Treatment of erectile dysfunction: From pills to balloons and stents

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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
Clinical efficacy of PDE-5-I and Alprostadil

- No or suboptimal response in up to 50% of patients.
- Relevant side effects in up to 25% of patients.
- If PDE-5-I or intracavernosal prostaglandings don`t help, vascular problems are likely.
Own experiences

- **Interdisciplinary setting** with urologists and internists / cardiologists.
- **All-comers** quality control investigation.
- 50 patients with 82 lesions treated with POBA (15.9%), DCB (26.8%), or DES (54.9%); 4/2016 – 10/2017.
- **Primary safety endpoint** was freedom from (MAE) at 30 days and at 3 months.
- **Primary feasibility endpoint**: incidence of a minimum clinically relevant improvement (MCID) of ≥4 in the IIEF-6 score at 12 months.
Clinical characteristics and comorbidities

Multiple concomitant factors with impact on erection
### Procedural characteristics

**Target lesion, n=82**

<table>
<thead>
<tr>
<th>Artery</th>
<th>Count (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal iliac artery</td>
<td>12 (14.6)</td>
</tr>
<tr>
<td>Internal pudendal artery</td>
<td>60 (73.1)</td>
</tr>
<tr>
<td>Common penile artery</td>
<td>3 (3.7)</td>
</tr>
<tr>
<td>Dorsal penile artery</td>
<td>1 (1.2)</td>
</tr>
<tr>
<td>Cavernosal artery</td>
<td>5 (6.1)</td>
</tr>
<tr>
<td>Inferior gluteal artery</td>
<td>1 (1.2)</td>
</tr>
</tbody>
</table>

**Arteries affected**

- Left side only: 27 (64.0)
- Right side only: 6 (12.0)
- Bilateral: 17 (34.0)

**Arteries treated**

- Left side only: 30 (60.0)
- Right side only: 7 (14.0)
- Bilateral: 13 (26.0)

**Lesion length, mm, n=75**

- 11.9 ± 6.6

**Total lesion length, mm**

- 17.6 ± 13.3

**RVD, mm, n=75**

- 2.92 ± 1.48

**Diameter stenosis, %, n=75**

- 58.0 ± 6.5

**MLD, mm, n=75**

- 1.19 ± 0.63

**PSV\(^a\), cm/sec, n=48**

- 20.5 ± 10.9

**EDV\(^b\), cm/sec, n=48**

- 7.9 ± 5.4

**Endovascular intervention**

- Standard balloon angioplasty: 13 (15.9)
- Drug-eluting stent: 45 (64.9)
- Drug-coated balloon: 22 (26.8)
- No access: 2 (2.4)

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EDV, end diastolic velocity; PSV, peak systolic velocity; RVD, reference vessel diameter.

\(^a\)Values are mean ± SD or n (%).

\(^b\)PSV and EDV were averaged over right and left cavernosal arteries.
Minimal Clinical Improvement
(≥4 in the IIEF-6 score at 12 months)
Clinical Improvement

„Viagra Study Endpoints“ NEJM 1998
Restenosis of DES for ED

• Re-angiogram in 24 with 52 stented lesions at 9 months.
• Binary restenosis: 15.4%.
PATHOPHYSIOLOGY OF SMALL CALIBER ARTERY RESTENOSIS

• ..... is currently not fully understood.

• Coronary trials: early recoil (10 minutes) with MLD reduction of 37.4% after POBA.

• BTK trial: early recoil (15 minutes) with MLD reduction of 29% after POBA.

1 Kawaguchi, J Invasive Cardiol, 2002
Recoil of ED-related arteries

Baseline

POBA 3/40

1 min
Recoil of ED-related arteries
• 21 consecutive ED patients, 31 arterial lesions (pudendal n=27, penile n=4).
• Mean lesion length: 20.6±13.9 mm
• Elastic recoil with >10% lumen compromise → DEB
• Severe elastic recoil (>30%) → DES
• Elastic recoil was observed in all 31 (100%) lesions → mean lumen compromise of 21.2%.
• Severe (>30%) recoil was observed in 14/31 (45%) arteries.
Conclusions

- Endovascular therapy good treatment option in patients not responding to conservative ED treatment.
- Patients with best responses to revascularization need to be further defined in larger-scale studies.
- Best antirestenotic concept (thin arteries, young patients) needs to be evaluated.

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