Surgery
(Other than AP)

Vineet Mishra, M.D.

Director of Mohs Surgery and Procedural Dermatology
University of Texas - San Antonio
Surgery Topics

- Traditional stripping “gold standard”
- PIN (Invagination) stripping
- Saphenous Sparing Techniques
  - CHIVA
  - ASVAL
- TIPP (Transilluminated Powered Phlebectomy)
Surgical Objectives

- Ablation of axial and perforator vein reflux
- Good cosmesis
- Improved venous function
- No complications of venous disease and procedures
Great Saphenous Vein

High Ligation Alone

For historical significance only

- Very high recurrence rate
- Minimal, short-lived reflux control


Courtesy John Bergan, MD
Great Saphenous Vein Stripping Technique

Requires:
Local*/regional/general anesthesia

Flush ligation of GSV on Femoral Vein
- 2-3cm oblique groin incision
- No narrowing of FV

Division/ligation of tributaries (traditionally)
- SEV, SCI V, SEPV, DEPV, PASV, AASV
- Stainless Steel clips or suture

Sources: Disease of the Veins – Chapter 7
The Vein Book – Chapter 55
Great Saphenous Vein Stripping Technique

External Stripper – outside the GSV
- More perivenous tissue damage

Invagination (PIN) Stripper
- GSV invaginates on itself as it is removed
- Less tissue damage

Tract may be “packed” with lido/epi-soaked gauze to limit bleeding

Sources: Disease of the Veins – Chapter 7
The Vein Book – Chapter 25
Distal incision at knee or ankle
• more saph. N. damage with groin-to-ankle stripping

Stripper passed proximally and stripped distally to minimize nerve injury

Source: The Vein Book – Chapter 25
To limit blood loss

- Elevate leg
- Hemostatic cuff tourniquet (<1hr)
- Escmarch bandage

“Profound” venous hypertension can occur immediately after stripping

- Thus, if AP is to be performed, do first before stripping to minimize blood loss.

Endoscopic GSV stripping Study

- 60 patients randomized to traditional vs endoscopically-assisted GSV stripping
- 1° endpoint: number of adverse events
- Hematoma, ecchymosis, seroma, wound healing complications and wound infections
- SF-36 health survey

Results

- Rate of postoperative morbidity/complications at week 1:
  - 42% events in endoscopic group
  - 63% in conventional group (difference not significant)

SF-36 assessment suggests endoscopic group had more rapid return to normal activities

Great Saphenous Vein Stripping Technique

Use of Silicone\(^1\) or PTFE\(^2\) (polytetrafluoro-ethylene) or silicone patch following high ligation/stripping

- Reduces incidence of recurrence by “preventing” neovascularization

\(^{2}\) van Rij. Circulation. 2008;118:66-74
GSV Stripping Complications

Blood loss
- kept to minimum with good technique

Infection
- generally in groin incision and uncommon

Saphaneous Nerve damage
- 40% groin-to-ankle stripping
- 7-10% groin-to-knee stripping

Lymphocoele/lymphedema
- 2.5%

“The measurement and classification of recurrence after varicose vein treatment is extremely difficult because there is considerable difference between observers on what constitutes a recurrence”

Source: Diseases of the Veins – Chapter 7

5-Year Recurrence

- 6% required reoperation for symptoms

Late Recurrence – mean 34yrs

- 47% developed recurrence

PIN (Invagination) Stripping
Fig. 3. PIN stripper. The minuscule head is followed by a flattened “neck.” The small groove indicates the position of the pointed tip meant to perforate the vein wall.

