Atherectomy plus DCB for Femoropopliteal Disease

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I do not have any potential conflict of interest
Background

DCB has been becoming the first line treatment!

• **Benefits**
  – More and more trials proved its long term patency
  – Re-interventions are less challenging than in-stent-restenosis

• **Limitations** (same as POBA)
  -- Dissections
  – Recoil
  – Limited results in Long Lesion / Calcified lesion/ ISR
Why use atherectomy Prior to DCB?

• DA has benefits
  – Decrease plaque burden
  – Increase size of the lumen
  – Improve effective drug delivery
  – Prevent Dissection
  – But It alone has limited result to treat challenging lesions!

• DA prior to DCB has been shown to be superior to angioplasty alone

Zeller et al. JACC 2006
DA+DCB>DA+POBA: Femoropopliteal ISR

Drug-coated balloon angioplasty after directional atherectomy in femoropopliteal arteries.

Sebastian Sixt, MD,a,b
Roland Macharzina, M
and Thomas Zeller, MD

- Retrospective study
- 89 lesions
- After DA – POBA: 60, DEB: 29
- ISR – DCB [27] vs PTA [36]

Fig. Probability of being free from restenosis is shown with the 95% confidence interval (shaded area).
DEFINITIVE AR Study (Anti-Restenosis)

Directional Atherectomy + DCB

- Rutherford category: 2-4
- SFA-popliteal a ≥70% stenosis
- Lesion length: 7-15 cm
- Diameter of target vessel: ≥ 4 mm and ≤ 7 mm

Severely calcified lesion

Randomization

- DA + DCB
  - DAART (48pts)
- DCB (54pts)

Registry

- DA + DCB
  - DAART (19pts)
DEFINITIVE AR Study

DA+DCB > DCB;

Angiographic Patency at 12 Months

- All Patients: 82.4% DAART, 71.8% DCB
- Lesions > 10 cm: 90.0% DAART, 68.8% DCB
- All Severe Ca++: 58.3% DAART, 42.9% DCB

12-Month Patency: DAART RCT Patients

- Increased lumen gain with DA before DCB may result in improved 12-month patency

- DUS Patency: 90% DAART, 77.8% DCB
- Angiographic Patency: 94.1% DAART, 68.8% DCB

Per Core Lab Assessment: "All Severe Ca++" group includes all patients with severe calcium (including randomized and non-randomized. Results for all patients who returned for angiographic follow-up.)
Objective

• To evaluate the efficacy and safety of DA+ DCB for treating SFA/pop lesions in our single center
Directional Atherectomy + DCB

- Retrospective study
- June 1, 2016 - Dec 31, 2016
- Symptomatic ASO with DCB: 55 cases
- CFA/SFA/popliteal arterial lesions
- Atherectomy + DCB: 9

![Pie chart showing 55 cases, 46 in blue for DCB and 9 in red for DA + DCB]
# Data from Xuanwu Hospital, CMU

## DA+DCB (n=9)

### Demographic characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, Mean ± SD</td>
<td>66.2 ± 10.6</td>
</tr>
<tr>
<td>Male gender, n(%)</td>
<td>8 (89%)</td>
</tr>
<tr>
<td>Smoking</td>
<td>6 (67%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>2 (22%)</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>4 (44%)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>6 (67%)</td>
</tr>
<tr>
<td>Coronary Artery Disease</td>
<td>1 (11%)</td>
</tr>
</tbody>
</table>

### Lesion characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesion length, Mean ± SD (mm)</td>
<td>132.2 ± 11.3</td>
</tr>
<tr>
<td>Rutherford 3, n(%)</td>
<td>7 (78%)</td>
</tr>
<tr>
<td>Rutherford 4, n(%)</td>
<td>2 (22%)</td>
</tr>
<tr>
<td>CTO</td>
<td>4 (44%)</td>
</tr>
<tr>
<td>ISR</td>
<td>2 (22%)</td>
</tr>
<tr>
<td>Severely calcified lesion</td>
<td>1 (11%)</td>
</tr>
<tr>
<td>CFA/SFA/pop</td>
<td>2/9/3</td>
</tr>
</tbody>
</table>
Results

• Technical success rate: 100%
• Provisional stenting: 1 (ISR case )
• ABI improvement: 0.23 ± 0.14
• Clinical symptom: improve 1-2 RC levels
• Follow-up time: 2.4 (1-6 ) mon
• Primary Patency: 100% by Duplex US
Case 1

- M, 83yo
- RC 3
- ABI: 0.5 (right side)
- PA occlusion, severely calcified lesion
Pre-op DSA
Recanalize
Directional Atherectomy with Turbohawk
pre-dilatation

4-80mm
DCB 5-120mm
Final DSA
Case 2  F, 65yo, ISR(SFA/P1-P2)
Recanalize the lesion
Pre-dilatation
After DA
Pre-dilatation and DCB

4-120mm POBA

5-150mm, 5-60mm DCB
Summary

• DA+DCB seems effective in short term, but requires more subjects and long term follow-up!
Thank you for your attention!
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