Chronic Venous Stasis Ulcers: When to Image Iliac Veins & the Vena Cava

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- Nothing to disclose

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Chronic Venous Insufficiency
- 1-5% of US adult population (2.5 million)
- One-fifth to two-thirds of DVT patients can get post-phlebitic syndrome
- 500,000 with active venous ulcers
- More than half of patients with venous ulcers require over one year of treatment ($$$$)

Chronic Venous Insufficiency
- Two causes:
  - Nonthrombotic (primary)
    - May-Thurner’s syndrome is most common cause of nonthrombotic iliac vein occlusion
  - Post-thrombotic (secondary)
- Can involve reflux, obstruction or both
- Most management is focused on reflux with little attention to the obstructive component

Utility of venous stents
- Retrospective analysis of 2093 patients
  - 227 stents in 205 patients
  - Mean follow-up of 50 months
  - Edema relief 89%
  - Healed ulcers 82%

- Retrospective review of 56 limbs in 53 patients
- 19 of 29 stented limbs had CEAP 6
  - Ulcers healed in 11 limbs in average of 5 months
- In 7 limbs without stenting with CEAP 6, ulcers healing in one patient after 3 months


- Iliac stenting in 528 limbs
  - 172 with deep venous reflux alone
  - 356 with untreated superficial or perforator reflux
  - 25% (133) CEAP class 6
- Diagnostic studies included ultrasound, ambulatory venous pressures, ACP, venography and IVUS
- IVUS essential to identify degree and extent of stenosis and calculate stenosis

Raju S, et al. Unexpected major role for venous stenting in deep reflux disease.
J Vasc Surg 2010;51:401-9

- With iliac stenting alone at 5 years
  - 54% had healed ulcers
  - 88% continued freedom of ulcer
  - Quality of life scores improved

Nonthrombotic iliac vein lesions (NIVL)

- Found in both genders and in all age groups
- Pathologic significance has been debated
- Reported to be present in 23-66% of general population
- Suggested to take a role in symptoms only when reflux is present
- Favorable outcome with iliac stenting alone indicates NIVL contributes to pathophysiology

What test to perform?

- Ultrasound can be suboptimal in the pelvic region
- Webs are difficult to visualize with contrast venography
- Iliac vein lesions in only 63% of venograms
- Collateral veins present in only 43% of venograms
- IVUS appeared to be the preferred method

IVUS

- Allows for sizing for stent placement
- Venography overestimates vein size
- 90% reported sensitivity to detect iliac obstruction
Who to screen for IVCO

- IVUS and venography
  - Invasive and expensive
  - Cannot screen large numbers


- 78 limbs CEAP class 5 or 6
- Ultrasound results:
  - Deep venous reflux only 13%
  - Superficial venous reflux only 38%
  - Combined deep and superficial reflux 49%

Incidence of iliacaval obstruction

<table>
<thead>
<tr>
<th>Iliocaval Stenosis (%)</th>
<th>Number of cases (%)</th>
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<tbody>
<tr>
<td>≥ 100%</td>
<td>7 (9%)</td>
</tr>
<tr>
<td>80-99%</td>
<td>11 (14%)</td>
</tr>
<tr>
<td>50-79%</td>
<td>11 (14%)</td>
</tr>
<tr>
<td>30-49%</td>
<td>4 (5%)</td>
</tr>
<tr>
<td>10-29%</td>
<td>13 (17%)</td>
</tr>
<tr>
<td>0-10%</td>
<td>32 (41%)</td>
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</table>

26/78 33%

Sensitivity and specificity of CFV duplex ultrasound findings for identifying ICVO ≥80%

<table>
<thead>
<tr>
<th></th>
<th>ICVO ≥ 80%</th>
<th>ICVO &lt; 80%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFV Duplex Positive</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>CFV Duplex Negative</td>
<td>3</td>
<td>62</td>
<td>65</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>62</td>
<td>75</td>
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</tbody>
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Sensitivity 77%
Specificity 100%
Positive predictive value 100%
Negative predictive value 95%
Clinical Presentation

- 63 year old female presents with left lower extremity swelling
- HTN, Non-smoker, Non-diabetic
- All left lower extremity veins found to be fully compressible

Guideline 3.11: Venous Imaging

We suggest selective computed tomography venography, magnetic resonance venography, contrast venography, and/or intravascular ultrasound in patients with suspected venous leg ulceration if additional advanced venous diagnosis is required for thrombotic or nonthrombotic iliac vein obstruction or for operative planning before open or endovenous interventions.

[GRADE - 2; LEVEL OF EVIDENCE - C]

Conclusion

- Studies have validated the treatment of ICVO
- Duplex ultrasound adequate for LE veins
- IVUS/venography better suited for iliac and IVC
- Imaging for ICVO warranted in patients with:
  - Prior DVT
  - Deep system reflux
  - Abnormal CFV Doppler signals