Courtesy Philip Coleridge Smith
PIN (Invagination) Stripping

Courtesy Philip Coleridge Smith
PIN (Invagination) Stripping

Courtesy Philip Coleridge Smith
PIN (Invagination) Stripping

Courtesy Philip Coleridge Smith
PIN (Invagination) Stripping

- Study looking at 39 GSVs stripped + USG tumescent anesthesia

CONCLUSION

GSV stripping using tumescent ultrasound-guided technique

- promotes less bleeding than conventional stripping
- should be performed when stripping the GSV

Neser RA, Caffaro RA. Dermatol Surg. 2011 Feb 22
PIN (Invagination) Stripping

Randomized 60 GSV Patients
- RF
- HL/ PIN stripping
- HL/ Cryo striping

Follow up at 1 day, 1, 2, 6 wks, 1yr:
- clinical f/ u
- duplex Doppler
- analogue scale pain scoring
- activity impairment assessments
- patient satisfaction scoring
- CIVI Q 2 quality-of-life questionnaire

RESULTS

@ 6 week:

Pts treated by RF had the best scores for the following categories: impairment scores, pain scores, and time to return to full activity

@ 1 year:

RF pts more satisfied with their operative procedures and cosmetic appearance of lower extremity compared with pts in the two other treatment groups

Let’s Discuss the Small Saphenous Vein
Small Saphenous Vein Considerations

10% of CVI patients
  - SSV involvement only

Termination of SSV variable
  - 75% join Pop.v. or Fem.v. near popliteal fossa
  - 25% terminate proximal to popliteal fossa

Myers KA, et al. The Vein Book - Chapter 32
  J Phlebology 2002; 2:11-17
Small Saphenous Vein Considerations

75% of patients with SSV reflux also have deep system reflux (Pop.v. or Fem.v.)
  - Usually resolves with SSV treatment

1/3 of patients with GSV reflux have SSV reflux

Lateral malleolar ulcers suggest SSV reflux

The Vein Book – Chapter 32
Small Saphenous Vein Considerations

SSV lies in the fascial plane between gastroc bellies

Sural n. is generally lateral to SSV

Common peroneal and posterior tibial nerves are found near the proximal portion of SSV

SSV may drain into:

- Popliteal Vein, GSV via Vein of Giacomini,
- Deep system (cranial extension of SSV)

The Vein Book – Chapter 32
Small Saphenous Vein Stripping Technique

Pt placed in prone position with knees flexed

Transverse incision in popliteal fossa based on duplex exam

Flush ligation with deep vein mandatory
  • Leave no stump at site

Stripping to mid calf only
  • minimize risk of sural n. damage

Small Saphenous Vein Stripping

Recurrence
- 52% at 3 years

Complications (Not well defined)
- DVT
- Sural nerve damage

The Vein Book Chapter 32
Let’s Explore Saphenous Sparing Treatments!
Saphenous-sparing Treatment of Truncal Reflux

CHIVA (French acronym)

• Normalize venous pressure by ligation of reflux points (perforators)

• Requires:
  • patient/physician patience
  • multiple treatments over years

• Primarily European practice

• Requires highly detailed duplex exam

• Not widely adopted

Source: The Vein Book – Chapter 24
ASVAL

- (Ambulatory Selective Ablation of Varices under Local Anesthesia)
- Technique based on the concept that truncal venous incompetence is due to peripheral veins

ASVAL Study:

- 55 legs w/ GSV reflux + VV
- Rx: Extensive AP only (no GSV trunk Rx)
- Measured reflux duration (RD), peak reflux velocity (PRV) and diameter of GSV at baseline and 1 month post-op

Saphenous-sparing Treatment of Truncal Reflux

ASVAL Study Conclusions

- Reduced reflux in the GSV
- Significant reduction in
  - RD (reflux duration)
  - PRV (peak reflux velocity)
  - size of the GSV
- Suggest that the size of the GSV can be improved by treating tributaries alone

Transilluminated Powered Phlebectomy (TIPP)

Powered method of tributary varicosity removal

Trivex system consists of 2 parts:
- transilluminator/irrigator
- powered resector/suction

Pt is placed under general/MAC/local anesthesia

Source: The Vein Book – Chapter 28
Transilluminated Powered Phlebectomy (TIPP)

Technique

Varicosities to be removed are marked around vein
- Tumescent anesthesia injected

Varicosities are aspirated, morcellated, removed by suction
- More tumescent fluid to tamponade

Source: The Vein Book – Chapter 28
Thank you for your attention!