Endovenous Laser Ablation
an advanced approach to an old problem

Daryl S. Kucey MD MSc MPH FRCSC
Davisville Vein Clinic
Division of Vascular Surgery
University of Toronto
The Problem
Saphenous Incompetence

Alternatives for Treatment

• Conservative (stockings)
• Sclerotherapy
• Surgical Treatments
  • High Ligation and Stripping
  • Thermal Ablation
Historical Approach

• Treatment Options
  ▪ Conservative
  ▪ Sclerotherapy
  ▪ Surgery

• Treatment Choice
  ▪ Clinical Judgement
  ▪ Patient Preference
  ▪ Availability of Resources
Historical Approach

Drawbacks

• Lack of Resources (OR Time)
  ▪ Lengthy waiting list
• Recurrences / Treatment Failures
• Morbidity
• Patient Expectations
• Surgeon satisfaction
The Ideal Treatment

• Easy access to effective treatment

• High success / low recurrence

• Safe

• Patient satisfaction
Treatment Objectives

- Treat vast majority outside OR
- Limit recurrences or treatment failures
- Minimize complications
- Keep surgeons interested in this clinical problem
Treatment Approach

- Office based interventions
- Thorough pre-treatment evaluation
- Minimally invasive, image-guided interventions
Office Based Interventions

EVLA

Foam Sclerotherapy
Office Based Interventions

- Local Anesthetic Only
- Early recovery
- Superior Cosmesis
- High success rate
- Low complications
Pre-Treatment Evaluation

- Patient (and treatment) selection is key to success
- Clinical Judgement alone is inadequate
- Must understand the anatomy and physiology of reflux
- *Image-guided surgery*
SFJ – valve cusps
SFJ – reflux with valsalva
GSV – mid thigh perforator
GSV – mid thigh reflux
Endovenous Laser Ablation

- Office Intervention
- Image guidance
- Local Anesthesia
- No incision
- Less Pain
- Early Recovery
Endovenous Laser Therapy (EVLT)

- First described by Navarro, Min, Bone (Dermatol Surg 2001;27:117-122).
- Laser fiber – (1470nm wavelength)
- Chromophore of laser light tuned to wall of vein
- Thermal injury to endothelium
- Initially thrombotic occlusion
- Ultimately fibrosis, ablation of the lumen
Stepwise Approach to Success

- Patient Selection
- Venous access
- Guidewire insertion
- Positioning of sheath and laser fiber
- Tumescent anesthesia
- Thermal ablation
- Post-treatment compression
Patient Selection

- Large varicose veins due to underlying saphenous incompetence
- Long, short or accessory saphenous
- Saphenous can be large, tortuous, duplicate
Access and positioning

- Percutaneous always
- Imaging is key
- Guidewire / 5 fr sheath
- Position laser at junction
Tumescence

• 1% Lidocaine diluted 1 to 10 with NS - analgesia

• Heat Sink
  - *prevent injury to adjacent tissues*

• Promotes *venospasm*
  - To reduce blood volume and facilitate thermal injury
Thermal Ablation

- 6 W continuous
- Pullback rate 1-3mm per second
- Endothelial injury (or “controlled” phlebitis)
- Tumescence and venospasm are essential
Compression
Greater Saphenous Vein

Pre-Treatment

Post-Treatment
Greater Saphenous Vein

Pre-Treatment

2 Wks Post-EVLT
Lesser Saphenous Vein

Pre-Treatment

Post-Treatment
Accessory Saphenous Vein

Pre-Treatment

Post-Treatment
Conclusions

“EVL A is a safe, effective procedure and an advanced office-based alternative to surgical stripping.”