Endovenous Thermal Ablation:

Consensus and Polemics

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Disclosure

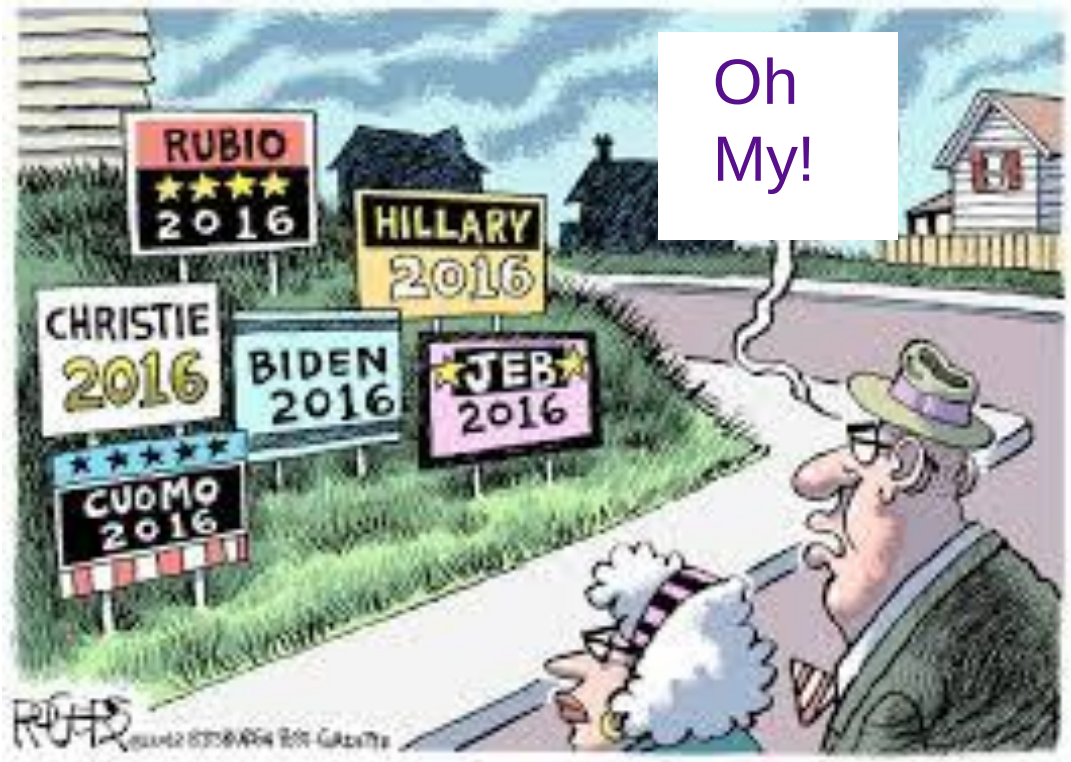
- Intellectual Property: AngioDynamics, Veniti

Consensus Definition

- a general agreement about something : an idea or opinion
  - Wide agreement

  - www.merriam-webster.com/dictionary/consensus
  - dictionary.cambridge.org/us/

Consensus


RUBIO
2016
HILLARY
2016
CHRISTIE
2016
BIDEN
2016
JEB
2016
CUOMO
2016
Oh
My!

Polemique (Polemic) Definition

- an often noisy or angry expression of differing opinions.
- a strong verbal or written attack on someone or something.

AFFORDABLE CARE ACT 2010 CONSENSUS?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www.investors.com/cartoons

In the USA

- No worries, the government will pay for any vein care you want

- Clinton: You are out of your mind! You will bankrupt the government.

ALTHOUGH THERE ARE ROAD BLOCKS FOR AGREEMENT

Medically Significant Venous Incompetence

Most patients seek treatment to **relieve symptoms** rather than cosmetic concerns.[1]

