

# **A new gluing modality for insufficient veins**

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# background

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Thermo-occlusive techniques or sclerotherapy achieve just a slow and often symptomatic vein regression, while gluing could close and minimize veins immediately.

A first and intermediate step is continuous gluing with aggressive, almost non-resorbable acrylates (VenaSeal®).

We examined a new modality which combines sclerotherapy with pointwise gluing (ScleroGlue®).

# purpose

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- 1) to achieve rapid endothelium denaturation by catheter sclerotherapy;
- 2) to add pointwise gluing to instantaneously obtain closure and vein wall adhesion.

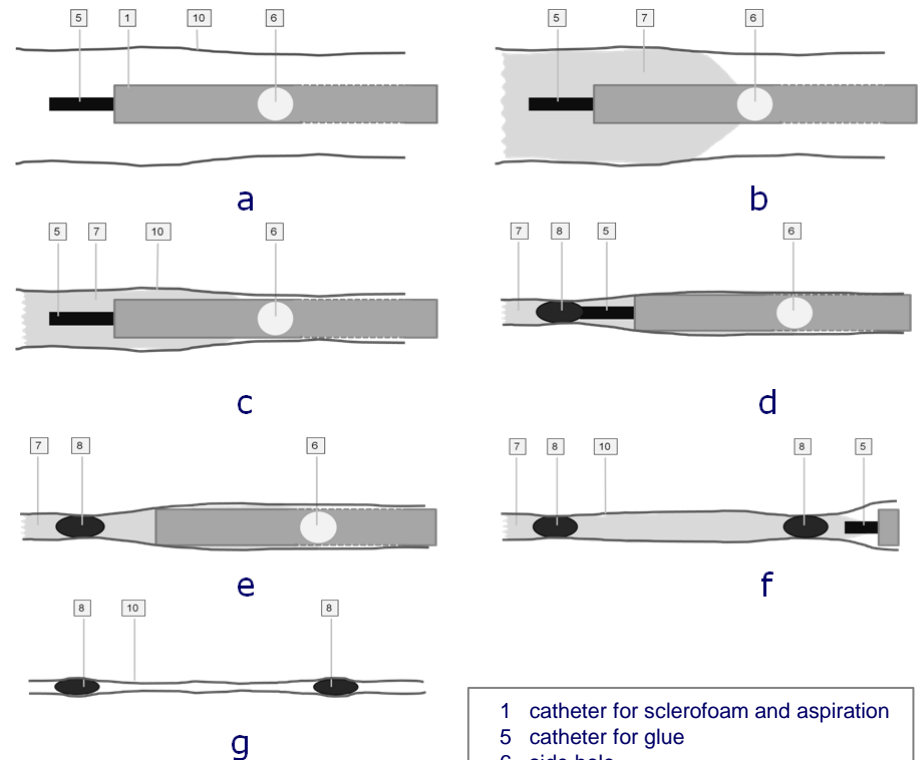
Target: Superficial veins selected for phlebectomy

Technique: Prototypes for investigational use

# methods

## System:

- a) coaxial catheters
- b) foam deployment
- c) aspiration,  
negative pressure
- d) glue deployment
- e) single glue deposit
- f) repeated gluing  
e.g. every 5 cm
- g) final result



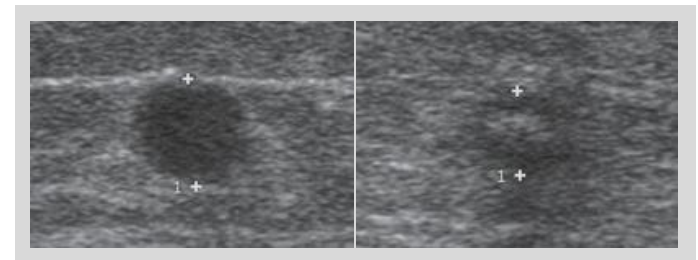
- 1 catheter for sclerofoam and aspiration
- 5 catheter for glue
- 6 side hole
- 7 sclerofoam
- 8 glue spot
- 10 vein

# methods

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Non-branched superficial vein segments (n = 32), length 10 - 20 cm, 6 - 12 mm Ø (mean: 8.4 mm).

