

Is it safe and efficient to treat the small saphenous vein by radiofrequency ablation

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Faculty Disclosure

James Lawson

I have **no financial relationships** to disclose.

Je déclare les informations suivantes : je suis consultant pour la société XYZ, employé de la Société ABC, je reçois des fonds/support pour mes recherches de la société ACME, fais partie du comité de direction de la société ACE, je parle pour la société DRUG, je suis actionnaire majoritaire de la société ABC **OU** je n'ai **aucune relation financière** à déclarer.



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Do we have to make a difference between GSV or SSV treatment ?

The surgical treatment of SSV is more challenging and has a higher risk than GSV surgery

Surgeon don't like to strip the SSV

Table 2. Methods of dealing with the short saphenous vein after saphenopopliteal ligation by surgeons in the survey

Surgical technique	Number of surgeons	Percentage
Stripping of the short saphenous vein	52	14.5
Avulsion/excision of up to 10 cm of short saphenous vein	197	55.1
Short saphenous vein left <i>in situ</i>	98	27.4
Short saphenous vein stripped or avulsed	8	2.2
Technique not documented	3	0.8

82,5 %

Article Title	Author(s)	Source
The Management of Short Saphenous Varicose Veins: A Survey of the Members of the Vascular Surgical Society of Great Britain and Ireland	R.J. Winterborn, W.B. Campbell, B.P. Heather, J.J. Earnshaw	European Journal of Vascular & Endovascular Surgery - October 2004 (Vol. 28, Issue 4, Pages 400-403, DOI: 10.1016/j.ejvs.2004.06.009)

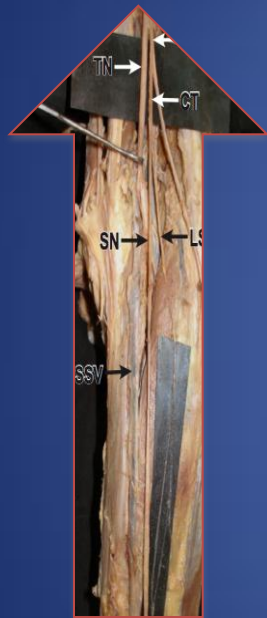


Table 2 Complications given in absolute figures, with percentages in brackets

	Surgery		EVLA	
	GSV	SSV	GSV	SSV
DVT	0	2 (5.3)	0	0
Minor comps	18 (17.8)	7 (18.4)	16 (8.3)	5 (13.2)
Sensory disturbance	7 (6.5)	6 (15.8)	5 (2.6)	4 (10.5)
Haematoma	6 (5.9)	1 (2.6)	1 (0.5)	0
Pigmentation	0	0	4 (2.1)	0
Phlebitis	2 (2)	0	3 (1.6)	2 (5.3)

GSV, great saphenous vein; SSV, small saphenous vein; EVLA, endovenous laser ablation; DVT, deep venous thrombosis

D Carradice Phlebology. 2012 Apr;27(3):128-34.

DVT (1,8-3,5%)
Nerve Damage (1,7-34%)

Review from Tellings Phlebology 2011;26:179–184

Is Stripping Necessary ?

- disease-specific AVVQ scores are significantly better after stripping vs SPJ ligation and proximal excision
- Less truncal reflux

	SPL with short segment excision ≤ 5 cm ($n = 23$)				SPL with inversion stripping > 5 cm ($n = 27$)			
	SPJ	Proximal SSV	Mid-SSV	Distal SSV	SPJ	Proximal SSV	Mid-SSV	Distal SSV
At 52 weeks								
Ligated/occluded/absent	23	1	1	0	27	27	20	0
Patent, no or flash reflux	0	11	8	14	0	0	5	22
Patent, reflux > 1 seconds	0	11 [†]	14 [†]	9	0	0	2	5

SPJ, saphenopopliteal junction; SPL, saphenopopliteal ligation; SPJ, saphenopopliteal junction

N. Samuel Phlebology. 2012 Jan 20.

unstripped SSVs failed to revert to competence



the elimination of SSV reflux is important



ligation of SPJ alone is insufficient.”