1. Gloviczki et al. J Vasc Surg. 2011;53(5 suppl):2S.

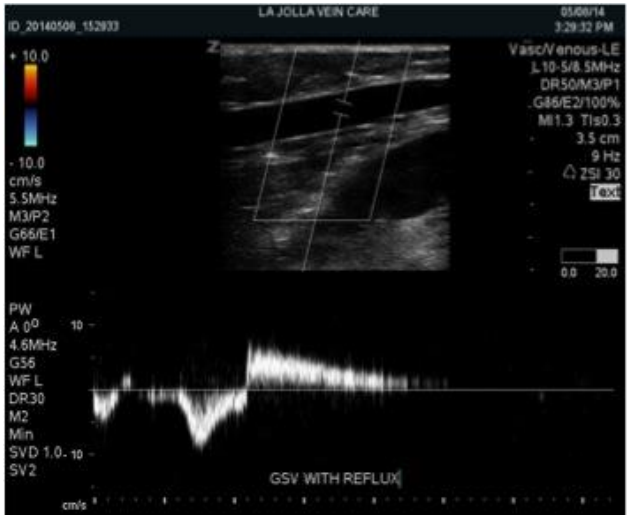
Venous incompetence Definition

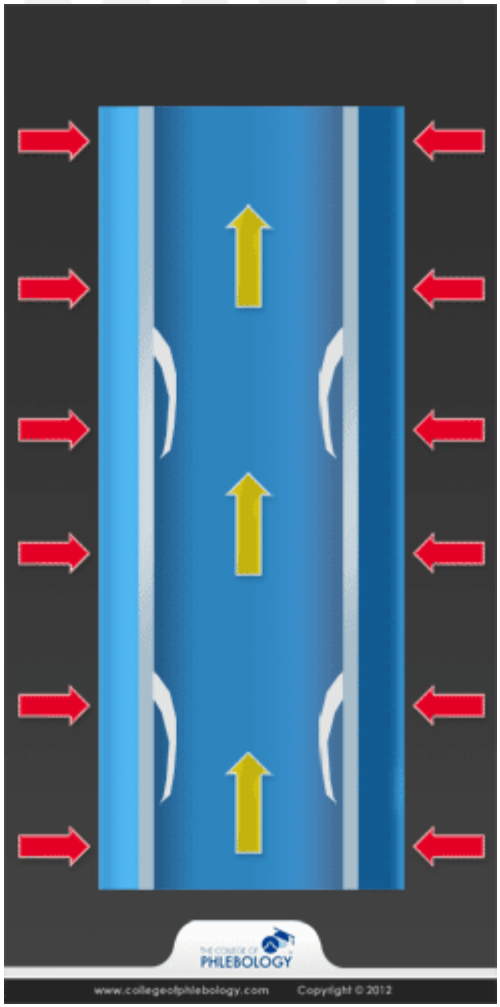
Deep veins

- CFV, FV & PopV > 1 sec
- Tibial veins > 0.5 sec
- Perforators > 0.5 sec

Superficial System

- GSV & SSV > 0.5 sec





Review Article

Phlebology

Persistent incompetent truncal veins should not be treated immediately

Phlebology
2015, Vol. 30(1S) 98–106
! The Author(s) 2015
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sagepub.co.uk/journalsPermissions.nav
DOI: 10.1177/0268355515569141
phl.sagepub.com
SAGE

P Pittaluga and S Chastanet

2015

Abstract

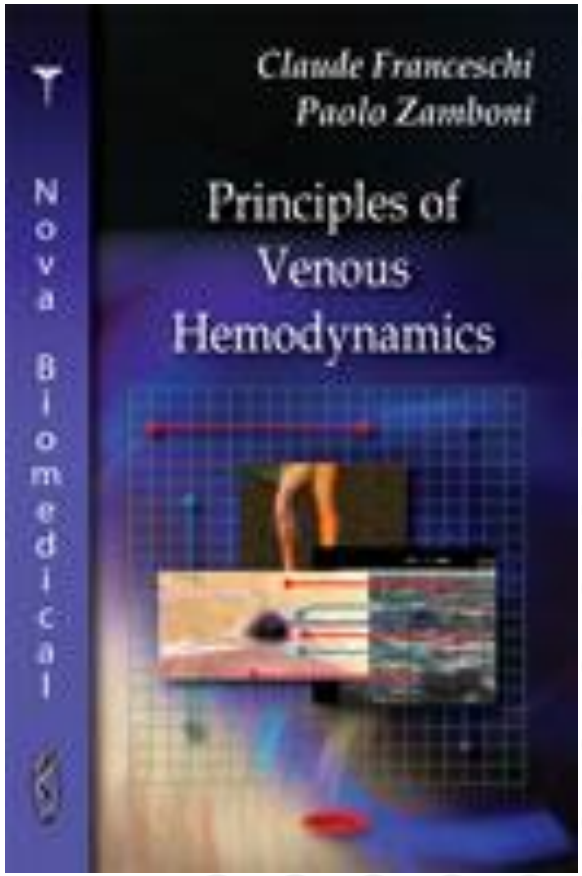
Background: The traditional attitude for the treatment of chronic venous disorder is to systematically treat incompetent truncal veins. We wanted to evaluate the outcomes of not treating all incompetent truncal veins with regard to our experience of focusing the treatment to the varicose tributaries.

