Recurrent Varicose Veins

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Disclosures

None
Possible Causes of Recurrence

- DNA: varicose veins are by nature chronic and recurrent, progress with time
- Suboptimal treatment: not all sources of reflux eliminated: junctions, IP’s, duplicated veins
- Development of new vessels around treated reflux pathways
  - Neovascularization in treated area
REVAS
(Recurrent Varices After Surgery)

- Lofgren et al, Arch Surg, 1971
  - most common cause of recurrence initially felt to be inadequate surgery
  - Recommended flush ligation, full stripping of GSV to foot with all tributaries, treatment of all IP’s
REVAS: UGS of IP’s

- **Thibault, Lewis, J Dermatol Surg and Oncol, 1992**
  - 71% of REVAS in GSV distribution, 33% in SSV distribution, most common cause thought to be IP’s
  - recurrent reflux at SFJ thought to be due to inadequate surgery or pre-operative evaluation
  - described **UGS as method to tx IP’s**, 72-100% success rates at one year described depending on location of IP.
Figure 1. Needle is inserted close to the transducer tip and along sagittal plane of transducer. Depth of target incompetent perforating vein (IPV) is measured on the B-mode image from skin surface to segment of incompetent perforating vein immediately beneath muscle fascia.
Stonebridge et al, Br J Surg, 1995:

- Venograms of 128 legs with recurrence:
- Divided recurrence into 2 types:
  - Type 1 (most common) – reflux thru SFJ, high tributary, neovascularization: theorized due to inadequately aggressive surgery
  - Type 2 – from pelvis, thigh IP (less common)
REVAS: Quantifying Recurrence Rate

- Fischer et al, J Vasc Surg, 2001:

- Long term DUS f/u of 125 limbs s/p aggressive surgery (ligation flush to femoral vein, stripping of GSV and high side tributaries, interruption of IP’s)
  - “60% developed …reconnections at the site of a properly performed ligation of the saphenofemoral junction or reconnections to other deep veins in the immediate neighborhood.”

- Comparison with other well-done shorter term f/u studies suggests reconnections continue to occur over time:
  - Chandler et al: 6 – 26% at 12 mos
  - Kluess et al: 8% at 30 mos
  - Frings et al: 33% at 5 years
Dwerryhouse et al, J Vasc Surg, 1999:

- At 5 year follow-up, 71% of patients who had only ligation had reflux in GSV.

- Neovascularization is the cause of GSV reflux in 52% of those who had flush ligation.
Crossectomy

“Crossectomy” in French literature = flush ligation with interruption of high tributaries, resection of proximal GSV
REVAS: Neovascularization

Frings et al, Phlebologie, 1999:

- 33% recurrence at groin after crossectomy
- histology confirms that the veins in the groin are immature, new veins (neovascularization)
Fischer et al, J Am Coll Surg, 2002

- 60% of limbs s/p GSV “stripping” show recurrent reflux at 30 years
Preservation of High Tributaries

Commentary by Kenneth Myers in Venous Digest: “Crossectomy with meticulous interruption of all tributaries may increase the risk of recurrence…. Would it be heresy to suggest that tributaries draining the low abdomen or pelvis should be preserved at operation?”
“It has been standard practice to dissect tributary vessels at the SFJ very carefully; taking each of the tributaries back beyond the primary and even secondary tributaries if possible. Actually, such dissection apparently causes neovascularization in the groin. This neovascularization has become recognized as a major cause of recurrent varicose veins....Clearly this is an adverse effect of standard surgery....”
Surgical Treatment

70 patients managed by GSV stripping

Post-op duplex at 1 week: Confirmed success

Re-examined after 1 year:
(Treatment failure groups)

- 6% of patients had complete strip track neovascularisation
- 17% of patients had partial strip track neovascularisation

What other methods can we use to treat recurrent varices?

- Electrical - RF Ablation
- Foam sclerotherapy
- Laser EV Laser ablation

Courtesy: P Coleridge Smith
Treatment of Recurrence

Thermal Ablation
- Quicker/easier than surgery
- Great for straight vein segment

Foam Ablation
- Easy
- Works
Incomplete Thermal Ablation

Treatment Failures

- **Incidence:**
  - 0-20%

- **Variable definitions of Success (mostly surrogate outcome measurements):**
  - Sonographic absence of the target vein
  - No flow in treated segment
  - Absence of visible reflux
  - Segmental patency of no more than 5cm without reflux
  - Resolution of symptoms

(Source: *The Vein Book – Chapter 31*)
Heat Catheters vs Neovascularization

- Due to fear of thrombus extending into deep vein (eHIT), heat catheter tips usually positioned 2 or more cm from junction
  - Position prevents "flush" ablation, closure of high tributaries (change in mindset)

- Lack of surgical trauma, maintenance of high tributary drainage may help prevent neovascularization
Incomplete Thermal Ablation

Why is incomplete ablation hard to find:

Depends on many factors

1. the sensitivity of the ultrasound equipment
2. the expertise of the sonographer
3. the vigor and independence with which the exam is conducted
Incomplete Thermal Ablation

- Duplex examination
  - Should include gray scale, compression, and color flow Doppler

- If tx is needed, Ultrasound-guided foam sclerotherapy can convert 80% of incompletely ablated veins to completely ablated veins
Incomplete Ablation

Treatment Failures

Foam

- excellent contrast medium on ultrasound

- injection may also reveal incompletely ablated vein which may appear completely occluded on ultrasound
Recurrence of Pelvic Origin

VV of upper medial thigh, perianal, or gluteal, posterior thigh -> Look at pelvic veins

Treatment: Ultrasound guided foam sclerotherapy
Recurrence Following Thermal Ablation
Pelvic Venous Insufficiency
A common indication to pursue further pelvic insufficiency is:

- early or repeated recurrence of leg varicosities/symptoms
Recurrence Following Thermal Ablation
Pelvic Venous Insufficiency
Truncal & non-truncal incompetent veins
- Thermal/AP/Foam UGS
- Including direct injection sclerotherapy of labial varicosities

Courtesy: Lorenzo Tessari, MD
REVATA Study

- Retrospective cohort study (REVATA)

- Looked at the site, source, and factors of varicose vein recurrence after radiofrequency (RF) and laser ablation.

- Methods: Seven centers enrolled patients into the study over a 1-year period. All patients underwent previous thermal ablation of the great saphenous vein (GSV), small saphenous vein (SSV), or anterior accessory great saphenous vein (AAGSV).

- Results. 2,380 patients were evaluated during this time frame. A total of 164 patients had varicose vein recurrence at a median of 3 years. Perforator pathology was present in 64% of patients.

- Conclusion. Recurrence of varicose veins occurred at a median of 3 years after procedure. The four most important factors associated with recurrent veins included perforating veins, recanalized GSV, new AAGSV reflux, and new SSV reflux in decreasing frequency. Patients who underwent RF treatment had a statistically higher rate of recanalization than those treated with laser.
REVAS Summary

- Recurrent varicose veins initially thought to be due to inadequate treatment of all sources of reflux, lack of flush ligation, inadequate surgery

- Current data strongly favors neovascularization due to surgical trauma as cause of REVAS.
  - Interruption of drainage from normal tributaries may contribute to neovascularization.

- Endovenous techniques may help prevent neovascularization by eliminating perivenous trauma and maintaining drainage of normal high tributaries.
Thank you for your kind attention!