Step by Step: infrapopliteal revascularization

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Modern Endovascular Approach to CLI

- **Low profile balloon systems** (long balloons)
- **New balloon technologies**
  - Cutting balloon
  - Cryoplasty
  - DEB
- **Debulking Devices**
  - Laser
  - Excisional Atherectomy
- **Stents**
  - Balloon Expandable
  - Self expanding
  - DES
  - Bioabsorbable
Arterial Approaches

1. Antegrade CFA  75%
2. Retrograde CFA  10%
3. Retro/antegrade Popliteal  5%
4. Retrograde proximal AT   2%
5. Retro/antegrade distal AT (pedal) 3+1%
6. Retrograde distal PT (malleolar)   4%
Revascularization Strategies Affecting CLI Outcomes

*Targets in BTK PTA: complete vs. selected revascularization*

1. The most important factor affecting Limb Salvage is the number of patent arteries post-PTA \[^{1,2}\]
   - 1 vessel better than 0
   - 2-3 vessels better than 1
   - Tibials better than peroneal

2. Direct revascularization (distal bypass) of the angiosome specific to the anatomy of the wound leads to a higher rate of healing and limb salvage \[^{3}\]

3. Trade-off between driven by 1) procedural time and cost, and 2) technical access / success in treating the angiosome specific vessel

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2. Faglia et al. When is a technically successful peripheral angioplasty effective in preventing above-the-ankle amputation in diabetic patients with critical limb ischaemia Diabet Med. 2007 Aug;24(8):823-9
Revascularization Strategies Affecting CLI Outcomes

**Wound Related Artery: Detection and Treatment**

**Foot Angiosomes**

**Anterior Tibial Angiosome**
Anterior Tibial Artery (ATA) becomes the dorsalis pedis artery that supplies the dorsum of the foot.

**Posterior Tibial Angiosome**
Posterior Tibial Artery (PTA) supplies the plantar aspect of the toes, the web spaces between the toes, the sole of the foot, and the inside of the heel. Three main branches of the PTA supply distinct portions of the sole: the calcaneal branch to the heel, the medial plantar artery to the instep, and the lateral plantar artery to the lateral midfoot and the forefoot.

**Peroneal Angiosome**
Peroneal Artery (PA) supplies the lateral border of the ankle and the outside of the heel. Two branches of the PA supply the anterolateral part of the ankle and the hind foot: the anterior perforating branch to the anterolateral part of the upper ankle and the calcaneal branch to the plantar aspect of the heel.

Peripheral Guidewires

- Different sizes (0.014”, 0.018”, 0.035”)
- Coating....
- Visibility, Shapeability, Pushability, Trackability, Torquability
• Lesion Characteristics
  – Stenosis vs occlusion
  – Calcification
  – Lesion localization
  – Endoluminal vs subintimal

• Operator decision and habits
PTA balloons
Long and flexible balloons
Trackability and pushability
Final Result
Guida 0.018
V18 Control Wire

Power Cross 3.0/80
Il Cattivo!
Il Cattivo!
Failed recanalization by antegrade way

Collateral circulation to plantar artery (injection through the balloon)
Passage of guidewire through collateral vessel in posterior tibial artery by retrograde way and dilatation of the occlusion
Passage of new guidewire by antegrade way and POBA
Conclusions

• **Limb salvage in CLI with BTK lesions can be treated with efficacy and safety;**
• **Strategy must be identified first;**
• **A “Learning Curve” is needed;**
• **We must be skilled in different arterial approaches in order to solve difficult cases**
Thank you
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