Percutaneous Thrombectomy for ALI: Equipment, Technique & Results

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Disclosures

– None
Conventional Treatment of Acute Limb Ischemia (ALI)

- Heparinisation + delayed surgery (Grade I)
- Prompt embolectomy/Bypass (Grade II)

*Ann Vasc Surg, 1995;9:32-38*
Alternative Treatment of Acute Limb Ischemia (ALI)

- Thrombolysis (Passive clot lysis → 48h duration)
  - Only for Grade I

- Thrombosuction (Immediate clot removal)
  - For Grade I & II

_Eur J Vasc Endovasc Surg_, 2000;20:138-45
Alternative Treatment of Acute Limb Ischemia (ALI)

• Thrombolysis (Passive clot lysis → 48h duration)
  - Only for Grade I

• Thromboscuction (Immediate clot removal)
  - For Grade I & II
Equipment

- 8F Sheath
  - Removable Valve
- 8F Aspiration catheter
  - 1 end-hole
- 6F Aspiration catheter
  - Smooth tip (crural)
- 50cc Syringe
Technique

- Aspiration catheter just above the proximal end of the thrombus
- Do not cross the thrombus
  - Avoid distal embolisation
Technique

• Continuous aspiration
  – 50cc Syringe

• Catheter withdrawal

• Clot removal
Technique

• Valve disconnection for large thrombus removal
Technique

- Repeat sequence until no more thrombi can be aspirated

- Adjunct PTA/stenting if residual stenosis or remaining clots
Technique

- 8F Closure device
- Immediate heparinisation
Nuremberg Experience

• 2009-2016

• N = 369

  – Grade I (Viable) 282 (76.4%)

  – Grade II (Threatened) 87 (23.6%)
## Early Outcome

- **Technical success**: 339 (91.9%)
  - Additional PTA: 117 (31.7%)
  - Additional PTA & Stenting: 116 (31.4%)
  - Additional open surgery: 19 (5.1%)
    - Embolectomy: 9 (2.4%)
    - Bypass: 10 (2.7%)
- **30-d Mortality**: 14 (3.8%)
- **30-d Major amputation**: 4 (1.1%)
Complications

- **Access site Hematoma**  20 (5.4%)
  - Surgical revision  7 (1.9%)
- **Renal Insufficiency (Contrast)**  6 (1.6%)
- **Cardiac Complications**  5 (1.4%)
Follow-up
Mean 26.2 ± 16 months

- New onset of symptoms 82 (22.2%)
- Reintervention 60 (16.3%)
- Major amputation 10 (3.0%)
  - AKA 5
  - BKA 5
- Related death 4 (1.1%)
Freedom from Reintervention

85.7 ± 2.2% at 1 year
70.5 ± 3.8% at 3 years
Case Example (1)

- 76 YO Female Pt
- ALI 6 h ago
  - Grade I
- Atrial fibrillation

DSA →
Case Example (1)
Case Example (2)

- 84 YO Male
- ALI 2 days ago
  - Grade I

DSA ➔
Case Example (2)

Crural

Pedal
Case Example (3)

- 69 YO Female
- ALI 3 days ago
  - Grade I
- Atrial Fibrilation
Case Example (3)

- 69 YO Female
- ALI 3 days ago
  - Grade I
- Atrial Fibrillation
Case Example (4)

- 73 YO Female
- ALI 4 hours ago
  - Grade II
- Atrial Fibrillation
Case Example (4)
Case Example (5)

• 88 YO Female Pt
• ALI (right) 20 h ago
  – Grade I
• Atrial fibrillation

MRA ➔
Case Example (5)

Initial DSA

After thrombosisuction
Precautions

• Correct Indication!
  – Pt with Acute Limb Ischemia
    • Fresh thrombus on DSA
    • Relatively short occlusion
    • Distal femoral, popliteal, crural level
Case Example

- 58 YO Male
- ALI 12 days ago
  - Grade I

Collaterals
Case Example

Thrombosuction failed...

Surgery solved the problem...
Precautions

• Correct Indication!
  – Exclude popliteal aneurysm
Case Example

- 81 YO Male
- ALI 2 days ago
  - Grade I
Case Example

Thrombosuction failed...
Conclusions

• Percutaneous Thrombosuction
  – Simple equipment
  – Quick treatment (vs Trombolysis)
  – ↑ Technical success
  – Durable in the mid-term
  – Does not preclude surgery

• Point of attention: Correct Indication!