Endovascular treatment for PTS: How do I do it?

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Disclosure

I do not have any potential conflict of interest
What is PTS?

Post Thrombotic Syndrome

- Acute DVT complication
- 29% ~ 79% chronic symptoms
- 7% ~ 23% severe symptoms
- 4% ~ 6% ulcers
- After acute DVT, PTS incidence:
  - 2 yrs: 22.8%, 5 yrs: 28.0%, 8 yrs: 29.1%

Strandness DE, et al. JAMA. 1983;250:1289-1292
Case 1

• Male, 65yrs
• Left lower limb DVT & IVC filter 5 yrs
• Warfarin for 5 yrs
• Both legs C4 for 2 yrs
Whom I treat?

- **Indication:** CEAP 3-6

<table>
<thead>
<tr>
<th>Villalta scale</th>
<th>CEAP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Symptoms:</strong></td>
<td>Clinical:</td>
</tr>
<tr>
<td>Heaviness</td>
<td>0–None</td>
</tr>
<tr>
<td>Pain</td>
<td>1–Telangiectasis</td>
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<tr>
<td>Cramps</td>
<td>2–Varicosities</td>
</tr>
<tr>
<td>Pruritus</td>
<td>3–Edema</td>
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<tr>
<td>Parathesis</td>
<td>4–Pigmentation,</td>
</tr>
<tr>
<td></td>
<td>lipodermatosclerosis</td>
</tr>
<tr>
<td></td>
<td>5–Healed ulceration</td>
</tr>
<tr>
<td></td>
<td>6–Ulcer</td>
</tr>
<tr>
<td><strong>Signs:</strong></td>
<td>Etiology:</td>
</tr>
<tr>
<td>Pretibial edema</td>
<td>Congenital/primary/secondary</td>
</tr>
<tr>
<td>Induration</td>
<td>Anatomic distribution:</td>
</tr>
<tr>
<td>Hyperpigmentation</td>
<td>Superficial, deep, perforator, or</td>
</tr>
<tr>
<td>New venous ectasia</td>
<td>combination</td>
</tr>
<tr>
<td>Redness</td>
<td>Pathophysiology:</td>
</tr>
<tr>
<td>Pain of calf compression</td>
<td>Reflux, obstruction, or</td>
</tr>
<tr>
<td>(Ulceration receives a</td>
<td>combination</td>
</tr>
<tr>
<td>score of 15)</td>
<td></td>
</tr>
<tr>
<td>Each factor is scored: 0</td>
<td>Severe:</td>
</tr>
<tr>
<td>(none) to 3 (severe)</td>
<td>&gt; C4</td>
</tr>
<tr>
<td>Mild: score 5-9</td>
<td></td>
</tr>
<tr>
<td>Moderate: score 10-14</td>
<td></td>
</tr>
<tr>
<td>Severe: score &gt;15</td>
<td></td>
</tr>
</tbody>
</table>

- **Contraindication:** Sever infection, Coagulation disorders
Endovascular Procedure - Access

- Antegrade > Retrograde
- Keep good Inflow
Case 2

LDVT after CDT 8 yrs, C3

Femoral V.
Case 2 – Left femoral V. Access

5F MPA 0.035 Guide Wire （Stiff Terumo）
Case 2 – Left femoral V. Access

Luminexx 14-80, Wallstent 14-60
Case 3 – Deep Femoral V. Access

LDVT Anticoagulant for 6 yrs, C4

Deep Femoral V.
Endovascular Procedure
Cross Lesions

Case 4 L DVT anticoagulant for 3 yrs, C5

Different from PAD CTO, No subintimal technique
Endovascular Procedure
Cross Lesions

Case 5 BL DVT, IVC filter for 10yrs, C4
Endovascular Procedure
Cross Lesions

Case 5 BL DVT, IVC filter for 10 yrs, C4

Modify 4F Pigtails
Cross iliacaval junction
CIRSE Standards of Practice Guidelines on Iliocaval Stenting

- Signs & Symptoms of CVD
  - Duplex Ultrasound (CT & MRI as needed)
    - Ilio-caval Obstruction
    - Ilio-caval Obstruction & Reflux
    - Ilio-caval Reflux
    - Compression Therapy
      - CEAP 0-2
        - Satisfactory Response
          - Continue Treatment
        - Insufficient Response
          - Endovenous Recanalization & Stenting
      - CEAP 3-6
        - see Eberhardt et al. Circulation 2005;111:2398
Endovascular Procedure – Stent

- 80% iliac-femoral DVT with IVCS
- Fibrous tissue in PTS
- All PTS need stent

Contraindication

- uncontrolled thrombophilia
- uncontrolled infection
Endovascular Procedure – Stent

- Self-expandible stent
- Wallstent in the joint

Cardiovasc Intervent Radio, Feb. 28, 2018
Endovascular Procedure – Stent

**Size of the stent**

- **Common Iliac V.:** 16 mm
- **External Iliac V.:** 14 mm
- **Common Femoral V.:** 12 mm
Endovascular Procedure – Stent

Diagnosis and management of iliofemoral deep vein thrombosis: clinical practice guideline

7.2 Stenting of the infrainguinal veins is not recommended (III, C, weak, low).


5.2. We suggest that stents not be used in the femoral and popliteal veins.

Stent location: No Femoral & popliteal V.
Endovascular Procedure – Stent

Safety and Effectiveness of Stent Placement for Iliofemoral Venous Outflow Obstruction, Meta-Analysis – 2869 patients

Primary patency of non-dedicated iliofemoral vein stents

- Nonthrombotic (N=1122)
- Acute thrombosis (N=629)
- Chronic postthrombotic (N=1118)

Complete pain relief

- Nonthrombotic: 81.5%
- Acute thrombosis: 100%
- Chronic postthrombotic: 69.3%

Complete edema relief

- Nonthrombotic: 68.0%
- Acute thrombosis: 100%
- Chronic postthrombotic: 63.6%

Early stent thrombosis

- Nonthrombotic: 1.0%
- Acute thrombosis: 6.5%
- Chronic postthrombotic: 6.8%
Endovascular Procedure
recanalize occluded IVC filter

Case 6

- Gu*, Male, 65 yrs
- Both legs C4 2 yrs
- Left DVT & IVC filter 5 yrs
- Warfarin 5 yrs
Endovascular Procedure

recanalize occluded IVC filter

Bilateral CFV access
Endovascular Procedure
recanalize occluded IVC filter

IVC filter Hug PTA (Mustang 10mm)

Both iliac V & CFV PTA (Mustang 5, 6mm)
Case 6

R: Wallstent 14/90 *2
L: Wallstent 12/90 *2
Wallstent 14/60 *1
• Medication: Plavix 75mg/D Warfarin

• Elastic stocking

• Results and Follow-up: Duration: 14 M No claudication No edema

Angiography After 1 M

CTV After 14 M

Case 6
Conclusions

- Endovascular treatment for PTS is safe
- It has high technique success rate
- Stents for IVC & iliac V. have good short and mid-term patency
Thank You

Better Endo, Better Vein
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