Methods: Retrospective study on all procedures of surgical treatment consecutively performed for varicose veins by single phlebectomy with preservation of a refluxing great saphenous vein (GSV), according to the principles of the ambulatory selective varices ablation under local anesthesia (ASVAL) during four years of practice. The clinical and hemodynamic outcomes have been evaluated at eight days, one year, and once a year.

NYU Langone
MEDICAL CENTER
Division of Vascular and Endovascular Surgery


CLAUDE FRANCESCHI
THEORIE ET
PRATIQUE DE LA
CURE
CONSERVATRICE ET
HEMODYNAMIQUE DE L'
INSUFFISANCE
VEINEUSE EN
AMBULATOIRE
EDITIONS DE L'ARMANÇON

1988


Claude Franceschi
Paolo Zamboni
Principles of
Venous
Hemodynamics
Nova Biomedical

2009

Classification of Venous Disease:

C_1: Telangiectasia

C_2: Varicose veins

C_3: Edema

C_4: Lipodermatosclerosis or hyperpigmentation

C_5: Healed ulcer

C_6: Active ulcer

CEAP Classification[1]

- Chronic venous disease is progressive and even modest disease may translate into functional limitations and limitations in daily activities[2,3]
- Approximately one-third of patients will experience clinical worsening within 6 months.[2]
- 66% of patients have episodes of ulceration lasting more than five years[4]

CEAP = clinical, etiologic, anatomy, pathophysiologic classification of venous disorders

1. Eklöf, B et al. Revision of the CEAP classification for chronic venous disorders: Consensus statement. Journal of Vascular Surgery. 2004 40(6): 1248-1252..
2. Labropoulos N, Leon L, Kwon S, et al. Study of the venous reflux progression. J Vasc Surg. 2005;41(2):291-295
3. Kaplan RM, et al. Quality of life in patients with chronic venous disease: San Diego population study. J Vasc Surgery. 2003; 37:1047-53
4. Callam MJ et al., Chronic ulcer of the leg: clinical history. British Medical Journal. 1987; 294:1389-1391.

VCSS

- In response to the need for a disease severity measurement, the **AVF** committee on outcomes assessment developed the **Venous Severity Scoring System** in 2000.

- Generates a **dynamic score** and can be used previous to treatment and post-intervention.

JVS 2000

- **Rutherford RB, Padberg FT, Comerota AJ, Kistner RL, Meissner MH, Moneta GL.Venous severity scoring: An adjunct to venous outcome assessment. *J Vasc Surg* 2000;31:1307-12.**

J Vasc Surg 2010;52:1387-96

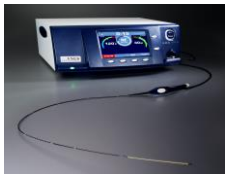
VCSS

Descriptor	Absent (0)	Mild (1)	Moderate (2)	Severe (3)
Pain	None	Occasional	Daily	Daily limiting
Varicose veins	None	Few	Calf or thigh	Calf and thigh
Venous edema	None	Foot and ankle	Above ankle, below knee	To knee or above
Skin Pigmentation	None	Perimalleolar	Diffuse, lower 1/3 calf	Wider, above lower 1/3 calf
Inflammation	None	Perimalleolar	Diffuse, lower 1/3 calf	Wider, above lower 1/3 calf
Induration	None	Perimalleolar	Diffuse, lower 1/3 calf	Wider, above lower 1/3 calf
No. active ulcers	None	1	2	≥ 3
Active ulcer size	None	< 2 cm	2 – 6 cm	> 6 cm
Ulcer duration	None	< 3 mo	3 – 12 mo	> 1 yr
Compression Therapy	None	Intermittent	Most days	Fully comply

J Vasc Surg 2010;52:1387-96

Venous Procedures

- RADIOFREQUENCY
- LASER
- FOAM
- MOCA
- ADHESIVE
- PHLEBECTOMY



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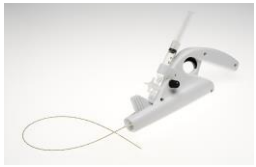


VESSEL OCCLUDER

LASER AND RFA

Consensus? Where to Perform Thermal Ablation?

