Venous Ulcers: An Algorithm for Treating Deep and Superficial Venous Occlusion and Incompetence

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Background

2014 Guidelines for treatment of VLUs
- Compression therapy
  - Grade 1A
- Ablation of incompetent superficial veins
  - Grade 2C
- Ablation of incompetent perforator veins near the VLU
  - Grade 2C
- Venous angioplasty and stent recanalization for caval/iliac vein occlusions
  - Grade 1C

Conservative Management (Compression + Antibiotics)

Authors Year Follow-up Ulcers Healed (%) Unhealed Ulcers (%)
Gohel et al 2007 36 mo 89% 11%
van Gent et al 2006 26 mo 73% 27%
Mayberry et al 1991 30 mo 93% 7%

Average Unhealed: 15%

Endovenous Management: Laser Ablation of Axial Veins (EVLT)

Endovenous Laser Therapy in the Treatment of Lower-limb Venous Ulcers

- Cumulative ulcer healing rates:
  - 1 month = 92.1%
  - 3 months = 92.1%
  - 6 months = 92.3%
  - 12 months = 97.4%

Perforator Management: Radiofrequency Ablation

Endovenous ablation of incompetent perforating veins is effective treatment for recalcitrant venous ulcers

- 45 patients (75 ulcers) with 86 incompetent perforating veins
  - Medial ankle = 61%
  - Calf = 37%
  - Lateral ankle = 2%

- 90% of ulcers healed in patients with at least 1 successful ablation
  - Mean healing time = 4 mo.
Ablation Procedures

Left: 63
Right: 47
Overall ablation success rates:
GSV (100%), SSV (95%), PTV (86%)

Ulcer Locations

Chronic Venous Insufficiency
CEAP 5/6 (Venous Leg Ulcers)

- Prospective study of 78 CEAP 5/6 patients to assess incidence of proximal venous disease
  - Duplex ultrasound plus combined with either CTV or MRV
  - M:F = 50%; mean age = 60
  - Ulcers equally distributed between R and L
  - 50% had Hx of DVT
- 37% had iliofemoral stenosis of >50%; 23% had stenosis/occlusion>90%
- Independent risk factors:
  - Women
  - Hx of DVT
  - Deep venous reflux

Contemporary Outcomes of Elective Iliac Vein Stenting in Chronic Venous Occlusive Disease

WVS 2017

Treatment of Deep Venous Stenosis and Superficial Reflux Impacts Ulcer Healing of Venous Leg Ulcers Refractory to Conservative Management

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On Behalf of the VLFDC
Objective

- Evaluate the relative contribution of correction of deep, superficial, and perforator vein abnormalities in the healing of venous leg ulcers.

Methods

- 9 institutions in the United States enrolled data
- Inclusion criteria:
  - Active venous ulcer, treated between 2013 and 2016
  - Patients treated with compression, ablation, angioplasty and/or stenting were enrolled
- Index leg – limb with largest ulcer
- Index ulcer – ulcer with largest surface area

Patient Demographics

- 832 patients
- Mean BMI = 33.4
- History of DVT = 27%
- Reflux
  - Deep: 34%
  - Superficial: 92%
  - Perforators: 76%
- Stenosis > 50%
  - Iliac vein: 5%
  - Femoral vein: 3%
- Mean age = 62

Ulcer Healing After Ablation of Superficial and Perforating Veins

Ulcer Healing After Iliac Stent

Ulcer Healing After Combinations
Remaining Questions

- How should proximal iliofemoral venous disease be identified?
  - Duplex alone?
  - CT Venogram or MR Venogram?
  - Catheter venogram? IVUS?
- When there are multiple levels of occlusion or reflux, which should be treated first?

Conclusions

- Venous ulcers can be healed with an aggressive approach to incompetent or obstructed superficial, perforating, and deep veins
- Each procedure contributes incrementally to ulcer healing-optimal order still not determined
- The status of the ulcer is the key to determining if there is still “ambulatory venous hypertension”
- If an ulcer is not healing with compression or heals and then recurs, there is a mechanical reason- find it and treat it!