RCT EVLA vs SSV Stripping

TABLE 3. Postoperative Complications and Clinical Recurrence

Complications	Surgery	EVLA	<i>P</i> *
Sensory disturbance at 6 wk	14 (26.4%)	4 (7.5%)	0.009
At 52 wk	5 (9.4%)	2 (3.7%)	0.434
Phlebitis	1 (1.9%)	3 (5.7%)	0.309
Infection (phlebectomy site)	1 (1.9%)	0	0.500
Skin pigmentation	0	2 (3.8%)	0.248
Hematoma	2 (3.8%)	0	0.248
DVT	1 (1.9%)	0	0.500
Clinical recurrence over 52 wk	9 (16.9%)	5 (9.4%)	0.390
	Incompetent SSV: 8	Recanalization: 2	
	Incompetent AASV: 1	Incompetent ALTB + calf perforator: 1	
		Incompetent posterior thigh perforator: 1	
		Incompetent calf perforator: 1	

Values are expressed as percentages.

*Fisher exact test.

AASV indicates anterior accessory saphenous vein; ALTB anterolateral thigh branch.

Samuel, N., Carradice, D., Wallace, T., Mekako, A., Hatfield, J., & Chetter, I. (2012). Randomized Clinical Trial of Endovenous Laser Ablation Versus Conventional Surgery for Small Saphenous Varicose Veins. *Annals of Surgery*, 1. doi:10.1097/SLA.0b013e318275f4e4

Results of EVLA surpass those of surgery.

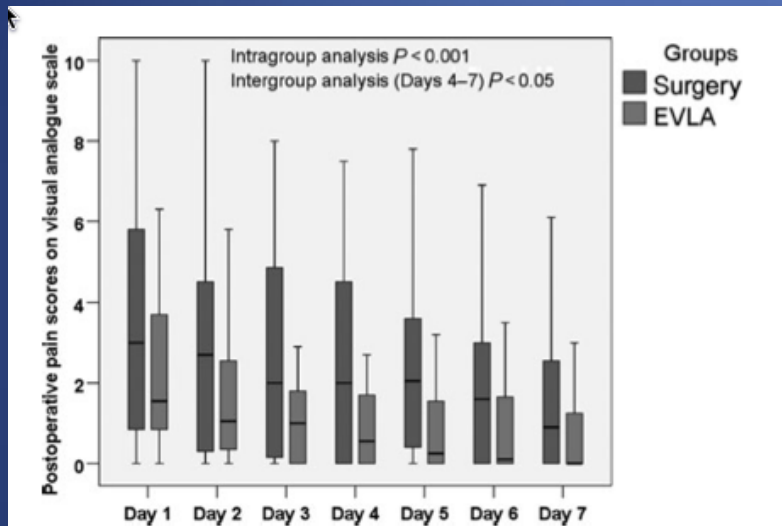


FIGURE 2. Postprocedural pain. Pain after surgery or endovenous laser ablation recorded on a visual analog scale from 0 to 10. Median (line within box), interquartile range (box), and range of data with $1.5 \times$ IQR below the first quartile and above the third quartile (error bars).