Office

But Wait… Why is the OR Better

Phlebology
The Royal Society of Medicine Press Limited

Endovenous laser procedure in a clinic room: feasibility and side effects study of 1700 cases

C Hamel-Desnos, JL Gerard, and P Desnos

Conclusions: This large retrospective study of laser procedures performed outside the operating theatre did not reveal any significant specific complications as regards the environment required. The efficacy results were equivalent to those found in the literature. Regarding cost and constraints induced by operating theatre environment,

June 2009

the clinic room SHOULD BE ABLE to offer an easier and economic alternative option for venous treatment

NYU Langone MEDICAL CENTER
Division of Vascular and Endovascular Surgery

Consensus: Cheaper in office

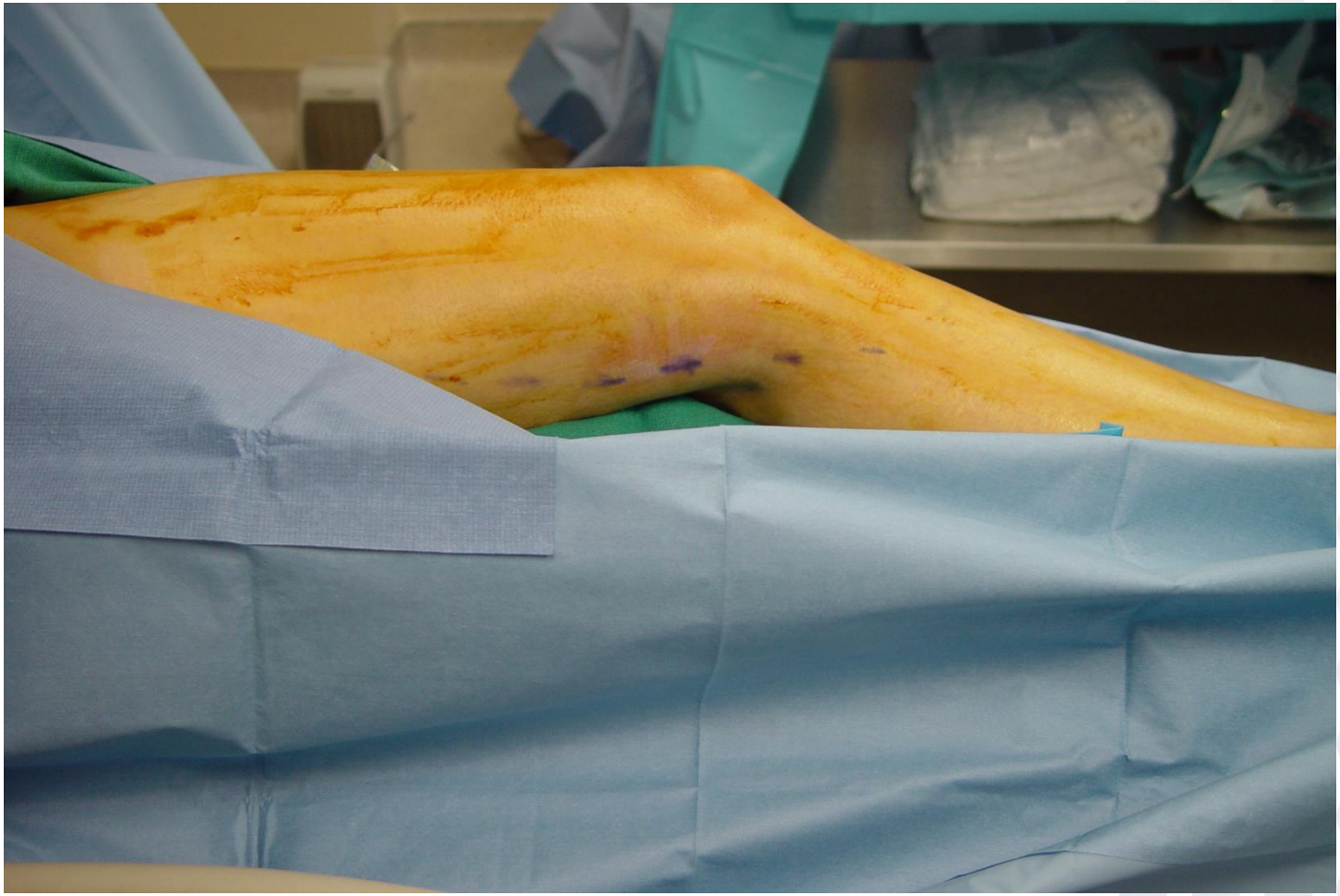
	Hospital	Office
•Room Charge	•$$$	$
•Staff Charge	•$$$	$
•Materials Charge	•$$$	$
•Extra Staff Cost	•$$$	0
•?????	•$$$	

