Ultrasound-guided sclerotherapy: When, how and for what?

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Disclosures

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Off label and/or Non-FDA Approved Drugs

Polidocanol and STS foam, as referred to in this presentation, may be considered “off-label” or not approved by FDA
Ultrasound guided sclerotherapy

Liquid vs Foam
Needle vs Catheter-directed

If catheter-directed, angiocath
(20-guage, 4mm Teflon device)
Seldinger with 5Fr infusion catheter
Sclerotherapy with Foam

Any detergent can be foamed.
Foaming increases effectiveness by increasing the surface area of the solution on the vein wall and displacing the blood for a longer time.

Ultrasound guided sclerotherapy

Bonn Study
Multicenter RCT
Liquid vs Foam Sclerotherapy
106 patients
Elimination of Reflux:
  Liquid: 29%
  Foam: 69% (p < 0.0001)

Macrofoam (>500 microns) and microfoam (preferably <100 microns)

Variables in foam sclerosants¹
- Type of sclerosant
- Concentration
- Type of gas
- Ratio of gas to liquid
- Method of preparation (e.g., Tessari)
- Time between foam preparation and use
- Bubble size of foam

Sadick N. Advances in Dermatology 2006; 22:139–156.
Sclerotherrapy with Foam

Advanced skill level required
Excellent ultrasound contrast medium, enhancing accuracy and extent of treatment
Foam is not generally indicated for use on veins <2 mm
Commonly used for reticular veins or veins using ultrasound - guidance
Early results not quite as good as surgery or endovenous thermal ablation
Reimbursement?
NO sclerosing agent FDA approved as foam
Indications:

Primary Rx of incompetent GSV/SSV
(Not commonly in U.S.)
Recurrence following GSV ligation/stripping
Venous malformations
Sciatic nerve varices
Saphenous or non-saphenous perforating veins
Indications
Adjunctive treatment following endovenous thermoablation or surgical excision for:

- Incompetent Distal Great Saphenous Vein
- Incompetent distal Small Saphenous Vein
- Major Tributaries with Reflux
- Incompletely ablated veins
Sclerothery with Foam

Foam production

*Concept Courtesy L. Tessari
Sclerotherapy with Foam

Ultrasound guided sclerotherapy set up
Start distally work proximally
Sclerotherapy with Foam
Sclerotherapy with Foam

Foam injection distal GSV
Sclerotherapy with Foam

Following foam up distal GSV
Sclerotherapy with Foam

Small Saphenous Vein injection
(patient prone)
Sclerotherapy with Foam

Side Effects
- Dry cough
- Migraine
- Chest tightness
- Circumoral paresthesia
- Metallic taste
- Nausea
- Dizziness
- Hyperpigmentation

Adverse Events
- Occular migraine
- Visual disturbance
- Panic attack
- Neurasthenia
- Respiratory difficulty
- Cutaneous necrosis
- DVT
- STP
- Neurologic event
Sclerotherapy with Foam

Jean-Luc Gillet, et al.

multicentre, prospective, controlled study

1025 pts

818 GSVs, 207 SSVs in 20 centers

27 (2.6%) side effects

migraine, visual disturbance, chest pressure

Sclerotherapy with Foam

Lower risk of chest tightness, dry cough, dizziness with CO₂/O₂-based foam compared to air-based foam

(p < 0.05)

Incidence of visual disturbance with CO₂/O₂-based foam (2%) trended less than with air-based foam (8%)

Morrison N, et al. Eur J Vasc Endovasc Surg 2010
Sclerotherapy with Foam

Adverse Events

Intra-arterial injection
FREAKING DISASTER!!!
1-2cm Skin necrosis/ulcer
Tissue/limb loss
Stop if painful!
Background

Reports:

rare neurologic symptoms or events following ultrasound guided foam sclerotherapy (UGFS) \(^1,^2,^3\)


Sclerotherapy with Foam

What is the fate of injected foam?
Foam Migration
Vasoactive Compounds

Prospective multicentre study

Patients with visual disturbances (VD) after foam sclerotherapy (air–based foam, 10mL max)

Patient assessment:

a) Clinically – description of procedure and neurological symptoms
   analysis method by neurologist specialized in migraine
b) Brain diffusion-weighted MRI - within two weeks – neuroradiologist analysed

Results:

a) Twenty patients, 16 women and four men, in 11 phlebology clinics
b) VDs average 7 minutes after FS
c) All pts VDs characteristic of migraine with aura
   1) with headache in 10, without in 10.
   2) Paresthesia in 5
   3) Dysphasic speech in 1
d) 15 pts (75%) Hx of migraine
e) 18/20 MRI – ALL NORMAL

Conclusion:

a) VDs after FS correspond to MA and not transient ischaemic cerebro-vascular events
b) Pathophysiological hypothesis: endothelin release to cerebral cortex via patent foramen ovale

Conclusions

Ultrasound-guided foam sclerotherapy appears to be effective, safe, associated with few mild, short-lived side effects, and infrequent (rare) significant complications
Conclusions

Proximal truncal ablation alone will ultimately fail

Unless one is committed to careful follow up and adjunctive treatment, the practitioner and the patient will be left with unsatisfactory results
Thank you for your kind attention

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