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## Ultrasound aspects of the vein over the time after foam sclerotherapy and clinical consequences

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CHD disclosure:

- I2M : shareholder and family ties
- Mepy Système : consulting
- Kreussler Pharma : consulting

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**Immediate images with spasm**

LEFT SSV AFTER UGFS

We all know the **immediate** venous aspect after foam injection

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**Immediate images with spasm**

Saphenous vein aspect just after foam injection (longitudinal view)

Just before injecting **4.3 mm**

Just after injection **4.7 mm**

"white line" in longitudinal view

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**Immediate images**

Saphenous vein aspect just after foam injection (transverse view)

Just before injecting **4.3 mm**

Just after injection **3.9 mm**

"white hyperechoic point" in transverse view

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**Short-term images**

At the beginning, there is no venous retraction

**1 MONTH FU**

Before injecting

**1 MONTH FU**

OCCLUSION: SSV AT 1 MONTH **4.8 mm**

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**2 weeks** In the short term, some images and clinical features should not be confused with those of superficial venous thrombosis (SVT)

After 2 weeks

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**4 weeks** Sometimes, vein inflammation near the skin can lead to hyperpigmentation

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**medium-term images (of SSV at 2 or 3 y-FU)**

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**long-term images** GSV OCCLUSION after UGFS at 17 years

Our aim is to achieve the occlusion over the long term

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**long-term images** GSV fibrosis after UGFS at 12 years

Long-term fibrosis is ideal

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**long-term images** Appearance close to that obtained after EVLA at 12 years

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## Fibrous shrinkage

The fibrous retraction of the vein takes time to form, e.g. several months or even years

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### Fibrosis occurrence (GSV)

**'3/1 STUDY'**  
Fibrous shrinkage/  
disappearance of **occluded veins** after UGFS of the **GSV** over time

Hamel-Desnos et al. *EJVS* 2007. 'The 3/1 study' (SFP)

Time Point	ER 3%	ER 1%	Disappearance
W 3	~95	~85	~10
M 6	~85	~75	~25
M 12	~75	~65	~45
M 18	~70	~60	~55
Y 2	~65	~55	~65

**Diagram 1.** Elimination of reflux (ER) in the great saphenous vein and disappearance of the GSV or image of an echogenic string (at the thigh level) in B mode - 3/1 Study.

Eur J Vasc Endovasc Surg Vol 34, December 2007

Hamel-Desnos C, Quiry P, Binigri J-P, Botelle G, Schadeck M, Desnos P, Alzert F-A. Comparison of 1% and 2% Polidocanol Foam in Ultrasound Guided Sclerotherapy of the Great Saphenous Vein: a Randomised, Double-Blind Trial with 2 Year Follow-Up - 'The 3/1 Study'. *Eur J Vasc Endovasc Surg* 2007; 34: 723-9

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### Fibrosis occurrence (SSV)

Same for the SSV in 'Fovellass study': venous retraction is progressive over 1 or 2 years then stable. Hamel-Desnos et al. *EJVS* 2023. FOVELASS study: EVLA vs FOAM in the SSV (SFP)

Time Point	EVLA (mm)	UGFS (mm)
D0	7.1	8
D6	4.3	6.6
M6	2.6	3
1Y	1.5	2.3
2Y	1.1	2.3
3Y	1.7	1.7

Hamel-Desnos C, Nyamekye I, Chauzat B, Gracia S, Josnin M, Abbadie F. FOVELASS: a randomised trial of EVLA versus Polidocanol Foam for SSV incompetence. *Eur J Vasc Endovasc Surg*. 2023; 65:415-423.

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### Diameter reduction in case of recanalisation

**FOVELASS study (SSV) (1)**  
In case of recanalisation in UGFS group, SSV mean diameter was **2 mm at 3 years** (mean diameter before treatment = 5.7 mm)

**'3/1 study' (GSV) (2)**  
In case of recanalisation, GSV mean diameter was **2.8 mm at 2 years** (mean diameter before treatment = 6 mm)

The reduction in the diameter of the saphenous veins could explain good clinical results of the foam despite a "technical failure"

1) Hamel-Desnos C et al. *Eur J Vasc Endovasc Surg*. 2023  
2) Hamel-Desnos C. et al *Eur J Vasc Endovasc Surg*. 2007

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## What means 'recanalisation'?

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### Complete recanalisation

Entire recanalisation (but with smaller diameter)

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**Recanalisation with segmental fibrosis**

Residual segmental fibrosis

— Patent vein  
— Occluded vein

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**Partial recanalisation**

Partial recanalisation

LUMEN  
SCLEROSIS/FIBROSIS  
GSV

GSV RECANAL

video

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**Feasibility of retreatment**

Foam retreatment of an SSV after small recanalisation

SSV AFTER LOOPS NET 1% X 2.8ML

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**Should we retreat?**

Retreatment with foam is technically possible, but should it be done?

- European guidelines (Rabe et al 2014)

*Recommendation 3I: We recommend re-treatment by sclerosing partially recanalized vein segments during the follow-up (GRADE 1B).*

- REPECA study (Gillet et al JMV): small GSV recanalizations (<3 mm) are stable over 2 years with no significant change in clinical criteria (70% were C1 and 86% were asymptomatic at inclusion)

Rabe E, Bruu FX, Cavazzini A, Coleridge Smith P, Frullini A, Gillet JL, Quen JL, Hamel-Desnos C, Kern P, Patsch B, Ramelet AA, Tessari L, Panzier F, for the Guideline Group. European guidelines for sclerotherapy in chronic venous disorders. *Vascular*. 2014 Jul;26(6):338-54.

Gillet JL, Lausacker M, Daniel C, Allart FA. Doit-on traiter toutes les recanalizations ? Étude REPECA. *JMV. Journal de Médecine Vasculaire*. Volume 42, Issue 2, March 2017, Page 79

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**Recanalisation with intraluminal sequelae**

Intraluminal sequelae after foam may interfere with catheterisation for Thermal Ablation retreatment

Video  
Courtesy of Louise Desnos

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**Conclusion- Ultrasound images after the UGFS**

- Ultrasound images after endovenous treatment speak for themselves and evolve over time
- We need to observe them more closely to... :
  - Better understand clinical results
  - Better classify 'failures' in clinical trials
  - Make the right decision about retreatment

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Thank you for listening



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