Consensus

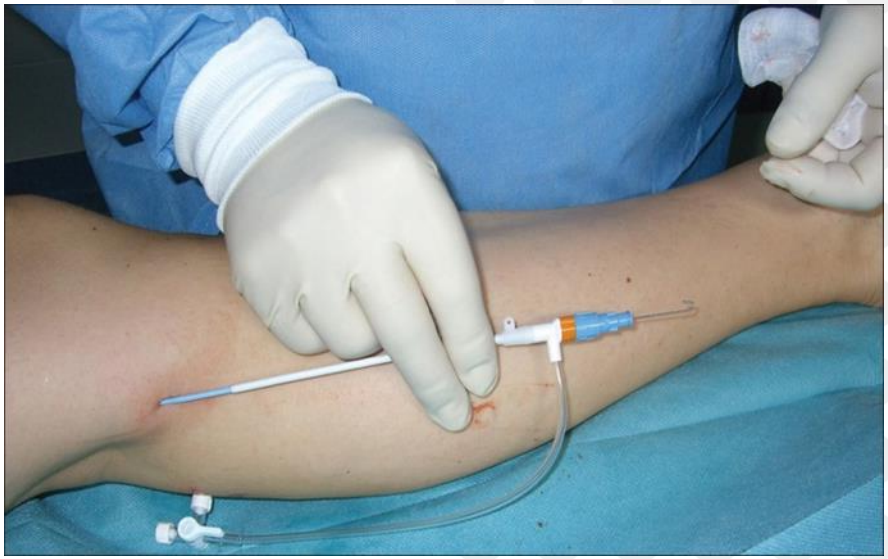
- **NO Level 1 Evidence that Hospital Surgery is safer**
- **There is evidence that outpatient surgery is less costly**
- **There is evidence that patients are happier in an office setting.**

