Z-Stent Extension Into the IVC
Less Contralateral Iliac Thrombosis

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Disclosures

• Medtronic: Consultant & NPI
• Boston Scientific: Consultant

All IVC & Iliac Vein Stenting is currently off label

Vena Cava Wallstent Extension

Landing zones

Where is the confluence?

0° 42° 58°

Stent placed “precisely” at junction

Anatomic ilio-caval choke point & radial force at distal wall stent = stenosis, distal migration, or occlusion

Contralateral DVT

Wall stent extension

Contralateral DVT Jailing from Wallstent?
Avoid jailing contralateral flow

Bilateral Stenting Easier

Purpose

Evaluate rates of contralateral DVT after:
(1) Traditional use of wall stents with caval extension vs.
(2) Modified Z-stent technique

Patients and Methods

• Consecutive patients undergoing ipsilateral stenting:
  – 2007-2011: 755 limbs with Wall-stent extensions
  – 2011-2015: 982 limbs with Z stent extensions

• Factors analyzed included: demographics, disease type and extent, procedural details and postoperative DVT incidence

Results: Demographics

<table>
<thead>
<tr>
<th></th>
<th>Wall-stent N=755</th>
<th>Z-stent N=982</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean)</td>
<td>59 +/- 15</td>
<td>59 +/- 15</td>
<td>NS</td>
</tr>
<tr>
<td>Female</td>
<td>534 (69%)</td>
<td>657 (67%)</td>
<td>NS</td>
</tr>
<tr>
<td>CEAP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C3</td>
<td>445 (59%)</td>
<td>468 (48%)</td>
<td>NS</td>
</tr>
<tr>
<td>C4</td>
<td>168 (23%)</td>
<td>271 (27%)</td>
<td></td>
</tr>
<tr>
<td>C5</td>
<td>24 (3%)</td>
<td>41 (4%)</td>
<td></td>
</tr>
<tr>
<td>C6</td>
<td>118 (16%)</td>
<td>202 (21%)</td>
<td></td>
</tr>
<tr>
<td>Thrombophilia</td>
<td>52 (7%)</td>
<td>91 (9%)</td>
<td>NS</td>
</tr>
</tbody>
</table>

Results: Venous Pathology and Stenting Details

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Wall-stent N=755 (%)</th>
<th>Z-stent N=982 (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTS</td>
<td>397 (53%)</td>
<td>667 (68%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>MTS</td>
<td>290 (38%)</td>
<td>223 (23%)</td>
<td></td>
</tr>
<tr>
<td>PTS + MTS</td>
<td>68 (9%)</td>
<td>92 (9%)</td>
<td></td>
</tr>
<tr>
<td>Proximal Stent Landing Zone</td>
<td>755 (100%)</td>
<td>982 (100%)</td>
<td>NS</td>
</tr>
<tr>
<td>Distal Stent Landing Zone</td>
<td>623 (83%)</td>
<td>873 (89%)</td>
<td></td>
</tr>
<tr>
<td>CIV</td>
<td>99 (13%)</td>
<td>86 (9%)</td>
<td></td>
</tr>
<tr>
<td>CFV</td>
<td>33 (4%)</td>
<td>23 (2%)</td>
<td></td>
</tr>
</tbody>
</table>
**Freedom From Contralateral DVT**

![Graph showing freedom from contralateral DVT over time for Z-Stent and Wall-Stent groups.](image)

- **Z-Stent** (n=588)
  - 91%
  - p<0.001
- **Wall-Stent** (n=478)
  - 99%
- **Number of cases:** 16 (2%)
- **Timing from initial intervention:**
  - Mean: 48 months
  - Range: 9 days to 111 months
  - Only 1 < 30 days

**DVT contralateral to Wallstent**

- **Number of cases:** 16 (2%)
- **Timing from initial intervention:**
  - Mean: 48 months
  - Range: 9 days to 111 months
  - Only 1 < 30 days

**Re-Intervention for DVT Contralateral to Wallstents**

- **Thrombolysis/PMT:** n=5
  - Failed: 4/5
  - 13/16

**Re-Intervention for DVT Contralateral to Wallstents**

- **Thrombolysis/PMT + Fenestration/Stenting:** n=8
  - Success: 8/8 (100%)
  - 13/16

**DVT contralateral to Z-stent**

- **Absolute number of cases:** 3 (0.3%)
- **Timing from initial intervention:**
  - Mean: 8 months (range: 6 - 9 months)

**Re-Intervention for DVT Contralateral to Z-stents**

- **Thrombolysis/PMT + Fenestration/Stenting:** n=8
  - Success: 3/3 (100%)
  - 3/3
DVT Contralateral to Z-stent: Attributable to Wallstent

No patient with accurate execution of the Z-stent technique developed Contralateral DVT!

Conclusions

- Z-stent modification of iliac stenting technique is associated with lower incidence of contralateral DVT likely secondary to decreased jailing of contralateral flow
- Benefit of the z-stent technique requires accurate placement of the Wallstent component at or below the confluence
- Ideally future dedicated venous stents will more gracefully address the confluence with increased radial support