Venous Anatomy for Sclerotherapy

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Disclosures:
Reference: Presentation dated 5/11/2015
High Level Overview:
Venous Anatomy of Lower Extremities
Barbara Deusterman, RN


Anatomy of a Vein
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Competent or “normal” valve

Venous valves are bicuspid (two) flap like structures made of elastic tissue. The valves function to keep blood moving in one direction.

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Normal Flow

Flow Dynamics

Deep Veins
Perforating veins
Large Superficial veins
Tributary veins
Reticular veins
Venules
Capillaries
What makes up the venous system?

- Deep venous system: The channel through which 90% of venous blood is pumped out of the legs
- Superficial venous system: The collecting system of veins
- Perforating veins: The conduits for blood to travel from the superficial to the deep veins
- Musculovenous pump: Contraction of foot and leg muscles pumps the blood through one-way valves up and out of the legs

Deep and Superficial System Location and Communication

Deep System
Nerves

The Saphenous nerve is the largest and longest branch of the femoral nerve and supplies the skin over the medial side of the leg.

The sural nerve runs with the small saphenous vein on the posterior leg just lateral to the Achilles tendon.

Muscular Pumps

- Normal venous return requires a “pump”
- Muscle action sends blood up the veins of the leg and competent valves prevent reflux/retrograde blood flow
- There are three muscular pumps in the legs:
  - Foot
  - Calf
  - Thigh
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Calf Muscle Pump

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Reflux: How does it contribute to Varicose Veins?

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Where does Visually-Guided Sclerotherapy fit in?
Vein branching leading to the saphenous truncal veins include:

- Telangiectasias (also known as telangiectatic or spider veins)
  - Are flat red vessels on the skin's surface
  - 0.1 mm – 1 mm in diameter
- Venulectasias (veins)
  - Are bluish vessels which may be distended above the skin
  - 1 – 2 mm in diameter

Vein branching leading to the saphenous truncal veins include:

- Reticular veins (also known as feeder veins)
  - Have a cyanotic hue
  - 2 – 4 mm in diameter
  - Associated with telangiectasias
- Varicose veins
  - Have incompetent valves with increased venous pressure leading to progressive dilatation and tortuosity of the vein walls
  1. Primary varicose veins – likely due to multiple factors such as heredity, female sex hormones, obesity, pregnancy, or long episodes of standing
  2. Secondary varicose veins (less common) – involves trauma, congenital absence of valves, aneurysms, or obstruction

**Lateral Subdermal Plexus**
Thank you.