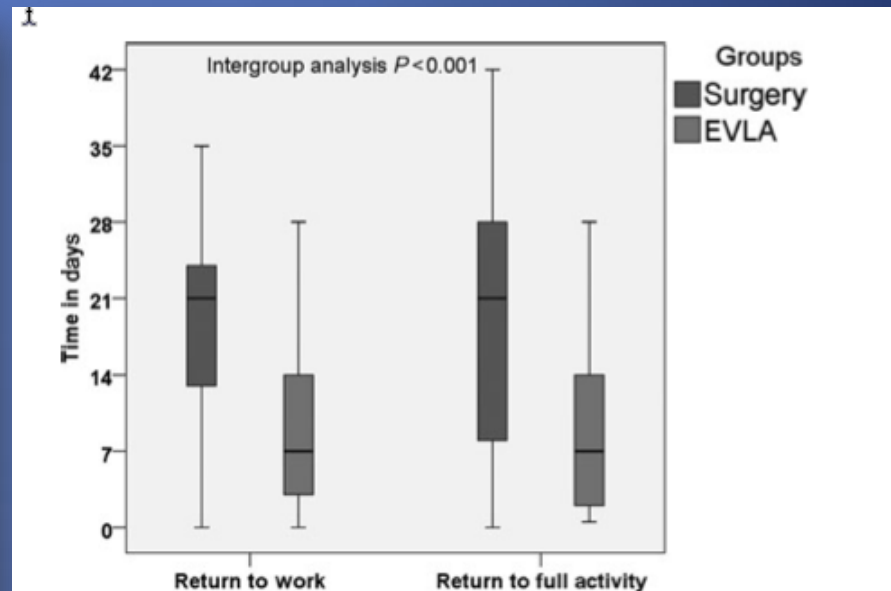


FIGURE 3. Return to work and normal activities. Patient's return to work and full routine activities after surgery or EVLA. Median (line within box), interquartile range (box), and range of data with $1.5 \times$ IQR below the first quartile and above the third quartile (error bars).

Thermal Ablation of the SSV

Is there difference between RFA or EVLA ?

Lack of specific SSV studies with RFA

Complications after SSV Surgery and Thermal Ablation with EVLA or ClosureFast

**G. Galema, C.J. van Vlijmen,
S.A. Gauw, J.A. Lawson,**

Quality Registry Control Endovenous Procedures 2010 Center Oosterwal

VNUS	No 1750	Closure 6 weeks (%)	Thrombotic complications (0,05 %)
GSV	1314	99.4	0,08
SSV	300	99.4	0
Giacomini	8	100	0
AASV	128	98.4	0

EVLA Radial	No 164	Closure 6 weeks (%)	Thrombotic complications (0,6 %)
GSV	60	98.3	1,7
SSV	59	100	0
AASV	45	96,9	0

Complications Varico 2 Study

GSV: Radial Laser vs RFA ClosureFast

Great saphenous vein	VNUS	Radial Laser	P value
Bruising	26/167 (15,6%)	28/134 (20,9%)	ns
Paresthesia (2 weeks)	3/168 (1,8%)	5/134 (3,7%)	ns
Persistent Paresthesia	1/168 (0,6 %)	2/134 9 (1,5%)	ns
DVT CFV	0/168 (0,0 %)	0/133 (0,0%)	ns
All thrombotic complications	1/168 (0,6%)	1/134 (0,7%)	

Contralateral
popliteal vein

Crural vein

GSV : Clinical Axial Reflux after 1 Year

GSV	n	Occlusion Rate	Clinical Reflux AASV	Duplex Reflux AASV	Length stump (mm)	P value
VNUS	78	100%	2 (2,6%)	8 (10,2%)	6,6	ns
Radial	77	97,4%	2 (2,6%)	5 (6,4%)	6,6	ns
All AASV Reflux : Terminal valve incompetent and VSAA pre-op visible						

