Clinical Evaluation of Patients With Venous Insufficiency

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Disclosure

Consultant:

- Bard™ Canada
- Boston Scientific ™ Canada
- Edwards Life Sciences ™
- Baylis™ Canada
- Sigmacon ™
- Diomed™
- Dornier™
Outline

- Venous Pathophysiology
- Venous Anatomy
- Venous History
- Venous Physical Exam
- Venous Ultrasound
Background

- 1 in 5 North Americans
- Approximately 25% of women have some type of lower extremity venous insufficiency
- 72% of American women over 60
- Approximately 15% of men have some type of lower extremity venous insufficiency
- 40% of North American men over 60
Pathophysiology
Vein Valves

- One-way valves allow blood to flow against the force of gravity
  - Flaps or “cusps” act as gates:
    - Open to allow flow toward the heart
    - Close to prevent backflow of blood
Venous Reflux

- Backflow causes pile-up of blood and increased pressure
- Vein becomes engorged:
  - High pressure
  - Thin walls
  - Little muscle support
- Diseased GSV can enlarge to diameters above 10mm
Failure of valves - reflux

- Blood falls down by gravity causing increased pressure
- Varicosities are formed
What is the Physical Appearance of Venous Insufficiency?
Venous Anatomy
Venous System

Patient Educational Aid

VEINS

Normal venous valve

Venous valve with clot

SUPERCIAL VEINS

DEEP VEINS
Compartments of the Thigh

SC, Superficial compartment; 
DC, deep compartment.
Great Saphenous Vein Anatomy
Perforating Sites

- Hunterian perforating vein
- Dodd perforating vein
- Boyd perforating vein
- Cockett perforating veins (I, II, III)
- Inframalleolar perforating vein

Hunterian perforator insufficiency
Competent Dodd perforating vein
Boyd perforator insufficiency
What are symptoms
- Swelling
- Heaviness (wooden legs)
- Pain
- Ulceration
- Itching
- Night cramps

Location of varices
- Vulvar/vaginal
  - Symptoms of pelvic congestion?
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Confidential Patient History for Leg Veins

Name __________________________ Date of Birth (mm/dd/yyyy) _____/_____/_____
Address __________________________________ City __________________________
Province __________ Postal Code __________
Home Telephone __________________ Work Telephone __________
Health Card # ___________________ Version Code __________ (one or two letters on card)
Family Doctor ___________________ Referring Doctor (if any) ___________________
Would you like us to send a report to your family doctor? Yes No
How did you learn about our clinic? ________________________________________

Past Medical History
1. Have you ever been in the hospital as a patient? Yes No
   If yes, specify when and for what reason __________________________

2. Have you ever had surgery of any kind? Yes No
   If yes, please specify when and what type of surgery _______________________

Vein History
1. Which leg is the most bothersome to you? Right Left Equal

2. Have you ever had your veins evaluated before Yes No
   If so, what doctor and when? __________________________
   Did this doctor perform any tests on your veins? (Example: Ultrasound) ______

3. Do you wear support hose prescribed by a doctor? Yes No
   If yes, what type and do they provide relief? _______________________

5. Have you ever had any vein surgery? (Stripping) Yes No
   If yes, what leg? Right Left Both
Relevant History

- Prior vein treatment(s)
- Prior history of DVT
  - History of multiple spontaneous abortions can indicate hypercoagulable state
- Family history of DVT
- Personal or family history of PVD or CAD
  - Patients do need to be counseled that the saphenous vein is potential bypass
Patient Expectations

- What are patient’s expectations
  - Symptom relief
  - Cosmetic
  - Both
Venous Physical Exam
Physical Exam

- **Swelling**
- **Skin changes**
  - Corona phlebectasia
    - Clusters of spider veins
  - Hemosiderin deposition
  - Healed or open ulcers
- **Location of varices**
  - 360 degree viewing
  - Leads to detailed evaluation of highly suspect veins (e.g. ALT or SSV)
- **Distal pulses**
360 Degree View
External Rotation
“The BIC Pen”
CEAP Classification
CEAP Classification

- C: Clinical
- E: Etiology
- A: Anatomy
- P: Pathophysiology
CEAP Classification

- **C-Clinical findings**
  - C0-no visible varicose veins
  - C1-spider or reticular veins
  - C2-varicose veins
  - C3-edema
  - C4-skin changes without ulceration
  - C5-skin changes with healed ulceration
  - C6-skin changes with active ulceration
CEAP Classification

- **E-Etiology**
  - C-congenital
  - P-primary disease
    - Not due to other cause
  - S-secondary
    - Usually due to prior DVT

- **A-Anatomy**
  - Which vein is involved
    - Superficial
    - Deep
    - Perforating
CEAP Classification

- **P-Pathophysiologic component**
  - Reflux
  - Obstruction
Functional Assessment

- 0-asymptomatic
- 1-symptoms but can function without supporting device
- 2-patient who can work an 8 hour day only with a support device
- 3-unable to work
Venous Ultrasound
For those starting to treat these patients, participation in the duplex is essential

Evaluate for deep venous pathology
- Current/prior DVT
- Deep venous reflux

Evaluation of Superficial System
- Done with patient standing
- Examiner positioning/comfort is important
Goals of Ultrasound Exam

- Determine highest point of reflux
- Identify anomalies/unusual vessels
- Establish treatment plan
- Useful tool to show to patients so that they understand treatment plan
Superficial Venous US Evaluation

- Gray scale transverse covering entire length of vein
  - Size of vein
  - Caliber changes
  - Location of tributaries
  - Location of perforators
  - Course of vein/anomalies
    - Duplicated system
    - Does it exit fascia
Gray Scale Imaging
Great Saphenous Vein
Gray Scale Imaging
Great Saphenous Vein-
Extra facial
Gray Scale Imaging
Small Saphenous Vein
Superficial Venous US Evaluation

- Color flow and duplex
  - Compression on varicosities to assess for reflux
    - Reflux less than 0.5 sec is physiologic
    - Greater than 0.5 sec is pathologic
Transverse Color Flow
Longitudinal Color Flow
Venous Duplex Assessment

Col 72% Map 7
WF Low
PRF 1500 Hz
Flow Opt: Med V
BW  Pg
Col  Pg

SV Angle 60°
Dep 1.1 cm
Size 2.0 mm
Freq 4.0 MHz
WF Low
Dop 51% Map 4
PRF 1515 Hz

LT GSV
Vulvar and Lower Extremity Varicosities on MRI
End of Exam

- Determine Patient Expectations
- Risk factor assessment
- What is etiology of varicose veins
  - What is the highest point of reflux
- Treatment options
  - Stripping
  - Thermal ablation of incompetent vein
  - Ambulatory phlebectomy or sclerotherapy
Thank You!

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