

# RFA, EVLT, and Nonthermal Therapy for Superficial Venous Reflux – How to Choose?

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# Thermal Tumescent: TT

# Non Thermal, Non Tumescent: NTNT

- Laser
  - Radiofrequency
  - **Steam**
- **Polidocanol  
Endovenous Microfoam  
(US Foam)**
  - **Mechanochemical**
  - **Cyanoacrylate glue**

# Thermal Tumescence (TT)

- TT – 14 years
- Very good closure rates
- Replaced surgical stripping for the GSV and SSV
- Very low perioperative pain
- Return to full activity is generally 7-10 days
- Patient reported outcomes are good
- Proven effective in full spectrum of C2-C6

# Non Thermal, Non Tumescent: NTNT

- Reduced periprocedural pain
- Reduced bruising
- Less recovery time
- Faster return to activity
- Improved cosmetic result
- No risk of nerve injury (GSV or SSV)
- Treat to the Ankle
  - Tumescent can be difficult with lipodermatosclerosis present

# Thermal Tumescent – Achilles Heel

- Hyperpigmentation



Low SQ Fat Regions (Acc GSV)  
Higher Thermal Injury  
Larger GSV Calibers  
Inadequate Tumescent

# Thermal Tumescence – Achilles Heel

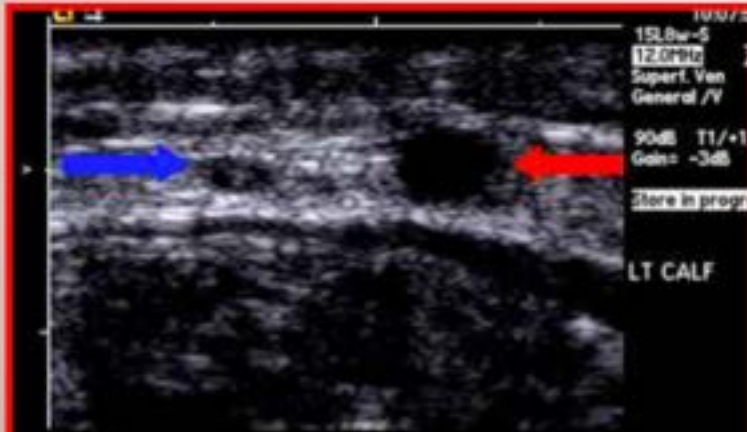
- Hyperpigmentation
- Some experience significant pain
- Nerve Injury
  - #1 Reason for litigation following vein procedures
  - Parasthesias/ Numbness/ chronic pain
  - Saphenous N, Sural N, and C Peroneal N