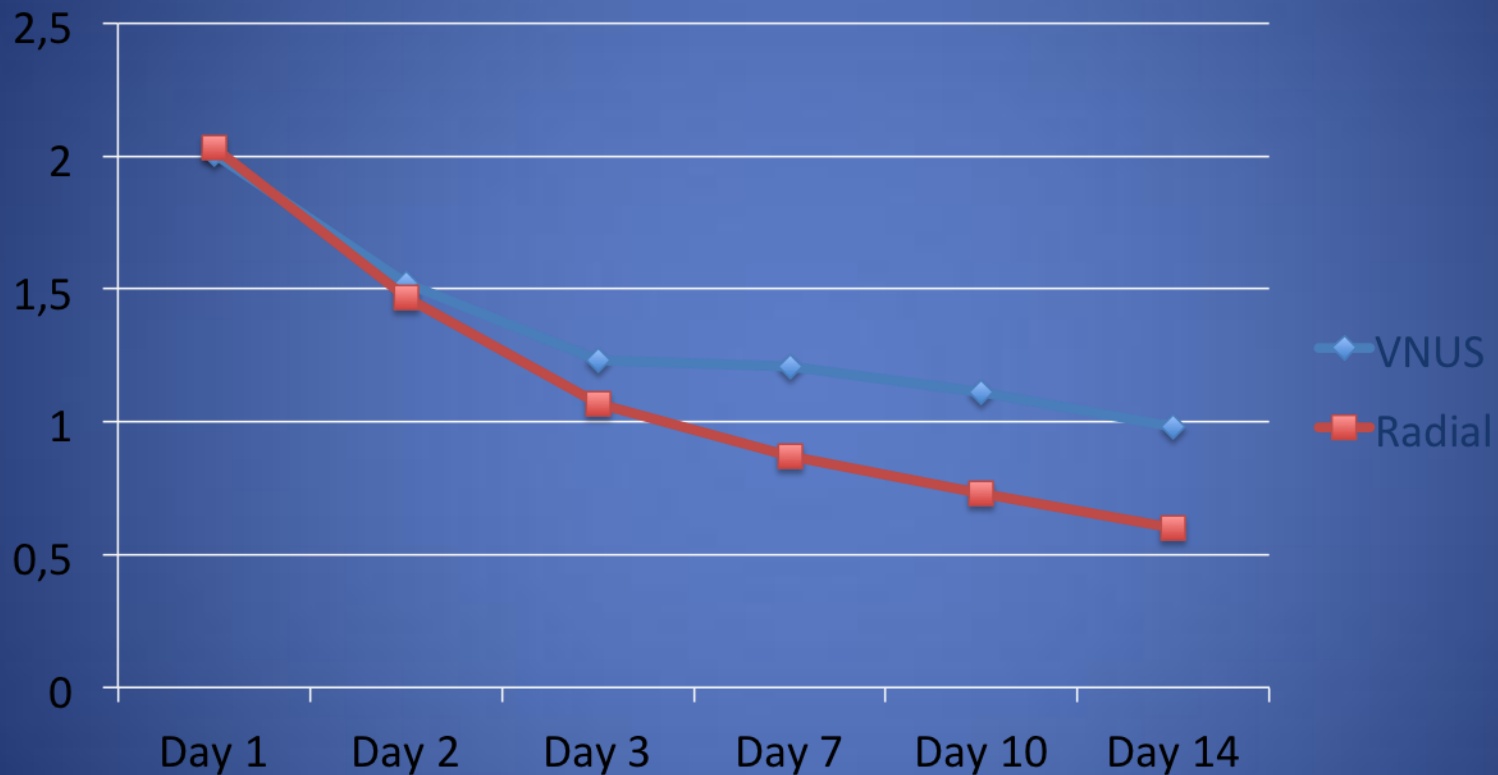
2 partial open

VCSS score and AVVQ

VCSS	preoperative	1 year
VNUS	3,77	1,96
Radial	3,81	1,81

AVVQ	preoperative	1 year
VNUS	14,2	7,2
Radial	14,4	6,6

VAS Pain Scores VNUS vs Radial



1796 SSV Treatments from 2005-2011

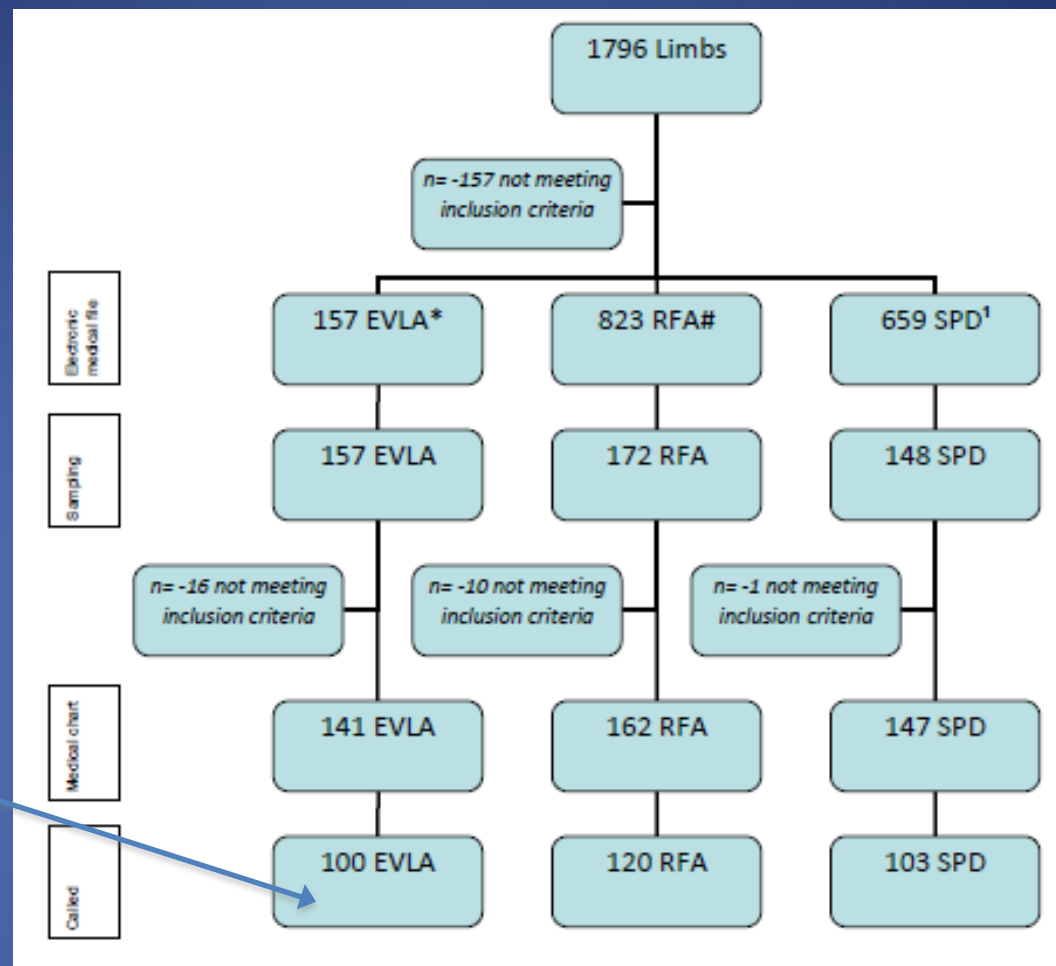
- 2005-2007: SPD
