Step by Step: How I treat SFA lesions

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Disclosure

Speaker name: Sabine Steiner

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
The many faces of femoropopliteal disease
The many faces of femoropopliteal disease

More than half of all endovascular procedures are performed in the SFA
TASC II classification of femoropopliteal disease

Type A lesions
- Single stenosis ≤10 cm in length
- Single occlusion ≤5 cm in length

Type B lesions:
- Multiple lesions (stenoses or occlusions), each ≤5 cm
- Single stenosis or occlusion ≤15 cm not involving the infrageniculate popliteal artery
- Single or multiple lesions in the absence of continuous tibial vessels to improve inflow for a distal bypass
- Heavily calcified occlusion ≤5 cm in length
- Single popliteal stenosis

Type C lesions
- Multiple stenoses or occlusions totaling >15 cm with or without heavy calcification
- Recurrent stenoses or occlusions that need treatment after two endovascular interventions

Type D lesions
- Chronic total occlusions of CFA or SFA (>20 cm, involving the popliteal artery)
- Chronic total occlusion of popliteal artery and proximal trifurcation vessels
Recommendation for revascularization of femoropopliteal disease

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class</th>
<th>Level</th>
<th>Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>When revascularization is indicated, an endovascular-first strategy is recommended in all femoropopliteal TASC A–C lesions.</td>
<td>I</td>
<td>C</td>
<td>-</td>
</tr>
<tr>
<td>Primary stent implantation should be considered in femoropopliteal TASC B lesions.</td>
<td>IIa</td>
<td>A</td>
<td>285, 286, 291</td>
</tr>
<tr>
<td>A primary endovascular approach may also be considered in TASC D lesions in patients with severe comorbidities and the availability of an experienced interventionist.</td>
<td>IIb</td>
<td>C</td>
<td>-</td>
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</table>
Challenges of SFA recanalization

- Unique anatomical features:
  - Longest artery in the body
  - Tortuous course within the muscular adductor canal
  - Exposed to mechanical forces: compression, extension, bending and torsion
Challenges of SFA recanalization

- Insufficient results after balloon angioplasty
- Flow-limiting dissection
- Recoil
- Calcifications
- In case of stenting
- Risk of restenosis
- Stent fractures
Options for SFA recanalization

- Plain old balloon angioplasty (High restenosis-rates!!)
- Drug coated balloons
- Long occlusions: Re-entry devices, retrograd approach
- Self-expandable nitinol stents
- Interwoven Supera stenting
- Atherectomy
- Laser-assisted angioplasty
- Stentgrafts
- Scoring, cutting-balloons...
Drug eluting balloons

<table>
<thead>
<tr>
<th>Trial Name</th>
<th>Target</th>
<th>Lesion</th>
<th>Rutherford Category</th>
<th>Outflow</th>
<th>Exclusion Criteria</th>
<th>Primary Patency (1 yr), %</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVANT 2</td>
<td>Femoropopliteal artery, 4-6 mm in diameter</td>
<td>De novo or nonstented restenotic ≤ 15 cm</td>
<td>2-4</td>
<td>One patent native outflow artery</td>
<td>Severe calcium, Renal failure or CKD, No adjunctive treatment modality</td>
<td>65.2</td>
</tr>
<tr>
<td>IN.PACT</td>
<td>SFA, 4-7 mm in diameter</td>
<td>De novo or nonstented restenotic lesions 70%-99% stenosis ≥ 4 cm and ≤ 18 cm, 100% ≤ 10 cm</td>
<td>2-4</td>
<td>Adequate outflow</td>
<td>Severe calcium, CKD, No adjunctive treatment modality</td>
<td>82.2</td>
</tr>
</tbody>
</table>

Clinical case: Drug eluting balloons

- Pre-interventional angiogram left leg
Intervention: Left SFA recanalization

DEB angioplasty
Severe dissection
after 1. PTA
after prolonged PTA
Final result after
spot stenting
Retrograde approach in CTO

- Failure of guidewire-passage in CTOs of the SFA occurs in up to 20%.
- Re-entry devices not always feasible, costly (Outback, Pioneer, Offroad)
- Alternative: transpopliteal approach, leaving the patient supine
Retrograde SFA Recanalization

- Subintimal wire passage
- Failed antegrade re-entry
Retrograde SFA Recanalization

- 21 G needle
- 0.0018 V-18 control wire
- Sheathless approach: support catheter
- Alternative: 4F sheath
Retrograde SFA Recanalization

- Wire snaring via 5F Judkins
- SFA treatment as usual
Calcification in the SFA

- Important cause for residual stenosis associated with increased restenosis

Bausback Y et al. JEVT 2011;18:13-21
Interwoven nitinol stents - Supera®

➢ Six pairs of closed-end, interwoven nitinol wires

➢ Stent is pushed out and deploys while catheter is pulled back

➢ Vessel preparation!!!!

➢ Improved strength, flexibility, durability

➢ 4x radial strength
Leipzig SUPERA registry

Werner M et al. Eurointervention 2014; Nov;10(7):861-8
Shortcoming of SFA Stents

Scheinert et al. JACC 2005
Shortcoming of SFA Stents

Lower stent fracture risk with modern Nitinol stents, almost not existing with Supera Stenting

Scheinert et al. JACC 2005
How I treat the SFA

- Male patient, 69 years old
- Severe claudication Rutherford 3
- PTA of the right SFA 2009, now documented re-occlusion
Highly calcified SFA occlusion
PTA

After lesion crossing:

Pre-dilation with 6 and 7(!) mm balloon

-> High risk of rupture -> Viabahn nearby!!!
Rupture -> Viabahn

Rupture -> Viabahn 7/150mm

Post-dilation with 6mm balloon

Residual stenosis at distal end ->

Supera stenting

Post-dilation with 6mm high-pressure balloon.
Viabahn and Supera
Summary

- Multiple treatment options for various lesion characteristics in the SFA

- Anti-proliferative drug release and novel stent design show promising results
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