The bifurcation stent: Sinus Obliquus

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Disclosure

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I have the following potential conflicts of interest to report:

- [x] Consulting (Abbott, Biotronik, Optimed, Straub medical, Terumo)
- [ ] Employment in industry
- [ ] Stockholder of a healthcare company
- [ ] Owner of a healthcare company
- [ ] Other(s)

- [ ] I do not have any potential conflict of interest
Challenge for stents to treat May – Thurner Syndrome

- the majority of iliofemoral DVTs are caused by iliac vein compression (May – Thurner Syndrome)
- focal external compression and vicinity to the ilio-caval bifurcation hampers venous stenting using conventional stents
- ideal May – Thurner Stent: radial force at the compression site, resistance against recoil and flexibility to accommodate the anatomy of the curved iliac vein
# Stent performance characteristics

<table>
<thead>
<tr>
<th>Design Attributes</th>
<th>Closed Cell</th>
<th>Open Cell</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>All struts interconnected</td>
<td>Not all struts interconnected</td>
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<table>
<thead>
<tr>
<th>Performance</th>
<th>Closed Cell</th>
<th>Open Cell</th>
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<tbody>
<tr>
<td>Crush Resistance</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Flexibility</td>
<td>+</td>
<td>++</td>
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<tr>
<td>Coverage</td>
<td>++</td>
<td>+</td>
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Patency of iliofemoral vein stents

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Anatomic</th>
<th>Technical</th>
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<tr>
<td>Post-thrombotic venous obstruction</td>
<td>Adequacy of lower extremity venous inflow</td>
<td>Stent characteristics</td>
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<tr>
<td></td>
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<td>Diameter</td>
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<td>Resistance to compression</td>
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<td>Stent extension into IVC</td>
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<td>Complete stenting of all disease</td>
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<td>Wall apposition</td>
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<td>Routine use of IVUS</td>
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*IVC, inferior vena cava; IVUS, intravascular ultrasound*
Contralateral iliac vein thrombosis

- the rate of contralateral iliac vein thrombosis after conventional May–Thurner stenting with proximal position in the IVC is unclear, because almost no study looked at long term data in patients post stenting

- after 5 years up to 10% with contralateral DVT after stenting with Wallstent
Dedicated May – Thurner or bifurcation stent: sinus - Obliquus

**Proximal closed cell design:**
- provides high radial force
- high resistance against recoil
- oblique design(35°) prevents to interfere the contralateral iliac vein
- 4 markers for correct rotational positioning

**Middle open cell design:**
- provides flexibility and less radial force for accommodation the curved anatomy of iliac veins during hip flexion

**Distal closed cell design:**
- for optimal positioning and wall appositioning
Bern venous stent registry

• a prospective registry including all patients receiving venous stents at university clinic of angiology in Bern, CH
• for this analysis, patient treated with sinus-Obliquus stents
• follow up of 6 month were analyzed

Stuck et al., J Endovascular Ther 2017;24:159
Results: patency rates

- PP estimates by Kaplan – Meier analysis were 92% at 6 months
- secondary patency was 100%
Results: clinical outcome

• in 10 patients with PTS:
  - Villalta score decreased by 6 points
  - revised Venous clinical Severity score (rVCSS) decreased by 3 points

• in 10 Patients with acute DVT:
  - all patients were free from PTS

• no stent fractures
• no contralateral DVT
Casereport

- 54 years old man
- more than 10 years with severe PTS, with permanent swelling of the leg, hyperpigmentation, venous claudication and recurrent ulcers
- DU: complete occlusion of the CFV, EIV and CIV
Take home massage

- most patients with acute iliofemoral DVT should be offered an early revascularization therapy
- stent recanalization of iliac veins and the IVC is a promising therapy for patients with PTS
- patency rates and clinical outcome at 6 month in patients with CIV compression treated with sinus – Obliquus stent were excellent
- Sinus – Obliquus is a dedicated stent for bifurcation lesions with an ideal hybrid design
Thanks for your attention
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