Venous Clinical Examination and Hemodynamics:
Identifying Reflux Pathways
With Duplex Ultrasound Mapping

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VEITH November 19, 2014
7:43-7:48 AM

Clinical decision making
Facilitated by categorizing “patterns of reflux”

• Patterns:
  – Great Saphenous Vein (GSV)
  – Small Saphenous Vein
    • and its thigh extensions
  – Non Saphenous Veins
  • Multiple patterns can co-exist

Great Saphenous Vein
“Sub-patterns of reflux”

• Source
  – Saphenofemoral junction

Great Saphenous Vein
“Sub-patterns of reflux”

• Source
  – Below the junction
    • Perforating vein
    • Tributary
      • External pudendal vein

Great Saphenous Vein
“Sub-patterns of reflux”

• Extent
  – Varicose veins
    • Thigh or calf
  – Malleolar level
  – Segmental
  – Cell patients
    • ? To the ulcer bed

Disclosures

• No relevant disclosures
Anterior Accessory Saphenous Vein reflux
different pattern

- More anterior & lateral than the GSV
  - Directly anterior to FV and SFA
  - Seen on DUS
  - Varicose veins on the anterior thigh

- AA GSV reflux
  - can lead to GSV reflux

Pattern correlates with disease severity

SSV reflux

Thigh extension of SSV (Giacomini) reflux

Reflux pathway involving both GSV and SSV
Non-saphenous veins

- Up to 30% of patients
  - 80% female
  - Often seen in patients with other patterns

- Patterns include:
  - Pelvic derived
    - Pudendal
    - Gluteal
    - Sciatic
  - IPV directly to varicose veins
    - Mid thigh, lateral thigh and popliteal fossa
  - Saphenous space varicose veins

Malgor and Labropolous Phlebology 2013;28 Suppl 1:51–54

GSV and non-GSV patterns commonly together

Perforating vein mapping

- Incompetent perforating veins (IPV)
  - Direct filling of varicose veins
  - Local venous hypertension near venous leg ulcers (VLU)

- In C2 patients with no other cause
  - Popliteal IPV
  - Lateral thigh IPV
  - Mid thigh or paratibial IPV

Perforating vein mapping

- Incompetent perforating veins (IPV)
  - Direct filling of varicose veins
  - Local venous hypertension near VLU

- IPV in C2 patients
  - Popliteal
  - Lateral thigh
  - Mid thigh
  - Paratibial
Perforating vein mapping

- "Pathological Perforator"
  - incompetent, large and adjacent to an open ulcer

Diagnostic criteria:
- ≥ 500 msec reflux
- ≥ 3.5 mm diameter
- "adjacent" to open ulcer
- Transmitting high pressure to the ulcer bed

Conclusions

- Categorizing reflux in patterns
  - Facilitates
    - Decision making
    - Communication

- Several can exist in a given patient
  - Incomplete appreciation of multiple coexistent pathways
    - may explain "recurrences"

Thank you for your attention