- From 2007 : Radial Laser (EVLA)
- From 2008 : VNUS (RFA)

All under Tumescant Anesthesia



Preference : RFA was used for a length of vein > 10 cm, and EVLA was used for the segments 3-10cm.

EVLA (mean) 12 mm
ClosureFast (mean) 16mm

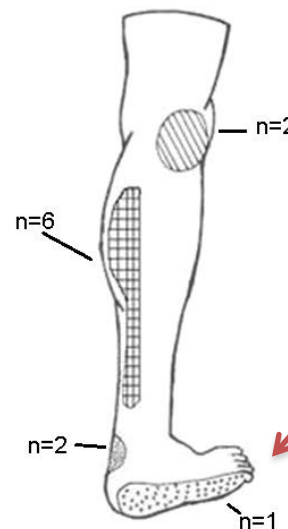
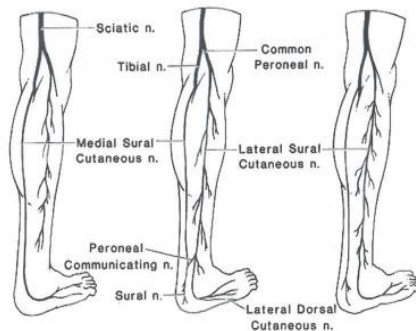


