Percutaneous mechanical stent thrombectomy used as therapy for acute limb ischemia

Igor Semin
Department of interventional radiology
Arkhangelsk regional hospital, Russia
Disclosure

Speaker name: Igor Semin

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
### Recommendations for Revascularization for ALI

<table>
<thead>
<tr>
<th>COR</th>
<th>LOE</th>
<th>Recommendations</th>
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<tbody>
<tr>
<td>I</td>
<td>C-LD</td>
<td>In patients with ALI, the revascularization strategy should be determined by local resources and patient factors (eg, etiology and degree of ischemia) (288-290).</td>
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<tr>
<td>I</td>
<td>A</td>
<td>Catheter-based thrombolysis is effective for patients with ALI and a salvageable limb (288-292).</td>
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<tr>
<td>I</td>
<td>C-LD</td>
<td>Amputation should be performed as the first procedure in patients with a nonsalvageable limb (293, 294).</td>
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<tr>
<td>I</td>
<td>C-LD</td>
<td>Patients with ALI should be monitored and treated (eg, fasciotomy) for compartment syndrome after revascularization (293, 294).</td>
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<tr>
<td>IIa</td>
<td>B-NR</td>
<td>In patients with ALI with a salvageable limb, percutaneous mechanical thrombectomy can be useful as adjunctive therapy to thrombolysis (295-299).</td>
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<tr>
<td>IIa</td>
<td>C-LD</td>
<td>In patients with ALI due to embolism and with a salvageable limb, surgical thromboembolectomy can be effective (300-302).</td>
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</tbody>
</table>
BUT!

open surgery

- Complications
- Artery diameter limitation (e.g. pedal or distal tibial)
- Patient condition, comorbidity

CDT

- Contraindications (a lot of patients have gastric ulcers)
- Complications (up to 10% intracranial hemorrhage)
- Time
Casper (Microvention)-Carotid Artery Stent

- **Braided nitinol design**
  - Closed cell design with open cell mechanical performance;
  - Optimal conformability and wall apposition

- **Low Profile Delivery System**
  - 5.2Fr. Rapid Exchange for all sizes
  - Up to 50% deployment
    - Fully re-sheathable
    - Fully repositionable
Advantages:

• no need in microcatheter (completed Rx-system for thrombectomy)

• optimal wall apposition in arteries of different diameters

• makes endovascular therapy of ALI as one-stop event (local anesthesia, no need in ICU).
Procedural steps

1. Antegrade/contralateral femoral approach
2. Occluded artery catheterization with Destination sheath (Terumo), 5000 IU of heparin
3. Wire (0.014``) recanalization of occlusion, stent delivering as distal as possible
4. Partial releasing
5. Traction with aspiration
Partial releasing

50 - 75% of length
Traction
Additionally

- Better for «fresh» thrombosis, but also effective for small organized thrombi
- 7-10 passes can be performed with one device
- Aspiration or PTA can be used as additional method
- Stent thrombectomy can be adjunctive to CDT or open surgery if needed
Case 1 (1)

- Female, 63 years old
- Thromboembolism, ALI 1
- Surgical embolectomy 16.04
- Rethrombosis 21.04
- Endovascular stent thrombectomy 21.04.2017
- Discharged from hospital without signs of LTI
Case 1 (2)

- Wire recanalization (up to lateral plantar artery)
- Stent delivery (plantar arch through posterior tibial artery)
- Partial releasing
- Traction with aspiration
Final angiogram
Case 2 (1)

- Female, 71 years old
- ALI caused by thromboembolism (AF)
- Endovascular stent thrombectomy
- Discharged without signs of LTI
Case 2 (2)
Case 2 (3)
Finally
Case 3 (1)
• Male, 57 years old
• ALI caused by thrombosis
• Endovascular aspiration+CDT 30.01.2017
• Endovascular thrombectomy 31.01.2017
• Discharged without signs of LTI
Case 3 (2)

- Wire recanalization (to plantar arch through anterior tibial artery)
- Stent delivery (arteria dorsalis pedis) and partial stent releasing
- Traction
Case 3 (3)

- Stent delivery (arteria dorsalis pedis through posterior tibial artery and plantar arch) and partial stent releasing
- Traction
Case 3 (4)
Finally
Results

• 2018: 78 patients (59 ALI)
• 1 amputation
• 2 deaths (MI, bleeding from puncture site)
• 75 discharged from hospital with saved limb
Summary

• Introduction of percutaneous mechanical thrombectomy is a logical step to further improve ALI treatments in the field of evolving endovascular therapy;

• We are able to save limbs at low risk of complications using CASper as stent-retriever in ALI treatment as first-line and after CDT/open surgery failure;

• This method is a suitable alternative to surgical embolectomy in infrainguinal territory and another arteries with diameter up to 8 mm