The evidence for venous interventions is evolving—many patients do actually benefit

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Disclosure

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☒ I have the following potential conflicts of interest to report:
☒ Consulting/Honoraria: BTG, Optimed, Cook, Volcano
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)
☐ I do not have any potential conflict of interest
Venous Intervention

- Acute DVT treatment
  - Catheter-directed thrombolysis
  - +/- Stenting

- Chronic venous obstruction
  - Endovascular reconstruction
  - Stenting
Venous Intervention

- Acute DVT treatment
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- Chronic venous obstruction
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Conservative Management of Iliofemoral DVT

- In less than 50%, venous patency is achieved
- Up to 30% suffer recurrent DVT
- More than 60% have an underlying venous stenosis as a reason for poor patency and a trigger for recurrent DVT
- More than 50% suffer the post-thrombotic syndrome (PTS)
- 15% develop venous ulcers

Venous Anatomy – Iliac Veins
## Iliofemoral Deep Vein Thrombosis Catheter-Directed Thrombolysis (CDT)

<table>
<thead>
<tr>
<th>RCT</th>
<th>Year</th>
<th>N</th>
<th>Venous patency @ 6 months</th>
<th>Venous reflux @ 6 months</th>
<th>PTS @ 6-24 months</th>
<th>Recurrent VTE @ 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>CDT</td>
<td>Control</td>
<td>CDT</td>
<td>Control</td>
</tr>
<tr>
<td>Elsharawy¹</td>
<td>2002</td>
<td>35</td>
<td>72%</td>
<td>12%</td>
<td>11%</td>
<td>41%</td>
</tr>
<tr>
<td>TORPEDO²</td>
<td>2010</td>
<td>183</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CaVent ³</td>
<td>2012</td>
<td>209</td>
<td>66%</td>
<td>47%</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Thrombolysis duration 2.4 ± 1.1 days**
**Thrombolysis dose: up to 20 mg t-PA per day (Major bleeding 9%), Stenting rate in CaVent: 17%**

## Demographics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>N = 87</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean ± SD</td>
<td>42 ± 21 y</td>
</tr>
<tr>
<td>Women</td>
<td>60 %</td>
</tr>
<tr>
<td>Body mass index, mean (range)</td>
<td>26 ± 5</td>
</tr>
</tbody>
</table>

### Ilio-femoral DVT (n=87)

<table>
<thead>
<tr>
<th>Prolonged thrombolysis</th>
<th>Mean 19 ± 6 hours, tPA dose 22 ± 10 mg</th>
<th>7%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stenting</td>
<td>≥ 1 Stent (mean 1.9 ± 1.3 stents)</td>
<td>80%</td>
</tr>
<tr>
<td>Vascular location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IVC</td>
<td></td>
<td>6%</td>
</tr>
<tr>
<td>Common iliac vein</td>
<td></td>
<td>83%</td>
</tr>
<tr>
<td>External iliac vein</td>
<td></td>
<td>71%</td>
</tr>
<tr>
<td>Common femoral vein</td>
<td></td>
<td>30%</td>
</tr>
<tr>
<td>Femoral vein</td>
<td></td>
<td>7%</td>
</tr>
</tbody>
</table>
### Ilio-femoral DVT (n=87)

<table>
<thead>
<tr>
<th></th>
<th>Mean (range)</th>
<th>273 d (1-819)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Follow up duration</strong></td>
<td></td>
<td>273 d (1-819)</td>
</tr>
<tr>
<td><strong>Major bleeding</strong></td>
<td>12 months</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Primary patency</strong></td>
<td>12 months</td>
<td>87%</td>
</tr>
<tr>
<td><strong>Secondary patency</strong></td>
<td>12 months</td>
<td>96%</td>
</tr>
<tr>
<td><strong>Post-thrombotic syndrome</strong></td>
<td>12 months</td>
<td>6%</td>
</tr>
</tbody>
</table>

Venous Intervention

Acute DVT treatment
Catheter-directed thrombolysis
+/- Stenting

Chronic venous obstruction
Endovascular reconstruction
Stenting
# Patency Rates Chronic Venous Intervention

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Cumulative Patency rate</th>
<th>Duration of f/u</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary</td>
<td>Assist – Primary</td>
</tr>
<tr>
<td>All</td>
<td>67-83%</td>
<td>89%</td>
</tr>
<tr>
<td>Non-thrombotic stenosis</td>
<td>79%</td>
<td>100%</td>
</tr>
<tr>
<td>Postthrombotic - non-occlusive</td>
<td>38-57%</td>
<td>63-80%</td>
</tr>
<tr>
<td>Postthrombotic - occlusion</td>
<td>30-70%</td>
<td>56-73%</td>
</tr>
</tbody>
</table>

Venous outflow obstruction plays an important role in clinical expression of CVD, particularly pain \(^1,3-4\)

Ulcerated limbs have a high rate of obstruction (37-52\%) \(^5-6\)

Stenting results in impressive clinical relief of pain, swelling, VCSS, VDS and QoL, even when associated reflux is left untreated \(^1-3\)

Treatment results in healing of ulcers, despite untreated reflux, in 55-58\% of the patients \(^1,3,6\)

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Sinus Obliquus May Thurner Hybrid Stent (Optimed)

- **Oblique (35°) design** for protection of contralateral iliac vein inflow with 4 markers for correct positioning.

**High-flexibility part:**
Open-cell design

**High-radial-force part:**
Closed-cell design
Vici Stent (Veniti)

- Laser-cut nitinol stent with closed-cell design with flexible interconnections
- High radial force, moderate flexibility
Take Home Messages

• Iliofemoral DVT has poor outcomes with conventional therapy

• CDT plus routine stenting of underlying stenosis is associated with patency rates >90% and low rates of PTS and should be considered for most patients with acute iliofemoral DVT

• Data from larger RCTs are not far away for the most conservative physicians

• Stenting of iliofemoral stenosis in patients with established PTS is becoming routine clinical practice in many centers