

Venous Ulcers Are Usually Due to Axial Reflux from the Thigh to the Calf: What Can be Done about It Surgically or Interventionally?

NOTES

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I will start my presentation by showing a picture of six patients with severe skin changes of their legs, the majority with ulcerations. To illustrate the controversy of chronic venous disorders (CVD), I will assert that the majority of physicians would assume that these are legs with complications from previous DVT, and would start conservative treatment without further investigation with Unna boot or similar compression device. I will ask the audience if they can determine the following from the clinical picture:

- Whether the etiology is primary, secondary (post thrombotic), congenital, or even nonvenous
- Whether the anatomic distribution of venous disease is superficial, perforator, deep, or a combination of these
- Whether the pathophysiology is due to reflux, obstruction, or a combination of both

In fact, a proper investigation of these six patients regarding cause of their skin changes led to the following diagnoses and treatments:

- **Case 1:** GSV incompetence-GSV obliteration using radiofrequency (RF) heating
- **Case 2:** GSV + perforator incompetence-GSV obliteration + perforator interruption
- **Case 3:** isolated perforator incompetence-perforator interruption
- **Case 4:** primary incompetence of GSV, perforators, and deep veins-GSV obliteration, perforator interruption, and deep venous valve repair
- **Case 5:** secondary incompetence of GSV, perforators, and deep veins-GSV obliteration, perforator interruption and femoral vein transposition
- **Case 6:** no venous disease-no surgery

The diagnosis of CVD is organized on three levels: (1) office visit with history, clinical examination, and hand-held Doppler ultrasonography; (2) noninvasive vascular laboratory tests with mandatory duplex scanning, and possible plethysmography; (3) invasive investigations or more complex imaging studies, including ascending and descending venography, varicography, venous pressure measurements, venous spiral computed tomography, and MRV. Proper diagnosis leads to an accurate classification, which guides the correct treatment. The CEAP classification of CVD was established by an ad hoc committee of American Venous Forum (AVF) in 1994 and revised in 2004¹:

- Clinical class: C0-C6
- Etiologic class: primary (Ep), secondary, postthrombotic (Es), congenital (Ec), and no venous etiology identified (En)
- Anatomic class: superficial veins (As), perforator veins (Ap), deep veins (Ad), and no venous location identified (An)

- Pathophysiology: reflux (Pr), obstruction (Po), or combination of both (Pr,o)

Utilizing this diagnostic model, we classified 98 legs with active venous ulcers at Straub Clinic and Hospital, Honolulu, Hawaii.² Seventy-five of the 98 ulcers were recurrent, 66 of 98 were of primary etiology, and 32 of 98 were of secondary etiology. Axial reflux from groin to calf was found in 50 of 66 (75%) in primary etiology (GSV axial reflux 30 of 66, deep axial reflux 10 of 66 and combined GSV + deep axial reflux in 10 of 66), and 25 of 32 (78%) in secondary etiology (GSV axial reflux 4 of 32, deep axial reflux 15 of 32, and combined GSV + deep axial reflux in 6 of 32). Incompetent perforators were identified in 82% in primary etiology and 78% in secondary etiology. The classification led to the following opportunities for active treatment. In primary etiology (66 legs):

- 40 legs-obliteration of GSV using RF or laser
- 22 legs-duplex-guided sclerotherapy for incompetent perforators
- 4 legs-deep axial reflux to the ankle; consider deep valve reconstruction

In secondary etiology (32 legs):

- 10 legs-obliteration of GSV using RF or laser
- 18 legs-duplex guided sclerotherapy for incompetent perforators ± SSV obliteration
- 1 leg-iliac vein angioplasty + stenting

In summary, an active therapeutic plan was suggested for 95 of 98 legs with venous ulcers, based on proper diagnosis and accurate classification.

Credo: The cornerstone for management of CVD is a proper diagnosis and accurate classification of the underlying venous problem, which creates the base for correctly directed treatment.

References

1. Eklöf B, Rutherford RB, Bergan JJ, et al. Revision of the CEAP classification for chronic venous disorders: Consensus statement. *J Vasc Surg* 2004;40:1248-52.
2. Danielsson G, Arfvidsson B, Eklöf B, et al. Reflux from thigh to calf, the major pathology in chronic venous disease: surgery indicated in the majority of patients. *Vasc Endovasc Surg* 2004;38:209-18.