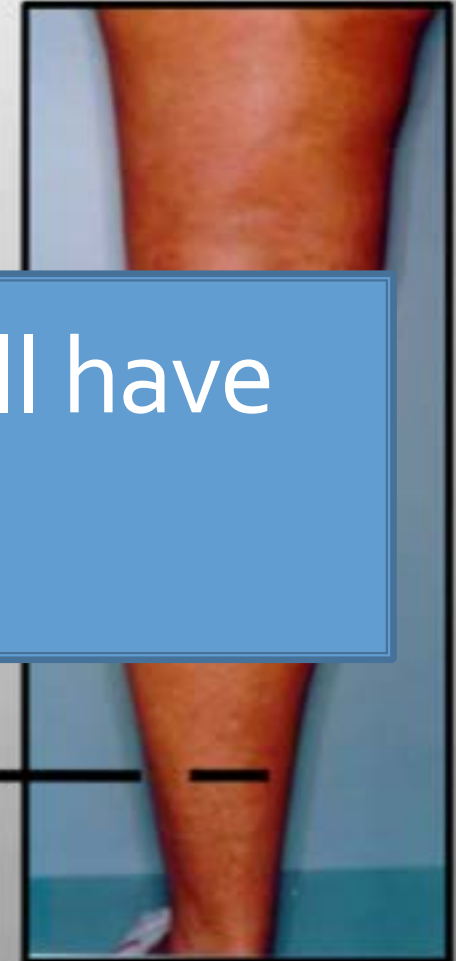


# Sural Nerve

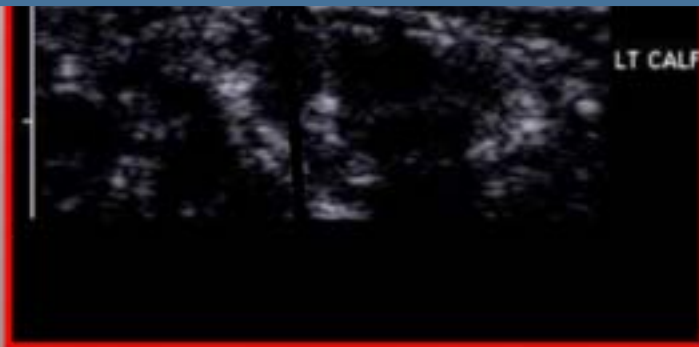
Sural  
nerve



SSV



-4.5% of Sural Nerves will have  
MOTOR Fibers!



# Thermal Tumescence – Achilles Heel

- Hyperpigmentation
- Some experience a significant pain during
- Nerve Injury
  - #1 Reason for litigation following vein procedures
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# NTNT – Foam Sclero

- Tessari Method
- Sodium Tetradecyl Sulfate (STS)
  - 1-3% Concentrations
  - Inexpensive
- Polidocanol
- Custom Formulations
- Risk of systemic circulation
  - Pulmonary hypertension
  - Reactive Airway
  - PFO – risk of arterial embolization



# US Guided Foam Results

- It is still inexpensive
- It does not require a console
- No heat injury
- Pain free
- Very minimal ecchymosis
- Tessari method is inexact

205)

At 6 w

At 6 m

-Dittenger, NEJM.2014.

