Endovascular Mesenteric Arterial Reconstruction
Tips and Techniques

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DISCLOSURE

Wayne Zhang, MD

• No relevant financial relationship reported
Etiologies

Chronic mesenteric artery occlusion

- Atherosclerosis
  - 95%
- Rarely
  - Takayasu’s
  - Buerger’s
  - Radiation
  - FMD
Diagnosis
Diagnosis

- Angiography
  - Diagnostic and therapeutic
  - Invasive
  - Procedure related complications
  - Contrast related complications
Diagnosis

• Angiography
  – Diagnostic and therapeutic
  – Invasive
  – Procedure related complications
  – Contrast related complications
### Table I. Baseline characteristics of patients undergoing angioplasty, with or without stenting, compared with surgical repair for chronic and acute mesenteric ischemia from 2000 to 2006

<table>
<thead>
<tr>
<th>Variable</th>
<th>PTSA/S</th>
<th>Surgery*</th>
<th>p^b</th>
<th>PTSA/S</th>
<th>Surgery*</th>
<th>p^b</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chronic mesenteric ischemia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients, No. (%)</td>
<td>3455 (61.9)</td>
<td>2128 (38.1)</td>
<td>...</td>
<td>1857 (35.5)</td>
<td>3380 (64.5)</td>
<td>...</td>
</tr>
<tr>
<td>Age, median (range), y</td>
<td>74 (24-97)</td>
<td>68 (29-99)</td>
<td>&lt;.001</td>
<td>72 (26-96)</td>
<td>72 (21-99)</td>
<td>.53</td>
</tr>
<tr>
<td>&lt;60, %</td>
<td>15</td>
<td>32</td>
<td>&lt;.001</td>
<td>24</td>
<td>26</td>
<td>.34</td>
</tr>
<tr>
<td>60-69, %</td>
<td>23</td>
<td>28</td>
<td>&lt;.05</td>
<td>25</td>
<td>22</td>
<td>.36</td>
</tr>
<tr>
<td>70-79, %</td>
<td>37</td>
<td>30</td>
<td>&lt;.01</td>
<td>31</td>
<td>33</td>
<td>.62</td>
</tr>
<tr>
<td>≥80, %</td>
<td>25</td>
<td>11</td>
<td>&lt;.001</td>
<td>21</td>
<td>19</td>
<td>.52</td>
</tr>
<tr>
<td>Female, %</td>
<td>74</td>
<td>79</td>
<td>&lt;.05</td>
<td>70</td>
<td>66</td>
<td>.14</td>
</tr>
<tr>
<td><strong>Comorbidities, %</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>66</td>
<td>51</td>
<td>&lt;.001</td>
<td>56</td>
<td>46</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>PVD</td>
<td>40</td>
<td>32</td>
<td>&lt;.01</td>
<td>33</td>
<td>13</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>CAD</td>
<td>39</td>
<td>26</td>
<td>&lt;.001</td>
<td>34</td>
<td>19</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>AFib/flutter</td>
<td>16.5</td>
<td>14.9</td>
<td>.49</td>
<td>23.6</td>
<td>38.7</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Prior MI</td>
<td>8.3</td>
<td>6.0</td>
<td>.17</td>
<td>6.4</td>
<td>4.7</td>
<td>.23</td>
</tr>
<tr>
<td>CHF</td>
<td>17.5</td>
<td>10.5</td>
<td>&lt;.01</td>
<td>22.1</td>
<td>22.6</td>
<td>.85</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>19</td>
<td>12</td>
<td>&lt;.01</td>
<td>18</td>
<td>17</td>
<td>.73</td>
</tr>
<tr>
<td>COPD</td>
<td>25</td>
<td>27</td>
<td>.40</td>
<td>29</td>
<td>23</td>
<td>.06</td>
</tr>
<tr>
<td>Chronic renal disease</td>
<td>6.3</td>
<td>1.2</td>
<td>&lt;.001</td>
<td>9.8</td>
<td>3.5</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>CVD</td>
<td>6.9</td>
<td>7.7</td>
<td>.61</td>
<td>4.7</td>
<td>5.9</td>
<td>.41</td>
</tr>
<tr>
<td>Charlson, mean ± SD</td>
<td>1.3 ± 1.1</td>
<td>1.0 ± 1.0</td>
<td>&lt;.001</td>
<td>1.4 ± 1.3</td>
<td>0.9 ± 1.1</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Bowel resection, %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*AFib, atrial fibrillation; CAD, coronary artery disease; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; CVD, cerebrovascular disease; MI, myocardial infarction; PTSA/S, percutaneous transluminal angioplasty, with or without stenting; PVD, peripheral vascular disease; SD, standard deviation.

*Surgery includes bypass, endarterectomy, or embolecotomy.

*p Statistical significance set at P < .01.
The graph shows the number of procedures over the years from 1988 to 2006. The categories include:

- **All Repairs**
- **Open Repairs**
- **PTA/Stent**

The number of procedures for each category shows an increasing trend over the years with a significant increase in recent years.
Endovascular Reconstruction

- When to intervene
- How many vessels need to be treated
- Access and Crossing lesions
- PTA vs. Stenting
- Post-stenting medical management
Endovascular Reconstruction

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- How many vessels need to be treated
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Endovascular Reconstruction

Indications

• High grade mesenteric artery stenosis or total occlusion
  – Symptomatic
  – Asymptomatic
  > 2-vessel significant disease

> 30% of the patients will develop bowel infarct within 2-3 years
Endovascular Reconstruction

- When to intervene
- **How many vessels need to be treated**
- Access and Crossing lesions
- PTA vs. Stenting
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Endovascular Reconstruction

- **Revascularization**
  - Reportedly 1.4-1.8 vessels

- **Single-Vessel** revascularization
  - Adequate to relieve symptoms in most of patients

- **Two-vessel** revascularization
  - Lower risk of symptom recurrence and secondary re-intervention
Endovascular Reconstruction

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Endovascular Reconstruction

- Access
  - Brachial
  - Femoral
Endovascular Reconstruction

- Brachial access if sharp angulation
- Angle sheath and catheter
- Crossing catheter
Endovascular Reconstruction

- When to intervene
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Endovascular Reconstruction

- Balloon angioplasty (PTA) alone
  - 15%
- Primary stenting
  - 85%
  - Less reintervention
  - Balloon expendable stent
    - Accurate
    - May post-dilate to a larger size if needed
  - May need covered stent if instent re-stenosis
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Endovascular Reconstruction

- Post-procedure medications
  - Clopidogrel: 6 weeks
  - ASA: life time
Endovascular Reconstruction

• **Indications** for endovascular treatment of CMI
  • Symptomatic
  • Asymptomatic with 2- or 3-vessel significant disease
• One vessel PTA/Stenting is adequate
  • Two-vessel treatment has better long-term outcomes
• Primary stenting is recommended
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• Post-stenting antiplatelet
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Thank you