Current Endovascular Techniques for Chronic Iliac Vein Stenosis

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Disclosures

• I have no financial relationship to disclose.
Clinical Presentation

C1 Telangiectasias
C2 Várices
C3 Edema Hinchazón
C4 Cambios coloración
C5 Úlcera Cerrada
C6 Úlcera Abierta
## CEAP Classification

<table>
<thead>
<tr>
<th>CEAP Classification of venous disorders</th>
<th>Affected Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>C0: No detectable venous disorder</td>
<td>9.6%</td>
</tr>
<tr>
<td>C1: Telangectasia or reticular veins only</td>
<td>59.0%</td>
</tr>
<tr>
<td>C2: Varicose veins (diameter ≥ 3mm)</td>
<td>14.3%</td>
</tr>
<tr>
<td>C3: Edema due to venous insufficiency</td>
<td>13.4%</td>
</tr>
<tr>
<td>C4: Skin changes due to venous insufficiency</td>
<td>2.9%</td>
</tr>
<tr>
<td>C5: Healed venous ulcer</td>
<td>0.6%</td>
</tr>
<tr>
<td>C6: Open venous ulcer</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
Prevalence & Etiology of Venous Insufficiency

Venous reflux disease is 2x more prevalent than coronary heart disease (CHD) and 5x more prevalent than peripheral arterial disease (PAD)\(^1\)

![Bar chart showing prevalence and incidence of various cardiovascular conditions.](chart.png)
More than 30 million Americans suffer from varicose veins or a more serious form of venous disease called Chronic Venous Insufficiency (CVI).

Of the over 30 million Americans affected:
- Only 1.9 million seek treatment annually\(^1,2\)
- While the vast majority remain undiagnosed and untreated
CVI Classification

• Primary (non-thrombotic)
• Secondary (post-thrombotic)
May Thurner Syndrome
Secondary (Post-thrombotic)

Post-Thrombotic Syndrome (PTS)

- 47% of DVT patients eventually develop PTS
- 25-33% of patients with PTS will develop severe symptoms such as ulcers and skin deterioration
- 75% of the cost of treating DVT is related to PTS
- Represents a permanent disability

References:
Diagnosis - Venogram

- Sensitivity of venography is only about 50% to identify focal iliac vein lesions common in primary CVI (Negus et al).
- Post-thrombotic diffuse or focal lesions are often missed as well.
- Venography is simply not sensitive enough to pick up anomalies in stent inflow/outflow and in the stent stack itself.
May-Thurner Syndrome
(Venogram vs. IVUS)
Post-Thrombotic Syndrome
(Venogram vs. IVUS)
Management

• Iliac Vein Stenting is cornerstone of Iliac Vein Stenosis Treatment.
• Large size wallstent almost exclusively used for Venous Stenosis.
• IVUS is must for diagnosis, even Venogram appears to be fairly normal.
## Technical Outcome

### STENT PATENCY RATES AND ETIOLOGY

Retrospective study of $N = 982$ chronic, nonmalignant femoro-ilio-caval lesions stented with IVUS guidance
- $n = 518$ were non-thrombotic iliac vein lesions (NIVLs)
- $n = 464$ were post-thrombotic lesions

<table>
<thead>
<tr>
<th>Lesion Type</th>
<th>Cumulative Patency Rate</th>
<th>Duration of f/u</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary</td>
<td>Assisted-Primary</td>
</tr>
<tr>
<td>Overall (n=603)</td>
<td>67%</td>
<td>89%</td>
</tr>
<tr>
<td>NIVL (n=302)</td>
<td>79%</td>
<td>100%</td>
</tr>
<tr>
<td>Post-thrombotic (n=303)</td>
<td>57%</td>
<td>80%</td>
</tr>
<tr>
<td>Post-thrombotic CTOs (n=47)</td>
<td>54%</td>
<td>68%</td>
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</tbody>
</table>
Clinical Outcome

Raju & Neglén Experience:

<table>
<thead>
<tr>
<th>Outcome 2.5 years Following Stenting</th>
<th>NIVL with Reflux</th>
<th>NIVL without Reflux</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Pain</td>
<td>82%</td>
<td>77%</td>
</tr>
<tr>
<td>No Swelling</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>Ulcer Healed</td>
<td>67%</td>
<td>76%</td>
</tr>
<tr>
<td>Good/Excellent Outcome</td>
<td>75%</td>
<td>79%</td>
</tr>
</tbody>
</table>

**Patient Characteristics**

**NIVL with Reflux (n=151)**
- 32% Superficial reflux
- 20% Deep reflux only*
- 38% Combined superficial & deep reflux*

**NIVL without Reflux (n=181)**
- Deep reflux axial in 1/3 of limbs
• Access well below CFV, always under US guidance and bilateral access.
• Micropuncture kit for venous access.
• Sheath size 6 – 10 F. Larger diameter sheath for large size wallstent.
• IV heparin or Angiomax
• 0.35 wire (stiff glide) for IVUS, balloon and wallstent delivery.
• Always use stent, PTA alone is not enough. Any > 50% stenosis should be treated.

(continue to the next slide)
• Match the wallstent with size of the vessel
  
  IVC = 22 mm
  CIV = 16 – 18 mm
  EIV = 14 – 16 mm

• Always extend stent 3 – 4 cm into IVC. Cover the entire disease segment. Be generous if overlapping the stents.

• Always post dilate. Bard Atlas balloon (12 – 20mm) is most commonly used.

• Good sedation, anesthesia helps.
IVC Stent Extension
The Iliac-Caval Junction is a Choke Point
Distal Migration of Wallstent
Post-Procedure

**May Thurner Syndrome:**
- If no evidence of DVT then ASA alone for 3 – 6 months.
- Some physicians use Plavix as well.

**Post-thrombotic Syndrome:**
- Continue Coumadin if patients are already on it.
- Recommend routine use of Coumadin for 6 months or more in these patients.

**Follow-up:**
- 1, 3, 9 & 18 months ultrasound and follow up.
- Some physicians perform venogram at 3 months.
Thank You