What is the best treatment for treating popliteal occlusive disease: PTA (POBA vs DEB), Stent (Bare vs DES), Atherectomy or Bypass

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Anatomical considerations

- Repeated strain from knee flexion during normal human movement.
- Two relatively fixed arterial points,
  - cranially at the adductor hiatus where the upper genicular branches arise
  - caudally where the anterior tibial artery crosses the interosseus membrane.

Techniques for Revasc.

- Balloon angioplasty
- Cutting balloon angioplasty
- Stent-PTA
- Drug eluting stents
- Drug coated balloons
- Atherectomy

Provisional stenting should be considered over primary stenting for the treatment of PA lesions.

- Stent-Fx rate: 3.4%

PA: Balloon angioplasty

Primary patency after tw and 54% for CLI patients

- Patients with multiple pop have early PTA failure (p=)
- The major benefit of this patients with a single pop

PA: Balloon angioplasty

- CLI patients benefit significantly less from the procedure.

Disclosures

- None

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Varcoe, RL. J Cardiovasc Surg 2015;56:55-65

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PA: Balloon angioplasty


PA: Atherectomy

- LIPS 2 Study (LPTA: n=385 vs. PTA: n=331)
  - More TASC-D lesions in LPTA group (92% vs. 67%)
  - Procedure type was not associated with increased risk of repeat revascularization.
  - Median time to repeat revascularization was similar in the two groups.
  - TLR 24.1% (LPTA) vs. 22.4% (PTA); similar limb salvage


PA: Atherectomy

- ATH vs. PTA study (ATH: n=18 vs. PTA: n=38)
  - No significant difference in respect to TASC classifications, runoff score, lesion length, number of vessels treated, and the presence of occlusive lesions.
  - Provisional stenting more frequent in PTA group.


Drug coated balloons

**In.Pact SFA**

|          | N | Male | DM | Lesion length [cm] | Proximal Stenting | Pletal
|----------|---|------|----|-------------------|-------------------|---
| DCB      | 220 | 65.0% | 40.5% | 8.94±4.89 | 7.3% | NS
| POBA     | 111 | 67.6% | 48.6% | 8.81±5.12 | 12.6% | NS

**Levant 2**

|          | N | Male | DM | Lesion length [cm] | Proximal Stenting | Pletal
|----------|---|------|----|-------------------|-------------------|---
| DCB      | 316 | 61.3% | 43.4% | 6.20±4.10 | 2.5% | 9.7%
| POBA     | 160 | 66.9% | 41.9% | 6.30±4.00 | 6.9% | 7.5%


Drug coated balloons

**Levant 2**:

- 12 month PPR was 65.2% (DCB) vs 52.6% (POBA; \( P=0.02 \) for superiority)

**In.PACT SFA**:

- 12-month PPR was 82.2% (DCB) versus 52.4% (POBA; \( P<0.001 \))


PTFE-covered Stent

- The hybrid heparin-bonded TIGRIS stent is a safe and effective endovascular option for complex occlusive disease of the popliteal artery with promising clinical and anatomical outcomes in the mid-term period.


Interwoven Nitinol Stent

- No stent fractures during the 16.6 months follow-up.

Conclusion

- Data regarding the performance of endovascular procedures in the popliteal artery in particular are scarce.
- PTA of the popliteal artery is safe and effective, even between the short and long term.
- DCB-PTA seems to improve outcome.
- Atherectomy can help.
- Standard nitinol stents are usually not suitable the popliteal artery.
  - New stent designs promising good clinical and anatomical outcomes.

Treatment algorithm SFA