Thoraco – Bifemoral Bypass is a Good Solution When Other Techniques Fail or are Contraindicated: Technical Tips and Results

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Disclosure

I have no relevant financial relationships to disclose

Thoraco-femoral / Iliac Bypass

Initial Reports

• 1961: JK Stevenson
  • A bypass homograft from thoracic aorta to femoral arteries for occlusive vascular disease

• 1962: FW Blaisdell
  • Extraperitoneal thoracic aorta to femoral bypass graft as replacement for an infected aortic bifurcation prosthesis

Thoracofemoral / Iliac Bypass

Indications

• Failure of prior aortic reconstruction
• Aortic graft infection (staged)
• Hostile abdomen (surgical, radiation, infection)
• Multiple interventions on axillofemoral bypass
• Suprarenal aortic stenosis
  - Middle aortic syndrome
  - Atherosclerosis

Thoracofemoral / Iliac Bypass

Considerations

• Thoracic / supraceliac aorta less likely involved with atherosclerosis
• Avoids intra-peritoneal dissection and adhesions
• Adequate respiratory function to tolerate thoracotomy
• Extraperitoneal exposure of supraceliac aorta

Juxtarenal Aortic Occlusion

• Concern for proximal extension of thrombus
• Involvement of renal / visceral arteries

Primary reconstruction for juxtarenal aortic occlusion (controversial)
Indications
Juxtarenal Aortic Occlusion

Infrarenal aortic occlusion: Does it threaten renal perfusion or function?

Indications
Juxtarenal Aortic Occlusion

Descending thoracic aorta to infrarenal artery bypass grafting: A role for primary revascularization for aortic occlusive disease?

Technique

- Right lateral decubitus position
- Thorax at 45°
- Pelvis horizontal
- Double lumen endotracheal tube
Technique

Cross limb subcutaneous
Cross limb retroperitoneal

Extensive Aortoiliac Disease

• 75 yr M with resection mycotic abdominal AAA and AxFem bypass
• Recurrent AxFem graft occlusion

Extensive Aortoiliac Disease

• 58 yr F with B/L lower extremity and mesenteric ischemia
• Difficult to control hypertension

Tunneling

• E coli septicemia 5 days post TF bypass
• Prior resection + RT neuroblastoma at age 4

PRESENTED BY:
A Short-Lived Thoraco-Femoral Bypass

My Worst Complication:
How it was Managed and Lessons Learned

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No Disclosures
### Tunneling Results

<table>
<thead>
<tr>
<th>Duration (yrs)</th>
<th>No. of pts</th>
<th>Mort%</th>
<th>Morb%</th>
<th>Mean FU mths</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>McCarthy 1986</td>
<td>10</td>
<td>21</td>
<td>0</td>
<td>44</td>
<td>4 year patency 100%</td>
</tr>
<tr>
<td>Schultz 1986</td>
<td>13</td>
<td>15</td>
<td>0</td>
<td>10</td>
<td>Actuarial patency rate 80.2%</td>
</tr>
<tr>
<td>Branchereau 1991</td>
<td>9</td>
<td>15</td>
<td>0</td>
<td>10</td>
<td>Primary patency 80.5% Secondary 100%</td>
</tr>
<tr>
<td>Kallman 1991</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>17</td>
<td>Primary patency 70%</td>
</tr>
<tr>
<td>Branchereau 1991</td>
<td>6</td>
<td>10</td>
<td>16</td>
<td>14</td>
<td>Primary patency 55.5% and Secondary 100%</td>
</tr>
<tr>
<td>Passman 1999</td>
<td>15</td>
<td>16</td>
<td>10</td>
<td>18</td>
<td>Primary patency, secondary patency, limb salvage, and survival - 70%, 84%, 65%, and 61%, respectively</td>
</tr>
<tr>
<td>Reppert 2014</td>
<td>3</td>
<td>13</td>
<td>0</td>
<td>38</td>
<td>100% sec patency, 15% secondary amputation</td>
</tr>
<tr>
<td>Crawford scvs 2018</td>
<td>15</td>
<td>41</td>
<td>5</td>
<td>9.3</td>
<td>Re-intervention 12%; 3 year primary limb patency, freedom from MALE and survival 90±2%, 70±10%, and 93±4%, respectively</td>
</tr>
</tbody>
</table>

### Mayo Experience

#### 1982 - 2018

- 35 patients
- Failed Ax-Fem =3 (9%)
- Suprarenal stenosis = 9 (26%)
- Failed ABFG =13 (37%)
- Occlusion =12 (34%)
- Hostile Abd = 10 (29%)
- Prior Sx = 3
- Radiation = 7
- Failed Ax-Fem =3 (9%)
- Suprarenal stenosis = 9 (26%)
- Failed ABFG =13 (37%)
- Occlusion =12 (34%)
- Hostile Abd = 10 (29%)
- Prior Sx = 3
- Radiation = 7

#### Early Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-hospital mortality</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Myocardial Infarction</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>A Fib / Angina</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Respiratory failure (trach)</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Renal failure (temp. HD)</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Paraplegia / stroke</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Return to OR</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Hospital stay (Median days)</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

#### Long Term Results

- Median Clinical FU – 6 years (1 mth – 26 yrs)
- Median Imaging FU – 3 years (1 mth – 22 yrs)

- TF Graft occlusion during FU = 1 pt
- Femoro-femoral graft occlusion = 3 pts
- Fem – fem limbs salvaged = 2 pts

- 4 Deaths during FU - 2/6/13/14 years
- 0 Aortic related

#### Primary & Secondary Patency TF Grafts

- Femoro-femoral crossover limb (n = 22)
- Primary Patency – 86%, Secondary Patency – 95%
Conclusions

- Descending thoracic aorto-iliac/femoral bypass is associated with low operative mortality, few complications and excellent long-term patency.
- DTAI/F bypass remains a viable option for lower extremity revascularization in patients with failed prior open/endovascular aortoiliac reconstruction.
- Primary DTAI/F is also indicated when adequate inflow from the abdominal aorta cannot be provided.