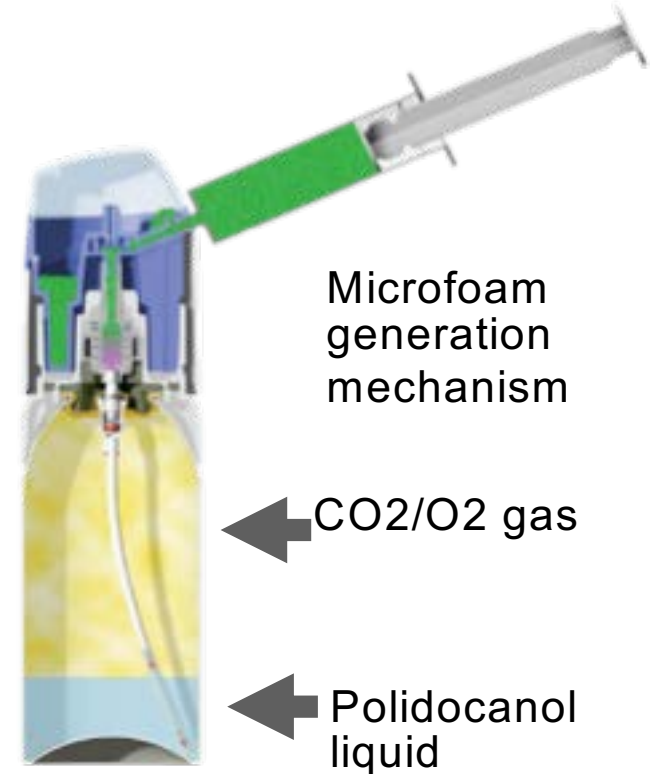
# Varithena

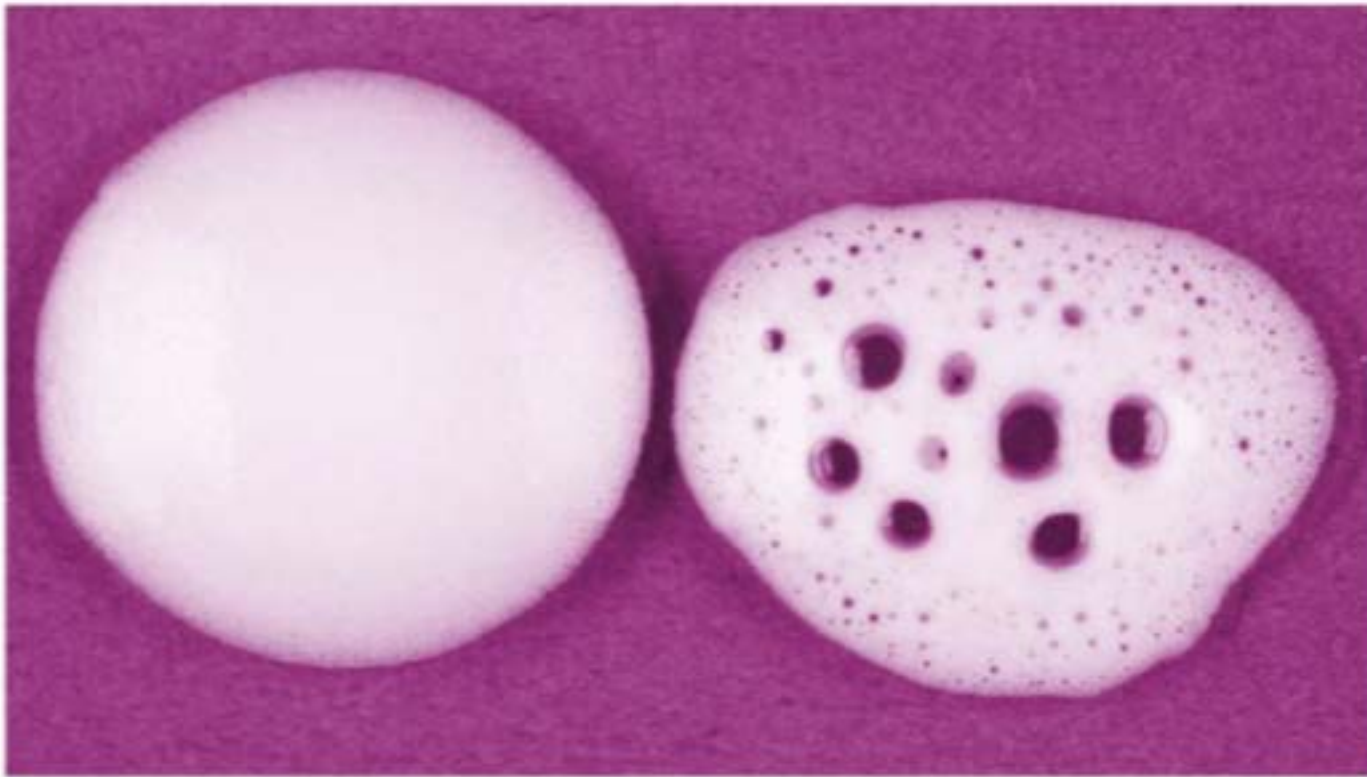
- PEM (polidocanol endovenous microfoam) patent-protected drug/device combination
- Highly uniform sclerosant/gas foam (CO<sub>2</sub>/O<sub>2</sub>)



# PEM: Polidocanol Endovenous Microfoam Varithena™

- Status of trials- safe
- Status of results – 75- 85%
- GSV/SSV/VV/VM
- **Caution:**
  - PFOs (38% CVI population)
  - MCA, TCD hits are detected





Varithena® microfoam

Physician-compounded foam

**Fig 1.** Varithena system highlights. The Varithena microfoam system provides significantly more consistent bubble size compared with physician-prepared microfoam compounds.

