Iliac vein stenosis and Saphenous reflux: which is more important?

SESHADRI RAJU MD. FACS.
THE RANE CENTER
JACKSON. MS.

Disclosures

• Stock in Veniti inc.
• US Patent: IVUS diagnostics in CVD
• Stent usage in iliac-femoral veins is currently off label.

Pathophysiologic Basis Of Saphenous Reflux & Iliac

• Shear: may be operative in C 1-C 2 disease.
• Saphenous reflux can cause C 3-6 disease but the mechanism is by upsetting calf pump ie. shortening VFT in Amb. venous pressure.
• Iliac vein stenosis also causes C 3-6 disease but there are differences in clinical profile particularly in C-3 disease.

Saphenous reflux can cause ankle edema but grade 3 edema like this is iliac in origin, not saphenous

Which is the culprit? Saphenous reflux or iliac vein stenosis?

• Saphenous reflux can cause C 4-6 reflux but has to be substantial – at least 30 cc to upset the calf pump.
• Saphenous < 5.5 mm in size cannot put out 30 cc of reflux because of size limitation.
• Saphenous >5.5 mm can but many do not because duration or velocity of reflux is not large.
• Actual volume of Saphenous reflux can be calculated by lumen area ($\pi r^2$) X duration sec. X velocity.

Which is the culprit? Saphenous reflux or iliac vein stenosis?

1. Calf pump assessment with APG and/or Amb. Venous pressure is necessary in assessment of complex cases.
2. In C 4-6 disease, saphenous reflux <30 cc is not the culprit but intrinsic calf pump disease not caused by reflux.
3. In some limbs, saphenous reflux >30 cc can be compensated by a super efficient calf pump.
4. In the above two instances, either iliac vein stenosis or calf pump disease (both raise peripheral venous pr. – the basis of CVD) is the culprit in C 3-6 disease.
5. If iliac vein stenting results are inferior in calf pump disease is not known.
Ambulatory Venous Pressure

Airplethysmography and Amb Venous Pressure

Maximum Reflux Potential and Duplex Measured Reflux vs. GSV Diameter (n= 119)
All limbs except 1 with Measured Reflux > 30cc. had a diameter ≥ 5.5 mm
At least 30cc. reflux probably required to effect calf-pump Raju et al JVS-VLD 2015; 3:8-17

Calf-pump Mechanics, Normal and Abnormal

• ↑VV with ↑EV can buffer reflux
• ↓Compliance, ↓VV, ↓EV or ↑Art. Inflow can decrease VFT and magnify reflux even <30cc.