- application of ScleroGlue system
- sclerosant: Aethoxysklerol 1%, 1+4 with air
- glue: butyl-cyanoacrylate
- removal of target veins
- histology (640 samples)



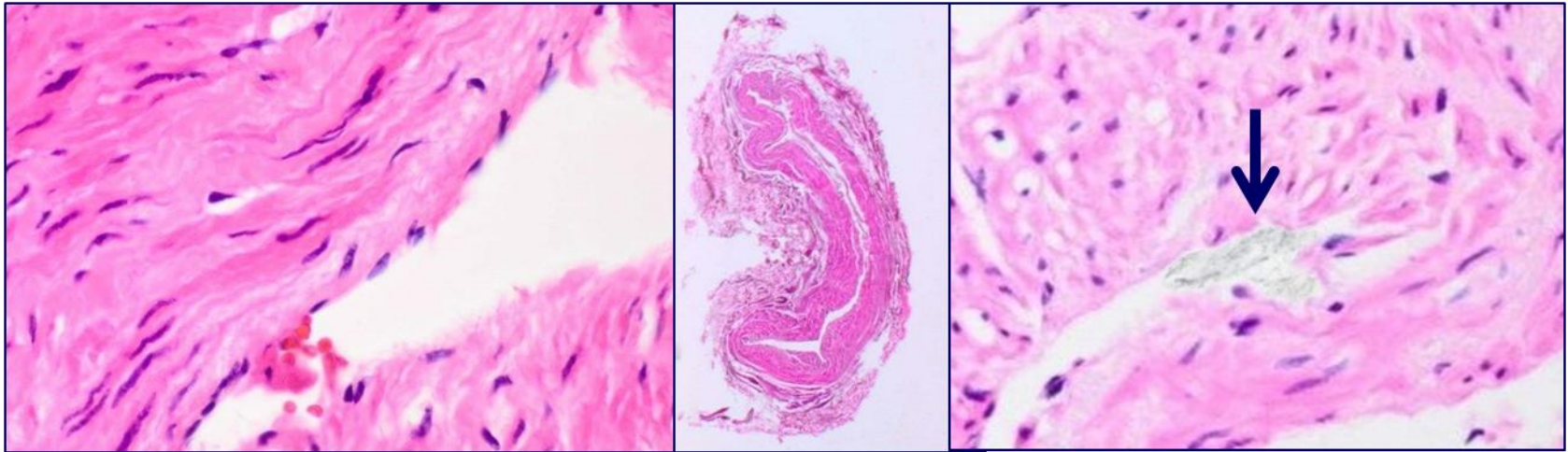
vein without glue    glue spot

# results

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- In 29/32 vein segments histology showed total denaturation of the endothelium, while in 3/32 vein segments denaturation was 93 - 99%.
- 72 of 81 glued spots (88%) were strongly cohesive when exposed to forces of up to 10 N.
- The amount of glue used: 3 - 6 mg (mean: 4.8 mg) per cm vein, corresponding to a mean of 240 mg for a 50 cm segment.
- Application time: 6 – 11 s/cm (mean: 8.5 s)

# examples



a

b

c

- a) foam area: endothelium destroyed
- b) cut close to glue spot, well attached vein walls
- c) glued area with traces of glue (arrow)

# discussion

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- As the gluing effects are achieved independently from external compression, the method could be applicable even in obese patients.
- In vivo, selective inclusion of tributaries and perforators could be rapidly achieved without additional punctures.
- Application time may be estimated to just about 7 minutes for a 50 cm segment.



# conclusions

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- The initial experience with ScleroGlue® prototypes provides reliable endothelium denaturation and economical point-wise gluing.
- Some parameters like size of glue spots and length of glue-free intervals may need further investigation.
- Further tests and clinical application will be considered as soon as rapidly bioresorbable glue is available.

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