50%
2 deaths (50%)
5 deaths (33%)
2 deaths (11%)
Other 11%

5/52 IV + LT PO (33%)
2 deaths (50%)
Diagnosis and Management of Prosthetic Joint Infection: Clinical Practice Guidelines by the Infectious Diseases Society of America

Table 3. Common Antimicrobials Used for Chronic Oral Antimicrobial Suppression (B-III Unless Otherwise Stated in Text)\textsuperscript{a,b}

<table>
<thead>
<tr>
<th>Microorganism</th>
<th>Preferred Treatment</th>
<th>Alternative Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococci, oxacillin-susceptible</td>
<td>Cephalexin 500 mg PO tid or qid or Cefadroxil 500 mg PO bid</td>
<td>Dicloxacillin 500 mg PO tid or qid or Clindamycin 300 mg PO qid or Amoxicillin-clavulanate 500 mg PO tid</td>
</tr>
<tr>
<td>Staphylococci, oxacillin-resistant</td>
<td>Cotrimoxazole 1 DS tab PO bid or Mincocycline or doxycycline100 mg PO bid</td>
<td>Cephalexin 500 mg PO tid or qid</td>
</tr>
<tr>
<td>(\beta)-hemolytic streptococci</td>
<td>Penicillin V 500 mg PO bid to qid or Amoxicillin 500 mg PO tid</td>
<td>Cephalexin 500 mg PO tid or qid</td>
</tr>
<tr>
<td>Enterococcus spp, penicillin susceptible</td>
<td>Penicillin V 500 mg PO bid to qid or Amoxicillin 500 mg PO tid</td>
<td></td>
</tr>
<tr>
<td>\textit{Pseudomonas aeruginosa}</td>
<td>Ciprofloxacin 250–500 mg PO bid</td>
<td></td>
</tr>
<tr>
<td>Enterobacteriaceae</td>
<td>Cotrimoxazole 1 DS tab PO bid</td>
<td>(\beta)-lactam oral therapy based on in vitro susceptibilities</td>
</tr>
<tr>
<td>\textit{Propionibacterium} spp</td>
<td>Penicillin V 500 mg PO bid to qid or Amoxicillin 500 mg PO tid</td>
<td>Cephalexin 500 mg PO tid or qid or Mincocycline or doxycycline 100 mg PO bid</td>
</tr>
</tbody>
</table>
GSTT aortic graft infection management flowchart

Mycotic aneurysm

Endovascular repair (stent) & IV Abx (BC x2)

Stop Abx after 1yr if Salmonella OR culture –ve AND PET/CRP normal

Staph. aureus or if unstable/progression?

Lifelong Abx

Optimise condition ('bridging' stent)?

Explantation of infected graft & in situ repair with vein, bovine patch or composite system

6/52 IV + 6/52 PO Abx. Stop Abx after if PET & CRP satisfactory
GSTT aortic graft infection management flowchart

Infected graft

- Major bleeding risk?
  - Endovascular repair (stent) & IV Abx (BC x2)
- Severe sepsis?
  - CT-guided biopsy? & PET
  - Explantation of infected graft & in situ repair with vein, bovine patch or composite system
- Stable?
  - Lifelong Abx
  - 6/52 IV + 6/52 PO Abx. Stop Abx after if PET & CRP satisfactory

Residual infected graft?
GSTT aortic graft infection management flowchart

**Mycotic aneurysm**
- Endovascular repair (stent) & IV Abx (BC x2)
- Stop Abx after 1yr if Salmonella OR culture –ve AND PET/CRP normal

**Infected graft**
- Major bleeding risk?
- Severe sepsis?
- Stable?
- CT-guided biopsy? & PET
- Optimise condition ('bridging' stent)?
- Explantation of infected graft & in situ repair with vein, bovine patch or composite system
- 6/52 IV + 6/52 PO Abx. Stop Abx after if PET & CRP satisfactory
- Lifelong Abx
- Residual infected graft?
- Staph. aureus or if unstable/progression?
- Stop Abx after 1yr if Salmonella OR culture –ve AND PET/CRP normal
Summary & Conclusions

Guy’s and St Thomas’
NHS Foundation Trust

MAGIC

King’s College
London
Conclusions

- Evidence poor, no guidelines, management/outcomes variable
- Small case numbers and a registry needed to track quality
- The multidisciplinary team is essential

Research
  - Diagnostics: sonication, molecular assays
  - Imaging: PET CT, novel techniques
  - Antimicrobials: optimum agents, novel therapies, IV vs. oral treatment and minimum duration
  - Surgery: graft material, surgical technique
Novel imaging

