Sclerotherapy Foam vs Liquid for Reticular Veins

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Foam Sclerotherapy

• Made popular in 1993 by Cabrera
• Tessari method with 1:4 liquid:gas widely adapted
• Foaming increases potency of sclerosant 2-4x due to blood displacement rather than dilution
• Polidocanol (POL) (0.25 – 3%) and sodium tetradecyl sulfate (STS) (0.5 – 3%) most widely used to make

physician compounded foam
• Varithena (BTG) is a commercial preparation 1% polidocanol microfoam with an indication to treat the GSV, AAV and large varicosities. It is not indicated for reticular or spider veins so will not be discussed.

Foam Sclerotherapy

• Widely used for treatment of varicosities and perforators in the US
• Used commonly to treat saphenous reflux in Europe
• Used with US guidance
• Little doubt that foam with POL or STS is more potent than liquid sclero

What about the little guys?

Reticular Veins

• 1-3 mm
• Visible below surface of skin
• Generally asymptomatic

• Can be injected with liquid
• May require many injections and/or treatments
• Foam (0.5% polidocanol, 0.5 – 1% STS) works well

Telangectasias

- Dilated intradermal venules;
- <2 mm in diameter
- May cause itching or point tenderness at site
- Usually treated for cosmetic reasons

• Most often treated with liquid POL, STS, hypertonic saline or glycerin
What is the Best Agent?

- Using liquid sclerotherapy for telangiectasias, a Cochrane Review found no difference in efficacy comparing
  - Hypertonic Saline
  - Polidocanol (POL)
  - Sodium Tetradecyl Sulfate (STS)
- Possibly more complications with 1% solution of either POL or STS vs 0.5%
- POL probably best tolerated
- CONCLUSION: No clear evidence of superiority of one agent


Foam or Liquid?

- Foam uses smaller volumes of sclerosant
- Homogenous effect along the length of a vein
- More potent
- Able to be seen by US or naked eye
- May cause more phlebitis and hyperpigmentation at site of injection
- No evidence that ulceration is more common
- No evidence that foam is better than liquid for reticular veins or telangiectasias


Complications

Multicenter registries reporting immediate and midterm results of sclerotherapy

- 49 events occurred (0.4%) (> 12,000 injections)
  - 12 Liquid, 37 Foam
  - Most common was visual disturbance, (19 cases)
  - 70% in reticular/spider injections
- 2nd work: 14 adverse events (0.17%) (> 8000 injections)
  - 5 SOB/chest tightness
  - 9 neurologic sx after liquid and foam
- Most after surface injection rather than US-guidance
- 7/9 had a migraine history, 5/9 R cardiac shunt
- All symptoms resolved

**Hill DA. Phlebology. 2014, 29:619-627

Does CO₂ Help?

- Morrison first reported on air vs CO₂ POL foam in US-guided procedures, average of > 25 cc injected
  - 39% of air pts
  - 11% CO₂ pts
  - P< .01
- All effects transient
- Conclusion = Side effects decrease significantly with CO₂ vs air


Should we all use Physiologic Gases?

- Additional cost for purchase of CO₂/O₂
- Additional storage/disposal
- Foam less stable
- No evidence that there is a difference of efficacy based on gas type
- Recent review makes case for using physiologic gases in patients at high risk of neuro symptoms:
  - Migraine with aura
  - Known PFO

Wong M. Phlebology 2015 30:580-4
Conclusions

- POL or STS foam for reticular and spider veins is easy, fast and effective
- No hard evidence of increased skin complications
- Good evidence that air-based foam leads to more neurologic complications than CO₂-based foam
- Good evidence that reticular/spider injections have more neurologic complications than US-guided
- Little support for foam vs liquid for reticular/spider veins
- If used for large clusters or in high risk patients;
  - Use with CO₂ or CO₂/O₂
  - < 10 cc per treatment
- Consider moving to physiologic gases for all patients