Revascularization of Complex Aorto-Iliac Obstructions: Techniques and Results

D. Scheinert, MD

Head, Department of Medicine I / Angiology
Park Hospital Leipzig, Germany

Head, Division of Angiology
University of Leipzig – Heart Center, Germany
TASC
Transatlantic Intersociety Consensus Document

- TASC A: Intervention
- TASC B: Intervention preferred
- TASC C: Surgery preferred
  “More evidence is needed!”
- TASC D: Surgery

TASC
Transatlantic Intersociety Consensus Document

• Iliac Arteries:
  – Stenosis < 3 cm in length (TASC A)
  – Stenosis 3-10 cm (TASC B)
  – Unilateral occlusion of CIA
Recanalization of chronic iliac artery occlusions
Chronic Total Occlusion of the left CIA – Recanalization Techniques -

- Retrograde Approach
- Cross-over Approach
- Brachial Approach
Chronic Total Occlusion of the left CIA

Retrograde Approach

Potential Disadvantages:

- difficult puncture
- inability to re-enter the true lumen in the area of the aortic bifurcation
Cross-over Recanalization Technique
Recanalization of iliac occlusions
Recanalization of iliac occlusions
Recanalization of iliac occlusions

- Patients: n=211

- Localization:
  - A. iliaca communis n= 67 31.6
  - A. iliaca externa n= 74 35.0
  - Aa. Iliaca comm. et ext. n= 71 33.5

- Mean length of occlusion 8.6 cm

- Technical Success n=190 89.6%

Chronic Total Occlusion of the left CIA – Recanalization Techniques -

Brachial Approach

• 6F Sheath 90 cm
• Success rate > 95%
Recanalization of iliac occlusions
- Clinical results -

Rutherford Kategorie

präinterventionell
postinterventionell
Recanalization of iliac occlusions - Long-term patency -

Reconstruction of the Aortic Bifurcation
Kissing Stent Technique
After PTA right CIA
After 12 hours thrombolysis
Rotarex right CIA and Balloon-protection left CIA
Result after Rotarex right CIA
Stenting right CIA,
Balloon-Protection left CIA
Result after Stenting right CIA
Cross-Over Approach after Stenting right CIA
Thromboembolic Occlusion left SFA Passage with a Filterwire EZ and Rotarex-Thrombektomie
Result after Rotarex - Thrombectomie
Filter-Retrieval with a 7F-Multipurpose-Guiding-Catheter
Stent-Supported Reconstruction of the Aortoiliac Bifurcation
With the Kissing Balloon Technique

Dierk Scheinert, MD; Malte Schröder, MD; Jörn O. Balzer, MD;
Hermann Steinkamp, MD; Giancarlo Biamino, MD
Infrarenal Aortic Stenosis

- Relatively infrequent
- Personal estimate:

5-10 relevant infrarenal aortic stenosis out of ~2000 peripheral interventional procedures / year
Infrarenal Aortic Stenosis

- „Atypical“ clinical symptoms
  - Claudication in hip and buttocks
  - Exercise dependent back pain
  - Impotence
  - Abdominal pain
Infrarenal Aortic Stenosis

• „Pseudonormal“ Duplex investigations
  – Direct visualisation sometimes difficult
    (obese patients, severe calcification)
  – Doppler spectrum in AFC bi- or triphasic,
  – no side difference

• Ankle-Brachial-Index (ABI) at rest normal

Standardized treadmill test
ABI at rest and after exercise
Infrarenal Aortic Stenosis

Hemodynamic relevance is sometimes difficult to determine

Pressure gradient
- resting gradient is of limited value
- no effective means of provocation

Always combine with clinical symptoms and noninvasive hemodynamic tests!
102 patients (17 men, 75 women, mean age 51.9 y.)

Technical success
(residual stenosis <50%, pressure gradient <10mmHg) 76%

Clinical patency rate after 10 y. 72%

Hemodynamic patency rate after 10 y. 46%

Stenting of infrarenal aortic stenoses

• Limited availability of aortic stents
  – Balloon-expandable Palmaz-Stent
    • Hand-crimped on aortic balloon
    • Requires large sheath (~12 F)
    • Almost no flexibility
    • Incomplete wall adaptation
Stenting of infrarenal aortic stenoses

Implantation of a Palmaz-stent P4014
Stenting of infrarenal aortic stenoses

- Characteristics of aortic balloons
  - High profile → large sheaths
  - Low rated burst pressure
  - Bulging effect

Can cause Dissections!
Stenting of infrarenal aortic stenoses

Implantation of a Palmaz-stent P4014
Stenting of infrarenal aortic stenoses

Implantation of a SMART-Stent 14/60
Adjunctive Imaging Modalities
- Spiral CT -

- Differentiation of obstructive material
- Calcification of the aortic wall
- Sizing of the stent and the balloon
Adjunctive Imaging Modalities
- Spiral CT -

Assessment of calcification
Adjunctive Imaging Modalities
- IVUS -
Adjunctive Imaging Modalities
- IVUS -
### Stenting of infrarenal aortic stenoses

<table>
<thead>
<tr>
<th>Study</th>
<th>n</th>
<th>Technical Success</th>
<th>Mean FU</th>
<th>Primary Patency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheinert et al. 2003</td>
<td>38</td>
<td>100 %</td>
<td>36</td>
<td>92 %</td>
</tr>
<tr>
<td>Schedel et al. 2004</td>
<td>15</td>
<td>87 %</td>
<td>36</td>
<td>85 %</td>
</tr>
<tr>
<td>Yilmaz et al. 2004</td>
<td>13</td>
<td>100 %</td>
<td>43</td>
<td>100 %</td>
</tr>
<tr>
<td>Stöckelhuber 2003</td>
<td>9</td>
<td>100 %</td>
<td>12</td>
<td>100 %</td>
</tr>
<tr>
<td>McPherson</td>
<td>12</td>
<td>100 %</td>
<td>32</td>
<td>91%</td>
</tr>
</tbody>
</table>
Iliac Artery Obstructions

The only indication for surgery is a failed angioplasty.