Abdominal Aortic Aneurysm
A service in need of surgery?

The Role of Endovascular Repair

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The Role of Endovascular Repair

- Endovascular technique
- Endovascular results
- NCEPOD study & conclusions
Endovascular treatment for AAA

Transfemoral Intraluminal Graft Implantation

For Abdominal Aortic Aneurysm

Intuitively, stent grafts should be better...

- No laparotomy
- No aortic cross clamping
- Rapid recovery
- Reduced hospital stay
First Commercial Devices 1993 - 1997
...disintegrate
Device Migration

POST-DEPLOYMENT

33 MONTHS
Endoleaks ...
2nd generation devices
Results of newer grafts appear better...

Zenith at 6 years
EVAR Registries
Morbidity & mortality: level 2 evidence

EUROSTAR DATABASE
holds > 8,012 cases

- Devices used: 28% Zenith
  22% Talent
  17% Van/Stentor
  14% AneuRx
  11% Excluder

www.eurostar-online.org
Early morbidity & mortality

EUROSTAR DATABASE

July 2003 analysis of 5,466 cases

- 3,985 (73%) men
- mean age 71.8
- mean $D_{\text{max}}$ 57.2 (30-45)
- mean hosp. stay 6.2 days

in-hosp. mortality 1.7%

Harris, 2004
Early morbidity & mortality
Level 1 evidence: EVAR 1 trial

Randomised elective AAAs > 5.5cm
41 UK hospitals: 1999 – 2004
EVAR I : EARLY RESULTS

Lancet  August 2004

<table>
<thead>
<tr>
<th></th>
<th>OPEN 539</th>
<th>1082</th>
<th>EVAR 543</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>74</td>
<td></td>
<td>74.2</td>
</tr>
<tr>
<td>Male</td>
<td>91%</td>
<td></td>
<td>91%</td>
</tr>
<tr>
<td>$D_{max}$</td>
<td>6.5</td>
<td></td>
<td>6.5</td>
</tr>
</tbody>
</table>

risk factors well matched
## EVAR I: EARLY RESULTS

<table>
<thead>
<tr>
<th>OPEN 539</th>
<th>EVAR 543</th>
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<tbody>
<tr>
<td>Days to Op.</td>
<td>35</td>
</tr>
<tr>
<td>Pre-op rupture</td>
<td>10</td>
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**Intention to treat**

<table>
<thead>
<tr>
<th></th>
<th>OPEN 539</th>
<th>EVAR 543</th>
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</thead>
<tbody>
<tr>
<td>30 day Mortality</td>
<td>4.7%</td>
<td>1.7%</td>
</tr>
<tr>
<td>In-hosp Mortality</td>
<td>6.2%</td>
<td>2.1%</td>
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</tbody>
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\((p:0.0004)\) \((p:0.016)\)
EVAR I: Secondary Interventions

5.8% v 9.8%

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Count</th>
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</thead>
<tbody>
<tr>
<td>open conversion</td>
<td>10</td>
</tr>
<tr>
<td>endoleak correction</td>
<td>18</td>
</tr>
<tr>
<td>open exploration</td>
<td>15</td>
</tr>
<tr>
<td>other surgery</td>
<td>14</td>
</tr>
</tbody>
</table>

EVAR 1 trial: mid-term results

*Lancet, June 2005*  (47% cases > 3 yrs)

<table>
<thead>
<tr>
<th></th>
<th>29%</th>
<th>p = 0.46</th>
<th>26%</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cause mortality</td>
<td>p = 0.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aneurysm related deaths</td>
<td>7%</td>
<td>p = 0.04</td>
<td>4%</td>
</tr>
</tbody>
</table>

Hazard ratio: re-intervention after EVAR  2.7 (1.8 – 4.1)

p = 0.0001
EVAR 2 trial: mid-term results

*Lancet, June 2005 (36% cases > 3 yrs)*

- **338 patients randomised**: 166 vs. 172
- **30 day mortality**: 9%
- **Aneurysm related deaths**: 20 vs. nss 22
- **Deaths from all causes**: 74 vs. nss 68
Abdominal Aortic Aneurysm:

A service in need of surgery?

The provision of facilities for diagnosis and treatment of Abdominal Aortic Aneurysms
NCEPOD study

Sample Size 884

- Elective open 434
- Emergency open 264
- Endovascular 53
- Non-operative 79
NCEPOD study: endovascular repair

- 49 / 53 (92%): male
- 43 / 53 (81%): elective
- 36 / 53 (68%): EVAR chosen = ASA status
- 48 / 53 (91%): unruptured, asymptomatic

- status of radiologist = consultant in 100%
  38% radiologists: no EVAR workload record
  64% cases: radiologist did > 10 evars / year
**NCEPOD study: endovascular repair**

- status of anaesthetist = consultant in 86%
- spinal anaesthesia: 33% cases
- post-op care: recovery area in 40%
  HDU bed in 48%
  ICU bed in 2% only
endovascular repair

morbidity < 30 days

• 17 / 53 (32%) device ‘complications’
  
  only 1 required re-intervention

• 1 myocardial infarct (<2%)
• 4 chest infections (9%)
• 2 renal impairment (4%)

All the non-device complications more frequent in the open repair group.
endovascular repair

mortality < 30 days

- No outcome given for 6 cases
- All other patients survived
- 6.2% mortality in open repair group
The role of endovascular repair?

- evar suitability ~ 54% infra-renal aneurysms
- sophisticated imaging for planning
- high level of training
- issues: durability & cost
The role of endovascular repair

[Diagram showing the role of endovascular repair with data points for Open Elective and Stent procedures from 1996 to 2005-date.]
The role of endovascular repair

• Treatment of choice in:
  ‘hostile abdomen’
  fit patients over 70

• Unproven: holding technique in acute / r AAA

• Unproven where long term exclusion required

• Unproven for peri-renal / supra-renal AAA
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