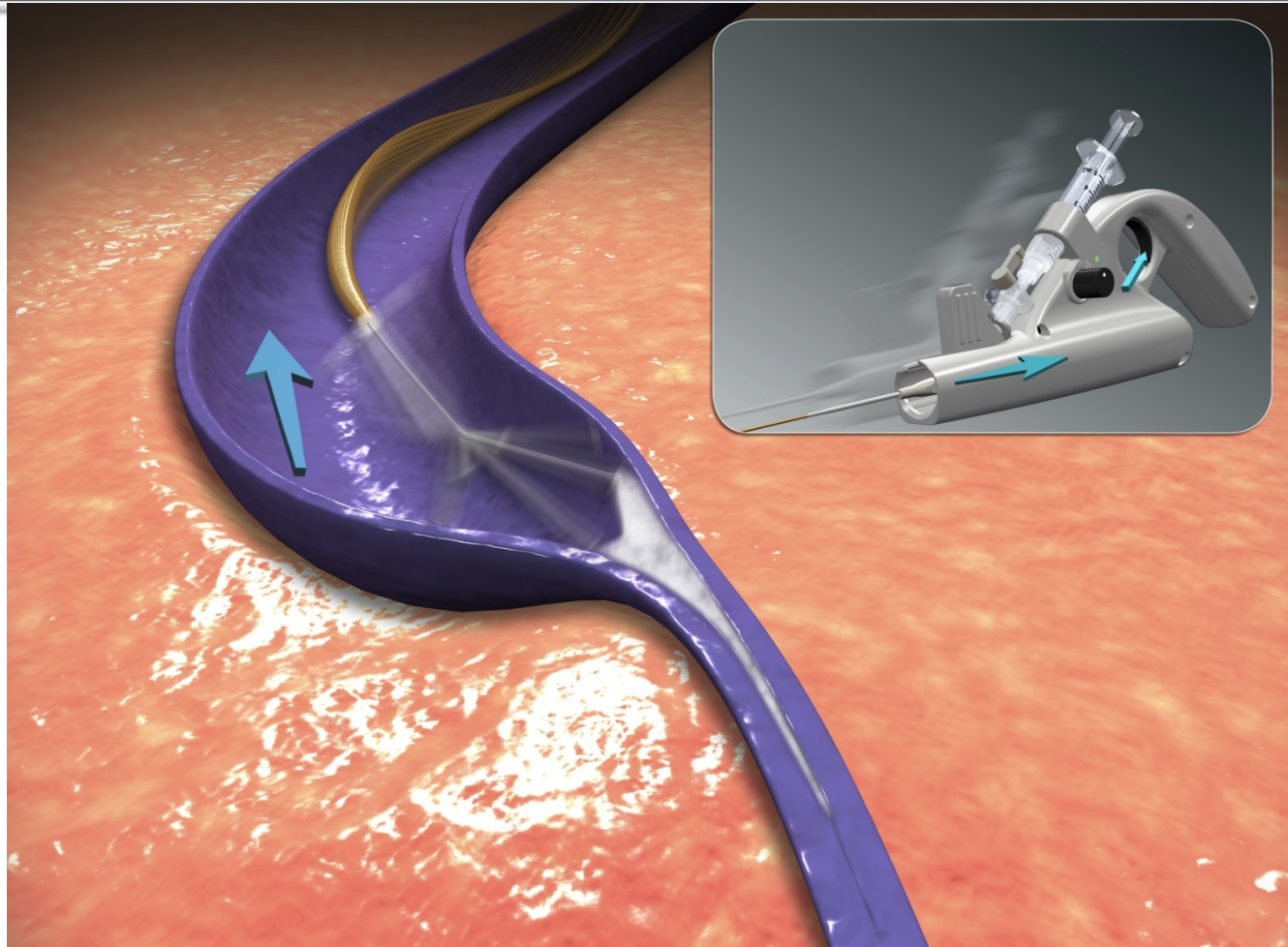
# Varithena Results- Vanish II

- 235 patients with GSV reflux
- 0.125%, 0.5%, and 1% concentrations
- Results:
  - 85% closure at 12 months
  - *Proximal DVT 1.7%*
  - *Distal DVT 2.5%*
  - *Combined 4.2%*



