NEW DEVELOPMENTS IN THE TREATMENT OF INFECTED AORTIC GRAFTS AND MYCOTIC AAAS: WHAT STRATEGIES WORK

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DISCLOSURES
I have nothing to Disclose

HIGH MORBIDITY AND MORTALITY (10-50% IN LITERATURE)
- Missed and delayed diagnosis
- Immuno-compromised patients
- Located in para-visceral and thoraco-abdominal aorta

DIAGNOSIS OF INFECTED ANEURYSMS
- Positive blood culture specimen
- First presentation of an aneurysm after bacterial sepsis
- Positive culture from aneurysmal wall, its content or the surrounding tissue with an associated infection
- Negative culture with
  - Image finding of eccentric aneurysms
  - Signs of infection
  - Preoperative treatment with antibiotics

PRINCIPLES OF TREATMENT
- Antibiotics: initial and long term
- Prompt surgical treatment: rupture risk
  - Excision of infected artery
  - Removal of surrounding infected tissue
- Arterial reconstruction
  - In-situ graft replacement
  - Extra-anatomical bypass

THE SUCCESSFUL USE OF EVAR IN MYCOTIC AORTIC ANEURYSMS
- Broad – spectrum Antibiotics
- No microbes isolated from 30% to 50% of aortic aneurysms
- The use of antibiotic-coated grafts
- Adjunct procedures, surgical debridement and/or percutaneous drainage
- Prolonged postoperative Antibiotics
THE ROLE OF EVAR FOR TREATMENT OF INFECTED AORTIC ANEURYSMS

- Well-controlled of an active infection by broad-spectrum antibiotics, without fever and stable hemodynamic parameters
- Acute presentation with fever, positive blood culture, active bleeding and hemodynamic instability from aneurysm rupture
- Specific appropriate antibiotics

CHIANG MAI UNIVERSITY REVIEW (FROM JANUARY 2009 DECEMBER 2011)

Elective EVAR for stable Infected AAAs

<table>
<thead>
<tr>
<th>Case no.</th>
<th>Gender/Age</th>
<th>Organisms</th>
<th>Procedures</th>
<th>Complications</th>
<th>2nd Procedures</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>75/F</td>
<td>Salmonella</td>
<td>Bifurcated Graft</td>
<td>Infected Graft</td>
<td>Explantation</td>
<td>10 months after EVAR</td>
</tr>
<tr>
<td>2.</td>
<td>69/M</td>
<td>B. pseudomallei</td>
<td>AUI - FFbx</td>
<td>No</td>
<td>No</td>
<td>Alive</td>
</tr>
<tr>
<td>3.</td>
<td>72/M</td>
<td>E. coli</td>
<td>Bifurcated Graft</td>
<td>No</td>
<td>Surgical Drainage</td>
<td>Alive</td>
</tr>
<tr>
<td>4.</td>
<td>83/F</td>
<td>Salmonella</td>
<td>Tube Graft</td>
<td>No</td>
<td>No</td>
<td>Alive</td>
</tr>
<tr>
<td>5.</td>
<td>57/M</td>
<td>B. pseudomallei</td>
<td>Bifurcated Graft</td>
<td>Infected Stent Graft</td>
<td>36 months after EVAR</td>
<td>CT guided percutaneous drainage</td>
</tr>
</tbody>
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All survived patients have a lifelong antibiotics treatment

Emergency EVAR for un-stable Infected AAAs

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<tr>
<td>1.</td>
<td>75/F</td>
<td>Salmonella</td>
<td>Tube Graft</td>
<td>Left Graft Limb Occlusion</td>
<td>Thrombo-embolectomy</td>
<td>Alive</td>
</tr>
<tr>
<td>2.</td>
<td>58/M</td>
<td>E. coli</td>
<td>Bifurcated Graft</td>
<td>Infected Stent Graft</td>
<td>26 months after EVAR</td>
<td>CT guided percutaneous drainage</td>
</tr>
<tr>
<td>3.</td>
<td>81/M</td>
<td>Salmonella</td>
<td>AUI - FFbx</td>
<td>No</td>
<td>No</td>
<td>Alive</td>
</tr>
<tr>
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<td>61/F</td>
<td>Salmonella</td>
<td>Tube Graft</td>
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Emergency Open repair for un-stable Infected AAAs

All 5 case had Salmonella infection with 30 days mortality rate of 60% (3/5)

All survived patients have a lifelong antibiotics treatment


INFECTED AORTIC GRAFTS

- Conventional open repair of AAA has a graft infection rate of 0.5% to 3%
- EVAR has a graft infection rate of 0.2-5%
- EVAR for Infected AAAs has a graft infection rate of 33.33% (3/9) in our series

MECHANISM OF GRAFTS INFECTIONS

- Contamination at the time of implantation
- Early postoperative septicemia (incisional site or remote infection)
- Hematogenous spread
- Adjacent infection such as diverticular abscess
- Re-intervention

Antibiotics and Drainage for Treating Stent-Graft Infection after EVAR

EXPLANTATION OF THE INFECTED AORTIC STENT GRAFT

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<td>57</td>
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<td>Bifurcated Graft</td>
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</tr>
</tbody>
</table>

CONSERVATIVE MANAGEMENT

- High mortality rates 75%
- Combined with endoluminal devices should be used as a bridge to definitive operative treatment
- Considered in patients with
  - Moribund
  - High risk for operation
  - Minimal graft contamination by a low grade virulent organisms

CONSERVATIVE TREATMENT OF ENDOGRAFT INFECTION AFTER EVAR WITH CT GUIDED DRAINAGE AND GRAFT PRESERVATION:

- Bacterial Virulence
- Onset of Endograft Infection
- Localization of Endograft Infection
- Initial Response to CT guided percutaneous drainage

CHOICE BETWEEN EXPLANTATION AND CONSERVATIVE MANAGEMENT DEPENDS ON:

- Location of the infected grafts
- Life threatening problems
- Causative organisms
- Medical risks
- Conditions and life expectancy

KEY OPERATIVE PRINCIPLE

- Pre-operative drainage of localized abscess
- Removal of only infected part of the graft
- Debridement of the infected soft tissue
- IV organism-specific antibiotics for 6-8 weeks
- CT imaging for follow-up
THE PRIMARY GOALS OF OPERATIONS
(MORTALITY RATES 4-30%)

• Removal of the infected prosthesis
• Debride all infected soft tissue
• Restored blood flow to the lower extremities and visceral arteries
• Prevent recurrent infection of the new grafts

GOALS AND PRINCIPLE OF SURGICAL TREATMENT

• Eliminate and control of infections
• Prevent late aneurysm rupture or fatal GI hemorrhage
• Minimize risk of recurrent infections

SPECIAL IN-SITU VASCULAR GRAFT
FOR INFECTED AAA

• Antibiotic-coated (Rifampicin) Dacron grafts
• PTFE grafts
• Silver coated polyester grafts
• Autogenous material
• Cryopreserved allografts

THANK YOU FOR ATTENTION