Limitations of Pedal and Other Retrograde Approaches for Lower Extremity Revascularization

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Retrograde Approach

Trans pedal approach has gained more and more popularity in recent years for the treatment of complex lesions in patients with CLI.

Antegrade femoral access has a failure rate ranging between 15-20% in case of infragenicular occlusions. It requires operator’s experience and can be difficult in case of obese patients.

Different retrograde accesses – tibial, popliteal, femoral – have been described to manage the most difficult conditions.

Advantages

• Better pushability of catheters and guidewires
• Easier recanalization of occluded segments
• More possibility to perform an endoluminal recanalization
• No concern about obese patients
• No concern about hostile or infected groin

Limitations

• Arterial spasm
• Not suitable for angioplasty and stent deployment
• Puncture in a healthy segment
• Vessel “rolling” (pedal)
• Venous puncture
• Acute thrombosis
• Vessel perforation / bleeding
• Dissection

Disclosures

• Consultant / Speaker / Proctor / Advisory Board
  – Abbott
  – Bayer-Medrad
  – Bard
  – Boston Scientific
  – Cook
  – Cordis
  – Medtronic
  – Spectranetics
  – TriFlume Medical
  – W.L. Gore & Associates

Retrograde Approach for Complex Popliteal and Tibioperoneal Occlusions

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Retrograde Access Technique for Revascularization of Infringuinal Arterial Occlusive Disease

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Spasm

- Avoid multiple punctures
- Micropuncture set (21G)
- Nitropaste

- Xylocaine 2% and Nitrate 0.5mg/2ml in the subcutaneous tissue
- Verapamil 2 ml i.a.

Vessel Size

- Small vessels diameter
- Heavy calcified
- Very sensitive
- Vessel rolling

Use of dedicated devices

Vessel Rolling

Vessel rolling away on contact with the tip of the needle.
The target vessel is «pinned» against the underlying bone

- Vessel perforation
- Bleeding

Post-procedure monitoring of pulses, motor and sensory function

Vessel Thrombosis

Thrombosis at access site – catastrophic complications

- Too small vessel
- Heavy calcified
- Too big devices

Retrograde access indicated only for CLI, not for claudicants with single vessel run-off
Conclusions

- Never use retrograde access as first approach
- Preferably in combination with an antegrade approach
- Accurate evaluation of the foot vessels
- Correct vessel selection
- US and fluoroscopic guidance
- Consider a learning curve of 5-10 cases
- Be familiar with dedicated devices