Radial 1470 = 94
Bare tip 980 = 4

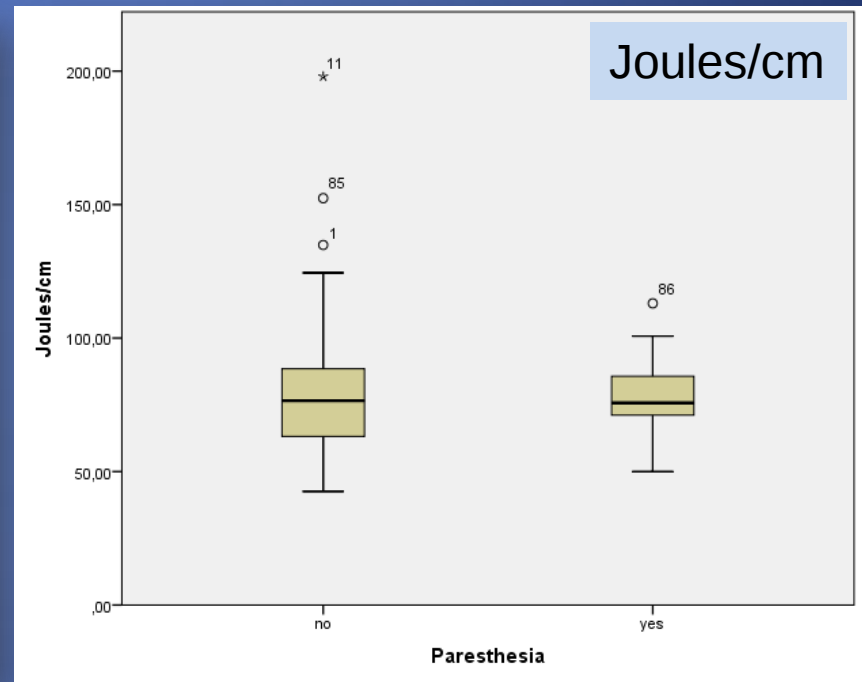
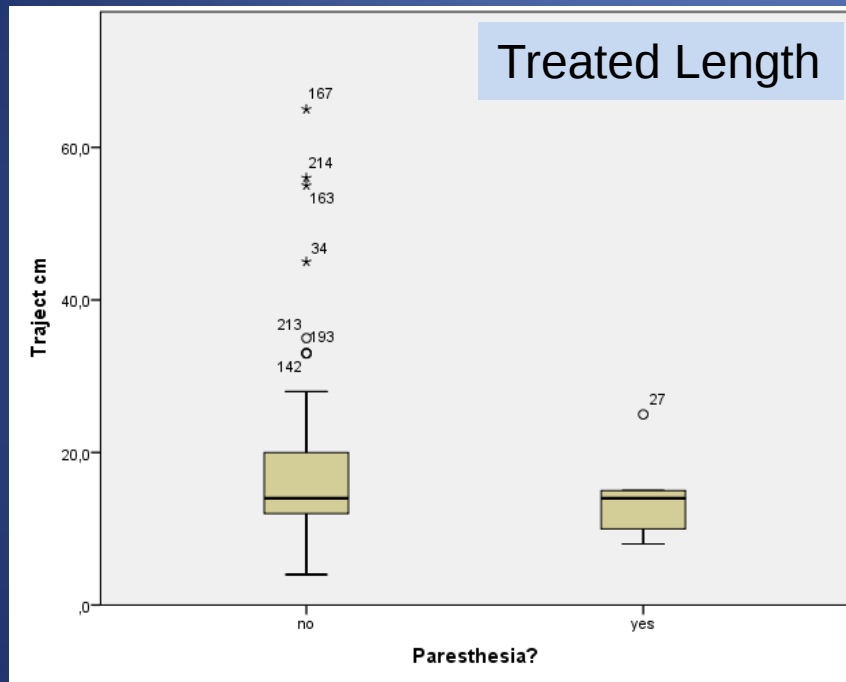
Random Sampling with SPSS

Complications

	Infection	Bleeding	Thromb. Compl	Transient Paresthesia	Persistent Numbness	Sural Nerve
SPD	2/103 (2%)	1/103 (1%)	0	8/103 (7,8%)	0/103 (0%)	0%
EVLA	0	0	1 (1%)	4/100 (4%)	5/100 (5%)	1/100 (1%)
ClosureFast	0	0	0	5/120 (4,2%)	6/120 (5%)	2/120 (1,7%)
			Calf Vein			



