Evaluation and Management of Chronic Venous Insufficiency

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Spider Veins and Varicose Veins
Chronic Venous Insufficiency (CVI)
25 Million people suffer from venous reflux disease, the underlying cause for most varicose veins.
Healthy Vein Valves & Correct Blood Flow

Damaged Vein Valve & Incorrect Blood Flow
Epidemiology

- Estimated 25 million people in the US have varicose veins
- 2 - 6 million have advanced CVI
- Nearly 500,000 venous ulcers
Prevalence and Etiology of Venous Insufficiency

Venous reflux disease is 2x more prevalent than coronary heart disease and 5x more prevalent than peripheral arterial disease.
Discrepancies in Chronic Venous Insufficiency

Of the estimated 25 million people with symptomatic CVI:

- Only 1.7 million seek treatment annually
- Over 23 million go untreated

## Prevalence by Age and Gender

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 29</td>
<td>8%</td>
<td>1%</td>
</tr>
<tr>
<td>40 - 49</td>
<td>41%</td>
<td>24%</td>
</tr>
<tr>
<td>60 - 69</td>
<td>72%</td>
<td>43%</td>
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Economic Impact

• Over 2 million work days are lost annually in the US
• Accounts for over $1.4 billion in spending each year
Risk factors of venous insufficiency:

- Gender
- Age
- Heredity
- Pregnancy
- Standing occupation
- Obesity
- Prior injury or surgery
- Sedentary lifestyle
Symptoms of venous insufficiency:

- Leg pain, aching, or cramping
- Burning or itching of the skin
- Leg or ankle swelling
- "Heavy" feeling in legs
- Skin discoloration or texture changes
- Open wounds or sores
- Restless legs
- Varicose Veins
CEAP Classifications

- **C** = Clinical signs (grade 0-6)
- **E** = Etiologic Classification (congenital, primary, or secondary)
- **A** = Anatomic Distribution (superficial, deep, perforator; alone or in combination)
- **P** = Pathophysiologic Dysfunction (reflux of obstruction; alone or in combination)
Clinical Classifications of Venous Insufficiency (CEAP)

- Class 0 - No visible or palpable signs of venous disease
- Class 1 - Telangiectasias or reticular veins
- Class 2 - Varicose veins
- Class 3 - Edema
- Class 4 - Skin changes
  - (4a) Skin changes including pigmentation or venous eczema
  - (4b) Skin changes with lipodermatosclerosis
- Class 5 - Healed venous ulceration
- Class 6 - Active venous ulceration
Stasis Dermatitis

- Usually the first sign of CVI
- Starts at the medial aspects of the shin around and proximal to the ankle
- Edema is more pronounced in the evening and resolves overnight
Stasis Dermatitis

- Skin becomes dry and severely itchy
- Significant hyperpigmentation
- Progressive disease leads to lipodermatosclerosis
- Eventually venous ulcers develop
- Concomitant contact dermatitis common
Stasis Dermatitis Treatment

• Treat underlying cause of leg swelling
• Compression
• Leg elevation
• Dry skin care
• Topical Steroids (triamcinolone or fluocinonide ointment, fluocinolone oil)
Lipodermatosclerosis

- Later stage of stasis dermatitis
- Bound down/indurated skin on lower exts
- Acute phase
- Chronic phase
Acute Lipodermatosclerosis

• Can mimic cellulitis
• Pain, warmth, erythema, and some induration
• Most often located on the medial lower leg above the malleolus
Chronic Lipodermatosclerosis

- Marked sclerosis of the skin
- Sharply demarcated induration
- Hyperpigmentation
- Inverted wine bottle appearance
Lymphedema

• Accumulation of lymph fluid within extravascular tissues
• Venous hypertension may occur simultaneously
• Lymphatic channels can become incompetent and dilated with repeated tissue injury
• Positive Stemmers sign
Stemmer’s Sign

• Pinch and lift a skinfold at the base of the second toe or middle finger
• If you can pinch and lift the skin = negative Stemmer’s sign (no lymphedema)
• If you can’t pinch and lift the skin = positive Stemmer’s sign (lymphedema)
Causes of Lymphedema

- Hereditary/Congenital
- Recurrent lymphangitis and cellulitis
- Parasitic infections
- Lymph node dissection
- Malignant obstruction
- Obesity
- Radiation injury
- Acne vulgaris and acne rosacea
<table>
<thead>
<tr>
<th></th>
<th>Venous</th>
<th>Arterial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Medial malleolus</td>
<td>Distal sites (toes) Pressure sites</td>
</tr>
<tr>
<td><strong>Morphology</strong></td>
<td>Moist Irregular borders</td>
<td>Dry “Punched out”</td>
</tr>
<tr>
<td><strong>Surrounding skin</strong></td>
<td>Hyperpigmentation</td>
<td>Shiny atrophic skin Hair loss</td>
</tr>
<tr>
<td><strong>Other findings</strong></td>
<td>Varicose veins edema</td>
<td>Weak pedal pulses Prolonged capillary refill</td>
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Workup
Treatment
Treatment

• Conservative Measures
• Sclerotherapy
• Vein Stripping
• Endovenous Ablation
First Line Treatment

- Treat underlying cause of leg swelling
- Compression
- Leg elevation
- Dry skin care
- Topical Steroids for dermatitis (triamcinolone ointment)
- Consider venous duplex ultrasound
Sclerotherapy

Before

After
Sclerotherapy Solutions

- Sodium tetradecyl sulfate
- Glycerin
- Polidocanol
- Hypertonic Saline
Sclerotherapy for varicose veins

A. Injection

B. Needle insertion into varicose vein

C. Chemical injection and vein constricted

Skin

Varicose vein

Chemical released

Constricted vein
Vein Stripping

- Saphenofemoral Junction
- Femoral Vein (Deep System)
- Great Saphenous Vein (Superficial System)
Disposable catheter inserted into vein

Vein heats and collapses

Catheter withdrawn, closing vein
Post-Procedure Instructions

- Ambulate frequently
- Avoid heavy/strenuous exercise for a few days
- Avoid prolonged sitting or standing
- Wear compression stockings for up to 2 weeks
- Patient should return for duplex scan within 72 hours
- Patient can go back to work the next day
Radiofrequency Endovenous Ablation

-97.4% vein occlusion 1 year post-treatment.

-95% reflux-free rate at 5 years
Endovenous heat-induced thrombosis (EHIT)

• In 1 prospective study:
  – 3% developed EHIT
  – Nonfatal pulmonary embolism occurred in 0.03%
  – Resolution occurred in 2 to 4 weeks in most patients
  – Mostly managed with aspirin and observation
  – Severe cases should be anticoagulated
References

• American Heart Association, SIR,Brand et al. “The Epidemiology of Varicose Veins: The Framingham Study”
• Sufian et al. Journal of Vascular Surgery: Venous and Lymphatic Disorders; Volume 1, Issue 2 , Pages 159-164, April 2013