Results from a national enquiry of infection in abdominal aortic endovascular repair (R.I.-EVAR)

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DISCLOSURE

Speaker name:

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I have the following potential conflicts of interest to report:

☐ Consulting

☐ Employment in industry

☐ Stockholder of a healthcare company

☐ Owner of a healthcare company

☐ Other(s)

☒ I do not have any potential conflict of interest
AORTIC GRAFT INFECTION

Well described during the last 3 decades

MORE THAN 2000 PAPERS!

Incidence: 0.6-3%
AORTIC ENDOGRAFT INFECTION

Less known complication

AROUND 150 PAPERS!

Incidence: ≈1% but probably under-reported
NATIONAL ENQUIRY ON ENDOVASCULAR GRAFT INFECTIONS IN ITALY – 2012/13

Vascular Surgery Division, Department of Surgery “P. Stefanini”, “Sapienza” University of Rome, Chief. Prof. Francesco Speziale

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26 cases
INFECTION IN EVAR
2012/13 ENQUIRY - ENDOGRAFT

Gore Excluder 42.3%

Medtronic Talent 15.4%

Cook Zenith 11.5%

Vascutek Anaconda 7.7%

Unknown 23.1%
INFECTION IN EVAR
2012/13 ENQUIRY – TIME INTERVAL

Time from EVAR to Infection
1 – 72 months
mean 20.5 months
Contrast-enhanced CT scans in all cases

Adjunct diagnostic modalities

- US: 7.7%
- GIE: 11.5%
- PET: 7.7%
- MRI: 3.8%
- Tagged leuko scan: 30.7%
INFECTION IN EVAR
2012/13 ENQUIRY – RISK FACTORS

Risk factors for infection

- Urgency: 30.8%
- Rx suite positioning: 15.4%
- Fever: 11.5%
- Adjunct procedure: 34.6%
Aorto-enteric fistula in 6 pts (23%)
## INFECTION IN EVAR
### 2012/13 ENQUIRY – ETIOLOGY

<table>
<thead>
<tr>
<th>Bacterial Strain</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Escherichia Coli</em></td>
<td>23.1%</td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>19.2%</td>
</tr>
<tr>
<td><em>Candida</em></td>
<td>15.4%</td>
</tr>
<tr>
<td><em>Enterococcus</em></td>
<td>7.7%</td>
</tr>
<tr>
<td><em>Staphylococcus epidermidis</em></td>
<td>7.7%</td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>3.8%</td>
</tr>
<tr>
<td><em>Klebsiella</em></td>
<td>3.8%</td>
</tr>
<tr>
<td><em>Haemophilus aphrophilus</em></td>
<td>3.8%</td>
</tr>
<tr>
<td><em>Fusobacterium mortiferens</em></td>
<td>3.8%</td>
</tr>
<tr>
<td><em>Bacteroides fragilis</em></td>
<td>3.8%</td>
</tr>
<tr>
<td><em>Staphylococcus lugdunensis</em></td>
<td>3.8%</td>
</tr>
<tr>
<td><em>Multibacterial</em></td>
<td>19.3%</td>
</tr>
<tr>
<td><em>Unknown</em></td>
<td>23.1%</td>
</tr>
</tbody>
</table>
INFECTION IN EVAR
2012/13 ENQUIRY
TREATMENT

CONSERVATIVE 4 pts
EXTRA-ANATOMIC BYPASS 10 pts
IN SITU REPLACEMENT 10 pts
ENDOVASCULAR 2 pts
Culture specific antibiotic therapy 1 pt
CT guided percutaneous drain placement and antibiotic therapy 3 pts
E-PTFE 2 pts
Dacron 2 pts
Cryopreserved
allograft 3 pts
Unknown 3 pts
INFECTION IN EVAR
2012/13 ENQUIRY

IN SITU REPLACEMENT 10 PTS

Rifampin-soaked
silver dacron 8 pts
Silver dacron 1 pt
Cryopreserved
allograft 1 pt
INFECTION IN EVAR
2012/13 ENQUIRY

RELINING 2 PTS
INFECTION IN EVAR
2012/13 ENQUIRY – 26 PTS

MORTALITY \( \Omega \)

13 pts
(50%)

Time from treat to \( \Omega \)
mean 3.3 ms (range 1-24 ms)

10 pts 1st month
We all know

The only way to eradicate infection from prosthetic material

Is to explant the graft
INFECTION IN EVAR
2012/13 ENQUIRY – 26 PTS

MORTALITY \( \Omega \)

- CONSERVATIVE: 2/4 pts
- EXTRA-ANATOMIC BYPASS: 5/10 pts
- IN SITU REPLACEMENT: 5/10 pts
- ENDOVASCULAR: 1/2 pts
INFECTION IN EVAR
2012/13 ENQUIRY – 26 PTS
MORTALITY $\Omega$
50%
Aorto-enteric fistula

INFECTION IN EVAR
2012/13 ENQUIRY – 26 PTS

MORTALITY Ω

4/6
(66.6%)

Aorto-enteric fistula
INFECTION IN EVAR
2012/13 ENQUIRY – 26 PTS
MORTALITY Ω

Cook Zenith 2/3 Pts
Medtronic Talent 3/4 Pts
Gore Excluder 3/11 Pts
Vascutek Anaconda ½ Pts

Significant difference in SUPRA and INFRARENAL aortic fixation 70% VS 30%
WHAT’S GOING TO HAPPEN WITH LATEST GENERATION ENDOGRAFTS?
The real **incidence** of infection following EVAR is difficult to assess and is probably **under-reported**

No dedicated **surveillance protocols** have been developed in EVAR patients submitted to **adjunct invasive maneuvers**

**No new technologies** are available for **treatment** of EVAR infection

Every kind of treatment is burdened by **alarmingly high mortality rates**

EVAR infection treatment often requires a **case-by-case evaluation**
CONCLUSIONS

Prospective registries are mandatory in order to monitor outcomes in EVAR infection patients and possibly develop new surveillance and treatment strategies.

Infection-dedicated surveillance protocols should be applied.

Preventive treatment strategies are needed and should be developed by industries.
Applying the principles that lead to the production of high-resistance-to-infection prosthesis...
...to EVAR!