Dedicated woven nitinol stent for the common femoral vein:
Arnsberg–Zurich experience

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Disclosure

Speaker name:
Tim Sebastian

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
PTS patients are the high-risk population among patients with venous stents from the Swiss Venous Stent Registry.

Hazard Ratio 2.5 (1.6-3.7)

If index diagnosis PTS

from the Swiss Venous Stent Registry

an analysis by Suvetha Gnanapiragasam

Abbreviations: PTS, postthrombotic syndrome; NIVL, non-thrombotic iliac vein lesion; DVT, deep vein thrombosis
PTS patients have more advanced disease with impairment of femoral inflow veins

Distal Stent landing zones: DVT versus PTS

- **External iliac**: Acute DVT 70, Post-thrombotic syndrome 32
- **Common femoral**: Acute DVT 27, Post-thrombotic syndrome 56
- **Deep femoral**: Acute DVT 1, Post-thrombotic syndrome 6
- **Femoral**: Acute DVT 2, Post-thrombotic syndrome 4
Stenting of the common femoral vein can be critical

- Repetitive force to the stent during hip (joint) motion and stent exposure to
  - Axial compression and elongation
  - External compression (impingement)
  - Kinking or bending

- Stent deformation and fracturing can cause
  - Loss of patency
  - Patient discomfort
Venous stenting across the inguinal ligament.

Neglén P¹, Tackett TP Jr, Raju S.

None of the braided stainless steel stents were compressed or fractured.
Virtus Trial Results (12/2019)

170 patients enrolled (127 PTS)
- 64 patients with CFV stents

9/64 patients with CFV stents had fractures (xray) after 12 months (14%)
Vessel patency NOT affected

VERNACULAR TRIAL (12-m)

93 patients with PTS (only 15% common femoral vein lesions)

➡ No stent fractures seen after 12 months (investigated by x-ray)
Type IV / IV fracture
Female patient with recurrent stent occlusion due to external compression of the common femoral vein stent
Self-expandable stent designs for dedicated venous stents

<table>
<thead>
<tr>
<th>Laser-cut</th>
<th>Woven nitinol (blueflow stent)</th>
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</thead>
</table>

![Laser-cut stent](image1)

![Woven nitinol stent](image2)
Arnsberg-Zurich experience

**Inclusion:**
Post-thrombotic syndrome and *stent extension into the common femoral vein*

**Method:**
We calculated 12-m patency rates for
101 PTS patients with laser-cut nitinol
49 PTS patients with woven nitinol stents

*used to cross the inguinal ligament*
Similar baseline characteristics (age, sex, comorbidities)

Proximal stent landing zone

Distal stent landing zone

This study cannot be regarded as a head-to-head comparison!
Type of laser-cut nitinol stents used to cross the inguinal ligament

<table>
<thead>
<tr>
<th>Type of Laser-cut Nitinol Stents</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Sinus XL Flex</td>
<td>49%</td>
</tr>
<tr>
<td>Venovo</td>
<td>16%</td>
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<tr>
<td>Sinus Superflex</td>
<td>11%</td>
</tr>
<tr>
<td>Zilver Vena</td>
<td>10%</td>
</tr>
<tr>
<td>Vici Venous</td>
<td>5%</td>
</tr>
<tr>
<td>Others</td>
<td>10%</td>
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</tbody>
</table>
Primary patency rate at 12 months (overall)
73.0% (95%CI 65.5-80.5)

This study cannot be regarded as a head-to-head comparison!
Secondary patency rate at 12 months (overall) 
95.7% (95%CI 92.3-99.1)

This study cannot be regarded as a head-to-head comparison!
Changes in Villalta Score from baseline to follow-up

Median improvement in Villalta score

4 (IQR 1-6) points

82 (55%) of patients free from signs and symptoms of PTS
Conclusion

• Laser-cut venous stents have revolutionized recanalization procedures for ilio-caval interventions

• Venous stents (woven vs. laser-cut; open- vs. closed-cell) have different biomechanical properties.

• Make the best out of these properties and choose depending on the segment / disease that you are treating.

• Availability of woven nitinol stents (blueflow stents) may improve outcomes in patients where stent extension into the common femoral vein is required.
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