Abdominal & Pelvic Venous Obstructive Pathologies & Syndromes

- May-Thurner Syndrome
- Other Iliac Vein & IVC Obstructions
- Nutcracker Syndrome
- Median Arcuate Ligament Syndrome

Iliac Venous Compression (May-Thurner Syndrome)

**Background**

- In 1851, Virchow observed iliofemoral DVT 5 times more likely to occur in the left lower extremity.
- In 1957, May & Thurner provided an explanation:
  - Left common iliac vein is compressed between the right common iliac artery anteriorly and 5th lumbar vertebral body posteriorly.
  - Compression & pulsatility produces accumulation of collagen & elastin referred to “venous spur” *
  - High prevalence of non-thrombotic iliac venous lesions in pt’s with chronic venous disease. **
  - Overall prevalence of MTS is 18-49% among pt’s with LLE DVT. ***
  - Predominantly females 20–40 years old

* May & Thurner. The cause of the predominantly sinistral occurrence of thrombosis of the pelvic veins. Angiology 1957;8:419-27
** Raju & Neglen. High prevalence of non-thrombotic iliac venous lesions in chronic venous disease... J. Vasc Surg 2006;44:136-143

Non Contrast MRV

- Time of Flight (TOV)
- 2D Fiesta (SSFP)
- Modified SSFP (Inhance)

Contrast MRV

- 3D FSPGR (3D MRA)
- Time Resolved MRV
- 2D FSPGR Post GD
- 3D Fiesta Post GD
- Intravascular CE MRV
Is Iliac Venous Compression Always Significant?

- Iliac venous compression is a frequent anatomic variant and is incidentally observed on many cross sectional studies *
- Luminal compression of the left CIV can be seen in up to 25% of asymptomatic healthy individuals *
- Compression becomes clinically significant only if it causes hemodynamic changes in venous flow or venous pressure evident by:
  - flow reversal,
  - presence of pelvic venous hypertensive collaterals,
  - or if it leads to DVT


Iliac Venous Compression
Utility of 2D TOF to Determine Hemodynamic Significance

Iliac Venous Compression CTV Techniques

- Conventional CE CTV
- Catheter Directed CE CTV
  - 22 g angiocath in:
    - Ipsilateral dorsal foot vein
    - Ipsilateral CFV
  - ~30 cc 1:3 dilution (300g)
  - Scan from caudal-cranial with 1.5cc/sec injection after ipsilateral CFV and or IVC bifurcation timing run

Direct vs Indirect CTV
Stent Surveillance S/P Lysis of Iliofemoral DVT

Catheter Directed CTV
Surveillance of MTS Stent

Other Iliac Venous & IVC Obstructions
Summary

- Non invasive imaging should be used for workup of patients with clinical suspicion of abdominal & iliac venous compression
- Duplex doppler ultrasound is usually the first modality to screen/confirm for iliacal obstruction
- TOF assists in determining hemodynamic significance of MTS
- Catheter directed CTV provides a more accurate method to interrogate iliacal stent patency