Procedure

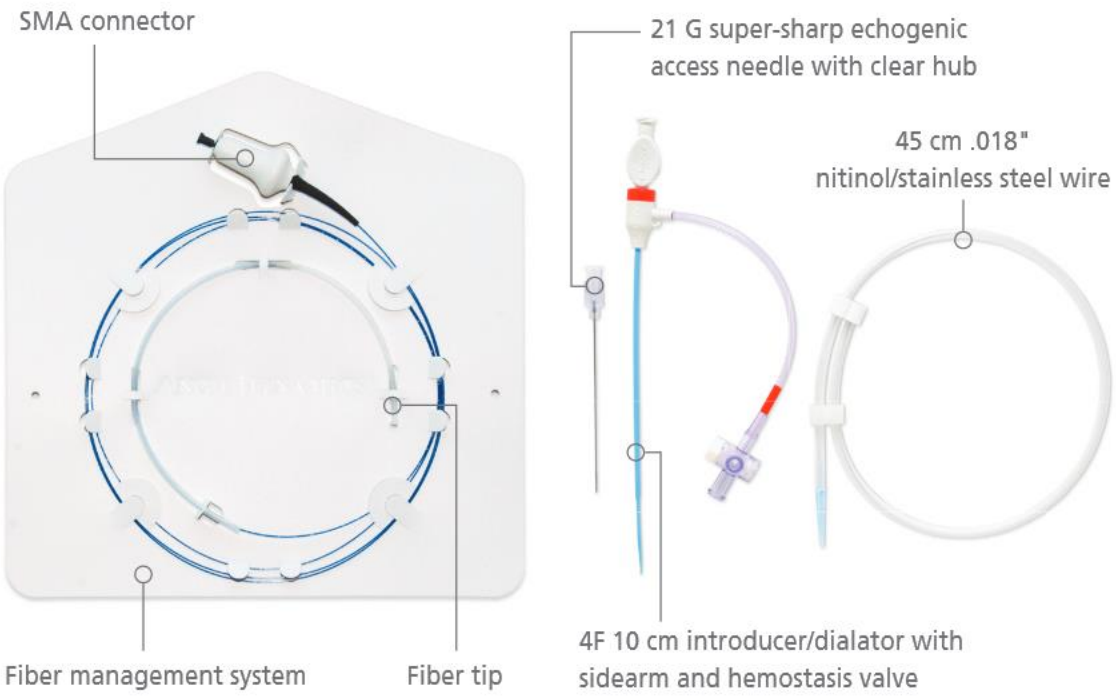
Preparation of the Patient



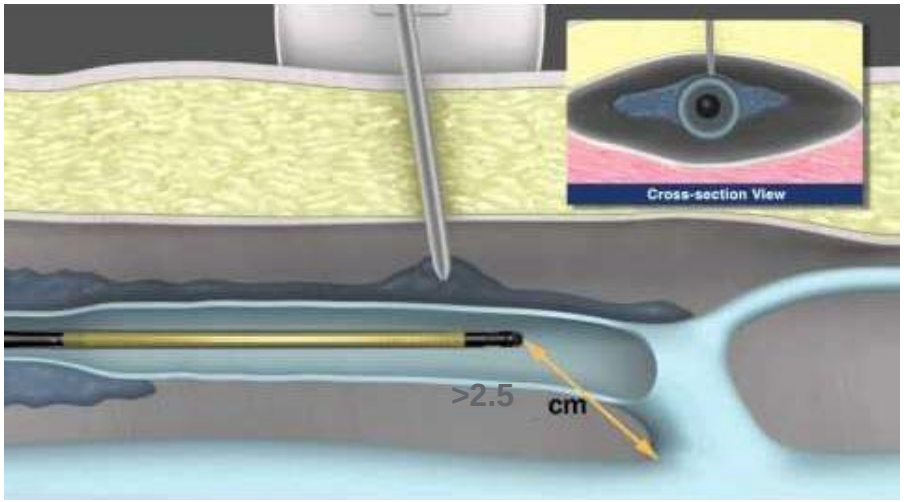
ACCESS



Direct/Radial



Fiber or Catheter Positioning



Increasing ablation distance peripheral to the saphenofemoral junction may result in a diminished rate of endothermal heat-induced thrombosis.

Sadek M[1], Kabnick LS[2], Rockman CB[1], Berland TL[1], Zhou D[1], Chasin C[1], Jacobowitz GR[1], Adelman MA[1].

Author information

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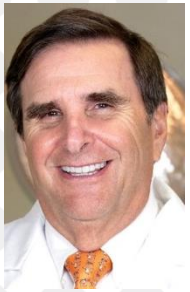
This study suggests that by changing the distance from the deep venous junction from 2.0 to 2.5 cms may diminish the rate of EHIT 2

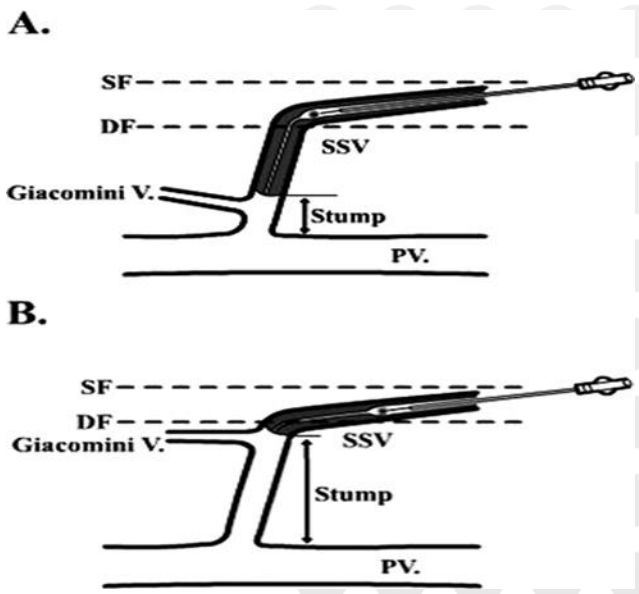


2013

Placement of Sheath and Fiber

Fiber or catheter placement:

just before the SSV "dives" to the popliteal vein
2-3cms from the Junction



Tumescent Anesthesia

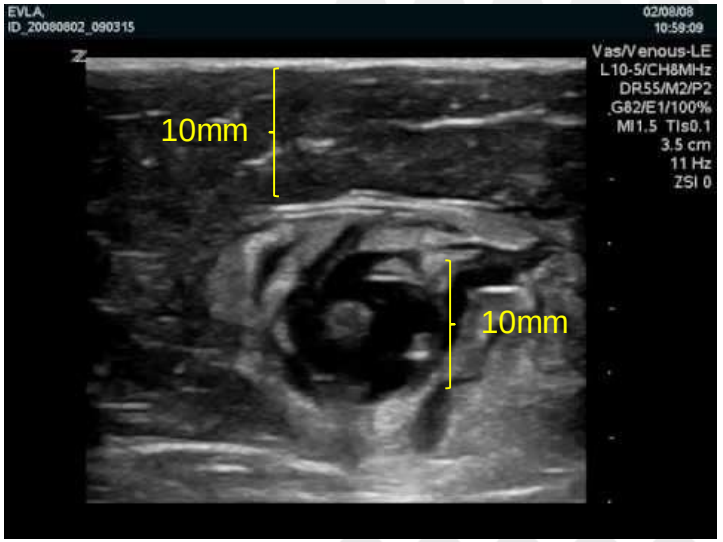
Ednothermal Ablation Anesthesia

Preparation of Tumescent Anesthetic Solution: 0.1% Lidocaine

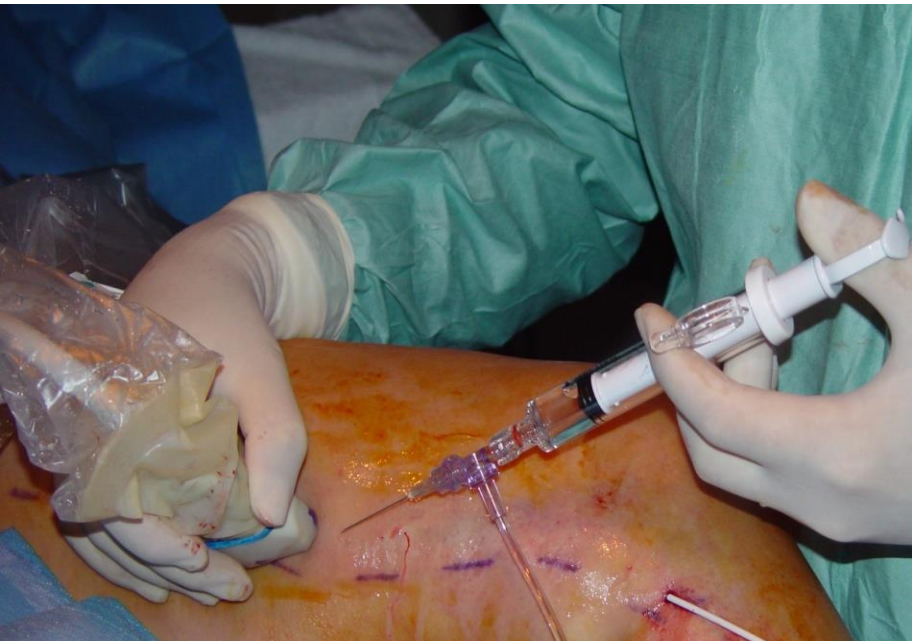
0.9% Normal saline	950 mL
2% Lidocaine	50 mL
Epinephrine	1 mL (1 mg, 1:1,000,000 final concentration)
Sodium bicarbonate 8.45%	12.5 mL (final solution pH 7.4)

Tumescent Halo

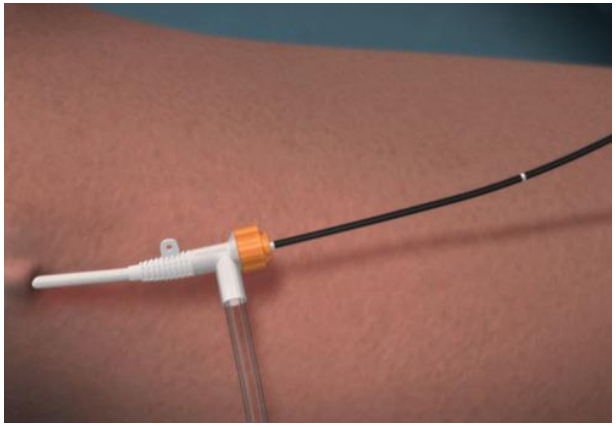
- 10 mm diameter around vein
- 10 mm between target vein & skin