Figure 3: (a) PET/CT image of two sterile and four *E. coli* infected pieces of vascular stent after incubation with $^{68}$Ga-ferrichrome C (top), with further imaging using autoradiography (middle and bottom). (b) $^{68}$Ga-ferrichrome C has significantly higher uptake in *E. coli* infected stents compared to non-infected, sterile stents.
Conclusions

- Evidence poor, no guidelines, management/outcomes variable
- Small case numbers and a registry needed to track quality
- The multidisciplinary team is essential
- Research
  - Diagnostics: sonication, molecular assays
  - Imaging: PET CT, novel techniques
  - Antimicrobials: optimum agents, novel therapies, IV vs. oral treatment and minimum duration
  - Surgery: graft material, surgical technique
- Similar situation for prosthetic joint infection 20 years ago – now widely accepted evidence-based guidelines
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Rajeni Thangarajah
Dr Tadhg Sullivan
Hasinaa Patel
Miss Rachel Bell
Mr Morad Sallam
Mr Oliver Lyons
Micro lab SOP for prosthetic aortic grafts

1) Cut graft in half (N.B. between steel wires)

2) Swab both luminal and external surfaces

3) Put piece of graft into Ballotini bead vial and vortex

4) Put remainder in cold room e.g. for 16S PCR if culture neg.

5) Half of graft for -20°C storage/sonication
Sonication

Standard culture 61% vs sonicated 78% (p<0.001)

Trampuz et al, NEJM 2007
MAGIC database

- Management of Aortic Graft Infection Collaboration
- Secure, web-entry database hosted by GSTT BRC
- Supported by Vascular Society of GB & Ireland
- ‘Service evaluation’ (NRES): evaluate the range of diagnostic & therapeutic approaches
- Create useful tool for routine clinical case management
- Develop a national registry
- Identify key research questions
Welcome

Infection complicates aortic graft and endograft deployment in approximately 1-4% of cases. In the absence of good evidence-based guidance, approaches to diagnosis and treatment are inconsistent. Corresponding outcomes are variable but often poor. In response to this, several English NHS Trusts with large vascular services came together in 2012 to form the Management of Aortic Graft Infection Collaboration (MAGIC). Underpinning the range of specialist expertise which is essential to manage these complex cases, it comprises vascular surgeons, infection specialists and radiologists.

Supported by the Vascular Society of Great Britain & Ireland, the MAGIC service evaluation database has been developed to collect high-quality, prospective data on the clinical presentation, diagnosis, treatment and outcome from aortic graft infection. The database complies with NHS patient data security standards and is hosted by the Guy’s & St Thomas’ Biomedical Research Centre. The MAGIC aortic graft infection definition is the first derived by multi-disciplinary expert consensus and is used to determine eligible cases for database entry.

Any vascular unit with a multi-disciplinary approach to managing aortic graft infection is now welcome to join the MAGIC database. Complete the enrolment form and/or for more information email: gtt-tr.magicadministrator@nhs.net

http://www.gsttbrc.com/MAGIC
L4/5 discitis

1. L2–S1 post. spinal instrumented fusion
2. L4/5 decompression
3. Debridement of L4/5 spondylodiscitis
4. L2 vertebroplasty

Pre-op. Post-op.
Case Report

Mycotic Aneurysm following a Dog Bite: The Value of the Clinical History and Molecular Diagnostics

Terry J. Evans,1 Oliver T. Lyons,2 Aisling Brown,1 Nicholas Price,1 Rachel E. Bell,2 and Morad Sallam,2 London, UK

A 63-year-old Caucasian taxi driver presented with a 3-week history of malaise, night sweats, 7 kg weight loss, generalized arthralgia, and persistent mid-lower abdominal pain. Blood inflammatory markers were raised, and a computed tomography scan demonstrated an irregular degeneration of the infrarenal aorta, with a differential diagnosis including aortic infection. An urgent type IV thoracoabdominal aneurysm repair was performed with a rifampicin-soaked aortic tube graft during an open procedure. No organisms were grown from multiple peripheral blood cultures or culture of the affected aorta. However, subsequent polymerase chain reaction of the resected aorta identified Capnocytophaga canimorsus as the causative organism—a commensal that lives in the mouth of dogs and cats. The patient subsequently gave a history of multiple bites from his pet dog over recent months—the likely source of infection. He was treated with 8 weeks of intravenous antibiotics before switching to oral antibiotics for an additional 6 weeks.

45/48 GSTT patients since 2001 met the diagnostic criteria, having scored ≥ 1 major criteria and ≥ 1 from another category. Of the 3 patients that did not meet the criteria, one received palliative care and not investigated, there were incomplete medical records for the second and the third scored 3 minor criteria from 3 different categories but no major.