# MOCA: Mechanochemical Ablation Clarivein – *Vascular Insights, LLC*

- 3Fr
- Flexible
- 2000-3500rpms
- Disposable
- Introduce sclerosant
- 2 actions
  - Vasospasm
  - Intima injury



# Clarivein Technique

- Position 1cm from SFJ
- Initiate wire for 3-7seconds
- Infuse STS (2%) at 0.1cc/cm
- Pullback is 1cm every 7-10sec

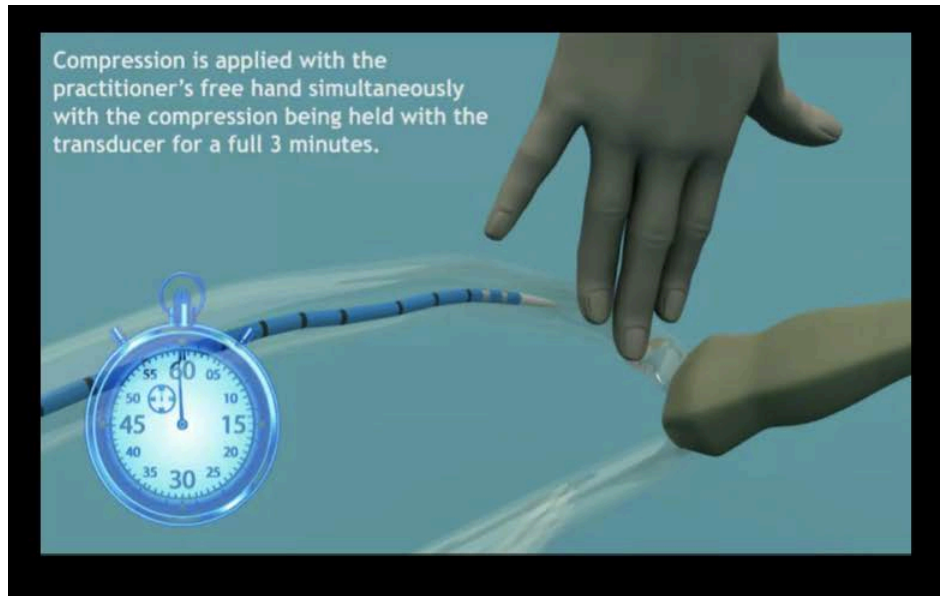
# Clarivein Results

- 20,000 cases worldwide
- 90% GSV occlusion at 12mos
- DVT 0.5%
- Less subjective pain compared to RFA
- Faster RTN to work (1.2days versus 4.2days)
- Cost (device + sclerosant)