No relation with LEED and length

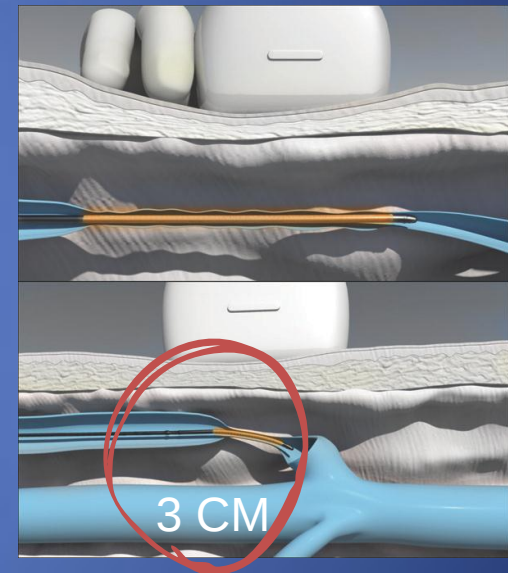


“RFA should be avoided because of the length of the heating element (6.5cm) and due to the impossibility of immediately stopping the heating (inertia), even after switching the device off when pain is felt. As a consequence, the nerves may be permanently damaged.”

Jean Luc Gerard

Does we have to believe him ?

- New ClosureFast coils are 3 cm
- CF : Temperature control: 60°C after switching off
- Except absorption ,also heat conduction from the very hot laser tip (1000°C)
- Careful tumescent application and nerve mapping will do the job.

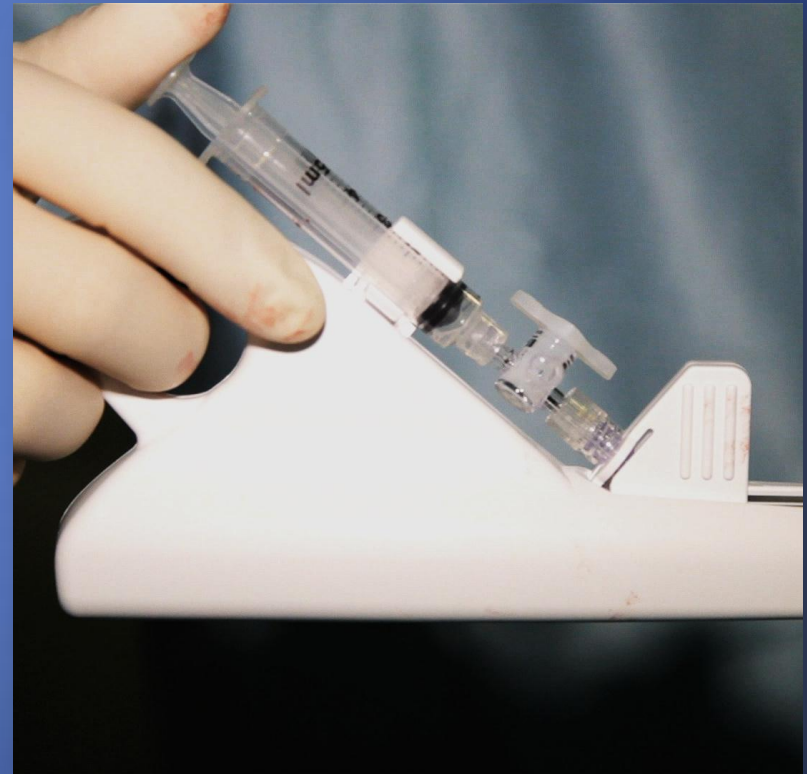


Tumescentless future ?

Sapheon Venaseal



Clarivein



Summary

- SSV : RFA (ClosureFast) and (Radial) EVLA are both safe and (efficient) procedures
- SSV: Paresthesia rate RFA comparable with EVLA, despite longer heating element.
- Thermal ablation : Paresthesia rate $SSV > GSV$
- No relation with Length of LEED
- Multiple punctures of tumescent is a risk

