Thirty day outcomes favor fenestrated repair of complex abdominal aortic aneurysm

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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
Types of AAA

Infra  Juxta – Para  Supra
Fenestrated Stent Grafts

Initial U.S. multicenter data\(^1\)
French Multicenter Registry\(^2\)

- High technical success
- Peri-operative mortality 2%
- 4% peri-operative dialysis
- 4 (3%) renal occlusions

A propensity-matched comparison of early outcomes for fenestrated endovascular aneurysm repair and open surgical repair of complex abdominal aortic aneurysms

Maxime Raux, MD
Shankha Mukhopadhyay, MD
Jean-Pierre Becquart, MD

Outcomes of fenestrated endovascular repair of juxtarenal aortic aneurysm

Thorarinn Kristmundsson, MD, PhD, Björn Sonesson, MD, PhD, Nuno Dias, MD, PhD,
Per-Tjege Qvist, MD, Martin Malins, MD, PhD, and Timothy Boyle, MD, PhD, Malmö, Sweden

Fenestrated endovascular aneurysm repair

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Results of the United States multicenter prospective study evaluating the Zenith fenestrated endovascular graft for treatment of juxtarenal abdominal aortic aneurysms

Gustavo S. Oderich, MD,a Roy K. Greenberg, MD,a,b Mark Farber, MD,c Sean Lyden, MD,b
Luis Sanchez, MD,d Ron Fairman, MD,e Feiyi Jia, PhD,f and Priya Bharadwaj, PhD,f on behalf of the Zenith Fenestrated Study Investigators, Rochester, Minn; Cleveland, Ohio; Chapel Hill, NC; St. Louis, Mo; Philadelphia, Pa; and West Lafayette, Ind
FDA Approves Fenestrated Devices

COOK ZFEN - 2012
Specific Aims

• Compare peri-operative outcomes of open and fenestrated endovascular repair (FEVAR) of complex (juxtarenal) aortic aneurysms in a real world setting following commercial availability of FEVAR devices
Study Design and Cohort

- Retrospective cohort study
- 2012 – 2014 ACS-NSQIP Participant Use File
  - Queried by ICD-9/CPT code
    - Intact complex aneurysms
    - Open and Fenestrated repair of juxta-/para-renal aortic aneurysms
Study Population

- Total cohort: 1102
- Open: 716
- FEVAR: 386
  - 1 vessel: 283
  - 2 vessel: 60
  - 3 vessel: 43
Study Design

Study Endpoints:

- 30 day death
- Systemic complications
- Predictors of death or systemic complications
# Clinical Features

<table>
<thead>
<tr>
<th>Variable</th>
<th>OPEN (N=716)</th>
<th>FEVAR (N=386)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>70 ± 9</td>
<td>74 ± 12</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Female</td>
<td>28 %</td>
<td>21 %</td>
<td>0.007</td>
</tr>
<tr>
<td>White</td>
<td>82 %</td>
<td>87 %</td>
<td>0.05</td>
</tr>
<tr>
<td>Smoker</td>
<td>44 %</td>
<td>32 %</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>COPD</td>
<td>20 %</td>
<td>26 %</td>
<td>0.02</td>
</tr>
<tr>
<td>PVD</td>
<td>1 %</td>
<td>4 %</td>
<td>0.001</td>
</tr>
<tr>
<td>Variable</td>
<td>OPEN (N=716)</td>
<td>FEVAR (N=386)</td>
<td>P Value</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------</td>
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</tr>
<tr>
<td>OR Time (minutes)</td>
<td>280 ± 130</td>
<td>220 ± 130</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Length of stay (days)</td>
<td>11 ± 10</td>
<td>4 ± 5</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
## Peri-operative Outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>OPEN (N=716)</th>
<th>FEVAR (N=386)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death</td>
<td>7%</td>
<td>4%</td>
<td>0.07</td>
</tr>
<tr>
<td>Cardiac comp.</td>
<td>7%</td>
<td>3%</td>
<td>0.004</td>
</tr>
<tr>
<td>Pulmonary comp.</td>
<td>20%</td>
<td>5%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Renal comp.</td>
<td>12%</td>
<td>4%</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
## Multivariable Models – 30 day

<table>
<thead>
<tr>
<th>Variable</th>
<th>FEVAR OR [95% CI]</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death</td>
<td>0.45 [0.23-0.83]</td>
<td>0.009</td>
</tr>
<tr>
<td>Cardiac</td>
<td>0.4 [0.21-0.77]</td>
<td>0.008</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>0.18 [0.11-0.30]</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Renal</td>
<td>0.27 [0.15-0.47]</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Study Limitations

- Operative and Clinical data limited
- Technical details unknown
- Re-interventions unknown
- Only 30 day outcomes recorded
- Long term survival, re-interventions, or conversions unknown
Summary

- FEVAR associated with lower
  - 30 day mortality
  - Cardiac, respiratory, and renal complications

- FEVAR associated with reduced LOS and OR time

- This represents an early national experience
  - 2-3 years
  - Majority single vessel fenestrations/stents
Conclusion

• FEVAR has favorable peri-operative mortality and morbidity to OPEN repair for patients with complex aortic aneurysms and further long term studies are needed
Thank You

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