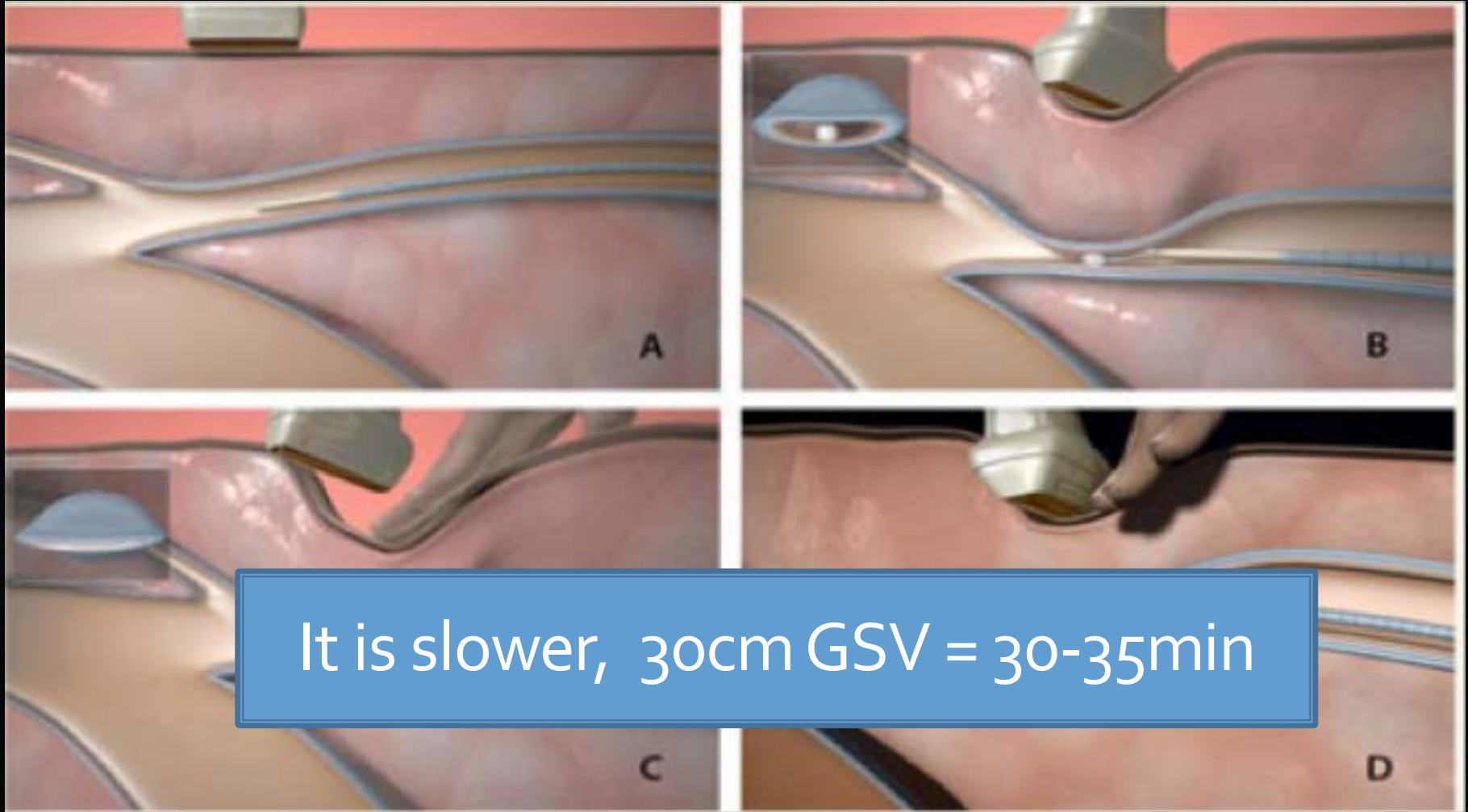


## VenaSeal™ Closure System

# CAG: TREATMENT



- Position from the **SFJ (3-5cm), 0.1cc**
- Pullback 1cm, 0.1cc, and then every 3cm deliver 0.1cc
- 3minute compression at each station



It is slower, 30cm GSV = 30-35min



# VeClose Trial (Medtronic)

- Noninferiority RFA vs. Venaseal
- Inclusion C2-C4
- GSV <12mm
- Primary outcomes
  - Target vein closure by DUS
  - No segments >5cm not closed
- Secondary outcomes
  - Procedural pain
  - Ecchymosis on POD 3

# VeClose Trial (Medtronic)

	Venaseal (n=108)	RFA (n=108)
1 mos closure	100%	87%
12 mos closure	97%	97%
3 years	94.4%	91.9%

- Quality of life measures were equivocal



# Practice

## TT - RFA

- 50-75%
- Thigh (C2-C6)
- Acc GSV
- SSV
- Perforators

## NTNT

- USGF
  - Calf GSV (C6)
  - Branches into perforators
  - Accessory GSVs (superficial)
- Venaseal (CAG)
  - Hyperpigmentation is concern
  - BK GSV (c5-c6)
  - SSV