Iliac vein interventions: Indications, evaluation and treatment

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Disclosures

None
Off label use of stents in iliac veins
Classification of venous disease

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Clinical signs</th>
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<tbody>
<tr>
<td>CoS: Heavy legs, pains in the legs, pruritus. But no clinical or palpable signs of venous disease</td>
<td>CoS: Presence of one or more active venous leg ulcers, often exacerabed by trophic changes</td>
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<tr>
<td>C1: Telangiectasia or cutaneous veins</td>
<td>C1: Healed ulcer with trophic changes</td>
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<tr>
<td>C2: Varicose veins</td>
<td>C2: Trophic changes of venous origin: atrophic/infarcted, purpuric, dermatitis, varicose eczema</td>
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<tr>
<td>C3: Venous telangiectasia (without trophic changes)</td>
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<tr>
<td>C4: Trophic changes of venous origin; atrophic/infarcted</td>
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<td>C5: Edema, pigmented</td>
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<tr>
<td>C6: Presence of one or more active venous leg ulcers, often exacerabed by trophic changes</td>
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</tbody>
</table>

CEAP: Clinical, Epidemiological, Anatomical, Prognostic.

San Diego Vein Institute Blog
A blog dedicated to educating people on treating their varicose veins
Complications of DVT

1 million new DVT patients/year in USA

25-65% of those with proximal DVT will develop post-thrombotic syndrome within 2-3 years

Severe post-thrombotic syndrome is highly disabling

Anticoagulation does not prevent post-thrombotic syndrome

Iliac vein interventions:

Indications

- Acute DVT?
- ATTRACT trial results negative for prevention of post-thrombotic syndrome
  - Vendantham, NEJM 2017
- Phlegmasia (IVC filter thrombosis)
- Post-op kidney/pancreas transplant (rare)
- Chronic venous insufficiency
ATTRACT trial

• NIH-funded multicenter trial that randomized 692 pts with iliofemoral DVT to either anticoagulation or pharmacomechanical thrombectomy plus anticoagulation
• At 2 years, no difference in post-thrombotic syndrome (47% vs. 48%)
• Increased bleeding (non-fatal) in the thrombectomy group (1.7% vs. 0.3%)
• Decreased enthusiasm for intervention for acute iliofemoral DVT for prophylaxis
  • Vendantham, *NEJM* 2017

Caval Thrombosis

• Almost always seen in setting of prior IVC filter
• Only 8% of retrievable filters are actually retrieved nationally
• Predisposes to extensive ileocaval thrombosis
• Patients very symptomatic and may have phlegmasia, renal dysfunction, etc.
Caval thrombosis

Caval thrombosis: approach

- Consider second suprarenal filter if thrombus extends through existing filter
- Pharmocomechanical rather than purely pharmacologic thrombectomy (large thrombus burden, severe symptoms)
- Re-establish some flow channel from groin through filter
- Accept residual thrombus in IVC/filter rather than prolonged TPA therapy
- Effective anticoagulation (LMWH) and hydration essential to prevent early rethrombosis
Caval thrombosis

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Caval thrombosis

R

12
Caval thrombosis

Caval thrombosis
Caval thrombosis

Caval thrombosis
Post-transplant iliac DVT

- Can present days to years after kidney or pancreas transplant
- Often associated with graft dysfunction (elevated Cr) and mild unilateral edema
- Graft dysfunction normalizes with restoration of venous outflow
- Aggressive approach to correcting underlying venous stenosis (iliac, caval) to prevent recurrence

Post-transplant iliac DVT: May-Thurner


Post-transplant iliac DVT: IVC filter thrombosis

Chronic venous ulcers

Conventional treatments not effective
compression therapy, perforator ligation, etc.
Few pts with post-thrombotic ulcers have correctable reflux
Leads to a nihilistic outlook for patients based on irreversible loss of valve function

Advances in care of Post-thrombotic syndrome

Unexpected major role for venous stenting in deep reflux disease
S Raju, J Vasc Surg, 2010
504 patients with reflux (54% post DVT) 37% had normal venogram but all stenosis by intravascular ultrasound
88% free from ulcers at 5 yrs.

2009 SVS discussion: “challenges all the previous concepts of pathogenesis and treatment of chronic venous insufficiency”
Chronic venous disease

Fundamental paradigm shift towards proximal obstructive lesions in post-thrombotic and non-thrombotic patients (S. Raju)

Importance of intravascular ultrasound over other modalities (CT, venogram, etc.)

Small differences in area (50%) can cause symptoms

Small improvements in area (50-75%) can heal ulcers
Pre-Treatment Tightest Stenosis = 69.8 mm²
Treated with two 18 x 90 mm Overlapping Stents, extending into IVC
Post-Treatment Cross-Sectional Area = 179.5 mm²

Luminal Gain of 110mm² or 157%

68 year old male with severe bilateral venous ulcers (circumferential)
S/P bilateral DVT, numerous procedures for superficial reflux
Weekly Unaboot changes in clinic for 3 years by me, 5 years by my partners before

https://clinicaltrials.gov/ct2/show/NCT02142062
Venogram vs. Intravascular Ultrasound (IVUS) for Diagnosing Iliac Vein Obstruction (VIDIO) Case study, images, and findings courtesy of Robert Tahara, MD. Dr. Tahara is the investigator of VIDIO, a Volcano sponsored study.
Results from this case study are not predictive of future results. Data on file at Volcano clinical affairs department.
“Poor opacification of the iliac veins limits assessment of thrombus. Possible compression of left iliac vein by artery”
Evaluation of venous ulcers

- Rule out arterial disease
- Wound care
- Nutrition evaluation
- Venous duplex examination with reflux
- Iliac venogram or ablation of reflux first?
Evaluation of venous ulcers

- Treated GSV reflux when diameter > 5 mm
- Otherwise iliac venogram and stenting of all lesions >50% decrease in area
- All patients with ulcer and leg swelling received iliac venogram
- How does iliac vein stenting compare with saphenous ablation?
Technical Points

- Puncture femoral vein or GSV mid-thigh or lower, **not common femoral vein** to keep tip of sheath low enough to allow stenting down to common femoral vein
- Know normal sizes of external and common iliac veins to identify long tubular stenosis or chronically shrunken veins
- Unlike arterial disease, stent into common femoral vein if needed
Iliac interventions: Followup

- Postoperative ASA+clopidigrel for 90 days then ASA 81 mg only
- IVC/iliac Duplex and office visit every six months
- Encourage stocking use, exercise and weight loss
- For ulcers, aggressive wound care (referral to wound care center)