Mechanism and Prevention Of Abdominal Incision Dehiscence After AAA Open Repair:

Why Is It A Worse Problem Than After Open Aorto-Bifemoral Bypass For Occlusive Disease?

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No conflict of interest

Why Is It A Worse Problem After Open Aorto-Bifemoral Bypass For Occlusive Disease?

Knife Injury

Henrikenson JVS 2013

Aortic disease

Adjusted HR: 1.6 for AID repair

Why Is It A Worse Problem After Open Aorto-Bifemoral Bypass For Occlusive Disease?

Abdominal Incision Dehiscence

Henrikenson JVS 2013

Linea Alba Fibroblasts From AAA and AOD Patients

AAA N=11

AOD N=10

Linea Alba Fibroblasts From AAA and AOD Patients
**In vitro** healing test 1. Scratch test

Anna Patient Fibroblasts recolonize less rapidly

**In vitro** healing test 2. Gel Contraction Assay

AAA patient Fibroblasts retract less

Association of Abdominal Wall Defects with AAA - Another key to AAA pathophysiology?

Henneman JVS 2013
Pleumeekers H Br J Surg 1999

Association of Abdominal Wall Defects with AAA - Another key to AAA pathophysiology?

Henneman JVS 2013
Pleumeekers H Br J Surg 1999
Association of Abdominal Wall Defects with AAA - Another key to AAA pathophysiology?

![Diagram showing AID (incision repair) with x1.5 and x3 Inguinal Umbilical]

Microarray mRNA differential in Linea Alba Fibroblasts

- 47 genes differentially expressed
- 34 up-regulated, log₂ ratio > 0.5
- 13 down-regulated, log₂ ratio < -0.5

Affymetrix® 28 869 genes

Prevention of AID in AAA Open Repair

- Mesh-augmented reinforcement
- Transverse vs. Vertical laparotomy
- Retroperitoneal approach

<table>
<thead>
<tr>
<th>N</th>
<th>Follow-up</th>
<th>AID/ Direct suture</th>
<th>AID/ Mesh</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bevis</td>
<td>85</td>
<td>3 years</td>
<td>40%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Muysoms</td>
<td>120</td>
<td>2 years</td>
<td>28%</td>
<td>0</td>
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Why Is AID A Worse Problem In Open Repair for AAA than AOD?

- Linea Alba Fibroblast have healing defects
- Poor healing of tissues under cyclic stretch in AAA patients?
- Best prevention: mesh (and EVAR!)
Prevention of incisional hernia in AAA repair by endovascular access

**Table 1:** Indications for First Recurrence after Open or Endovascular Aneurysm Repair.

<table>
<thead>
<tr>
<th>Indication</th>
<th>Open Repair (N=228)</th>
<th>Endovascular Repair (N=123)</th>
<th>Total (N=351)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any indication</td>
<td>58</td>
<td>54</td>
<td>112</td>
</tr>
<tr>
<td>Wound-related indication</td>
<td>25</td>
<td>24</td>
<td>49</td>
</tr>
<tr>
<td>Any</td>
<td>15</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>Wound infection</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Mediastinitis</td>
<td>8</td>
<td>3</td>
<td>11</td>
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</tbody>
</table>

DEAM trial NEJM 2010
Becquemin JVS 2011

AAA as a disease of tissues submitted to cyclic stretch?

**Figure 1:**

60 cycles/min
15 cycles/min

Incidence of Abdominal Incision Dehiscence (AID) Repair After AAA vs. OAD Open Repair

- Danish Vascular Registry
- Danish Ventral Hernia Database
- Danish National Patient Register

**Graph:**

**Adjusted Hazard Ratio:** 1.58
(95% confidence interval, 1.06-2.35)

Henriksen JVS 2013

Why Is It A Worse Problem After Open Aorto-Bifemoral Bypass For Occlusive Disease?

- Knife Injury
- Aortic disease
- Abdominal Incision Dehiscence

**Adjusted HR:** 1.58 for repair
Henriksen JVS 2013