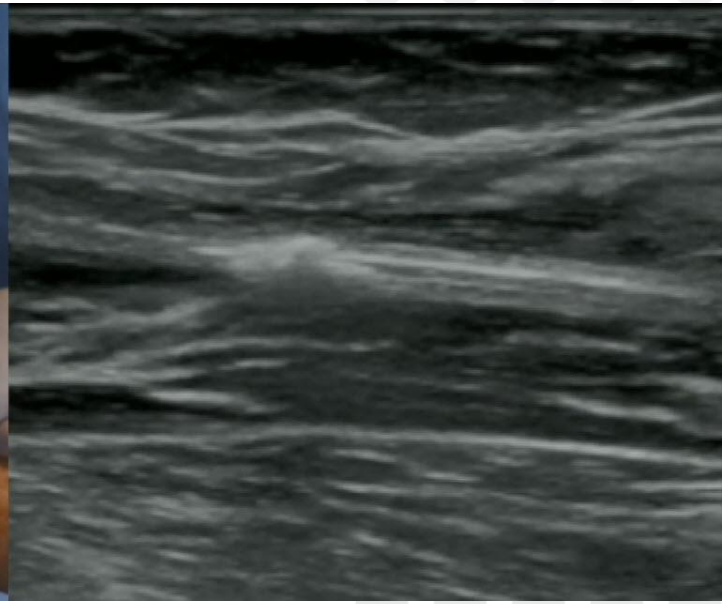


Tumescent Anesthesia



Pull Back





Endovenous Laser Ablation Procedure – Pull Back Continuous

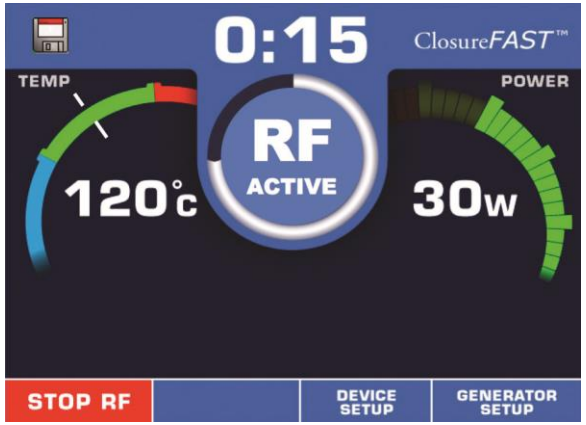
- 1470nm in USA 5-7W 30-50J/cm
- 1470nm OUS higher power and ⇧ J/cm
- Different powers for different wavelengths as well
- Fibers ie bare, covered - NeverTouch or Radial

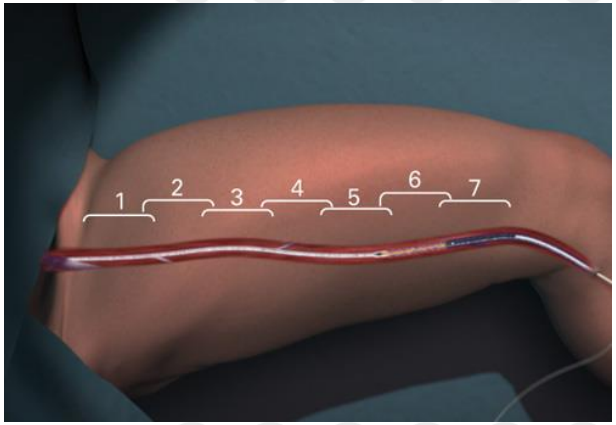
Radiofrequency Ablation
Ablation Procedure

- Compression

- Each 7-cm segment is treated = 20-second treatment interval
- Except for initial

- Controversy 1-2-3 cycle Rx the entire length





Compression Hose? What Pressure?

Postoperative Complication

- 68 year old female with symptomatic VV of the left thigh.
- GSV reflux within the facial compartment to mid-thigh and then epifascial to below the knee

- RF performed, entry site below the knee
  - Extra tumescent anesthesia placed around the vein in the epifascial area (originally under the skin and post T 1cm below the skin)

Complications: skin

- 75 yo F 1 wk postop LASER
  - Closed GSV
  - NO EHIT 2
  - Complaining of pain in around the epifascial GSV (superficial accessory saphenous vein)
  - Palpable cord
  - No erythema
  - 3 months postoperative U/S closed GSV

35 year old female attorney

ablation,3 months ago,
proximal thigh GSV
thigh and calf SAGSV
NOW complaining of brownish discoloration.

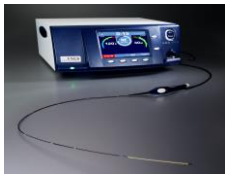
PMH: none
PSH: none
Allergies: none

Hyperpigmentation

This is Why

Which Endovenous Procedure is Better?

- RADIOFREQUENCY
- LASER
- FOAM
- MOCA
- ADHESIVE
- PHLEBECTOMY



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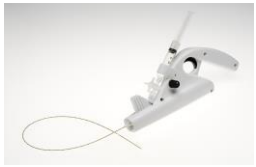

VESSEL OCCLUDER

Review Article

Vascular

Vascular
0(0) 1–9

DOI: 10.1177/1708538116648035
vas.sagepub.com
SAGE

Which endovenous ablation method does offer a better long-term technical success in the treatment of the incompetent great saphenous vein? Review

Renata Balint[1], Akos Farics[2], Krisztina Parti[2], Laszlo Vizsy[2], Jozsef Batorfi[2], Gabor Menyhei[3] and Istvan B Balint[2]

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saphenous vein reopening (p = 0.96; OR: 0.22; 95% of CI: 0.06–0.82 for radiofrequency ablation vs. endovenous laser ablation; p = 0.96; OR: 0.11; 95% of CI: 0.06–0.20 for endovenous laser ablation vs. ultrasound guided foam sclerotherapy; p = 0.93; OR: 3.20; 95% of CI: 0.54–18.90 for ultrasound guided foam sclerotherapy vs. radiofrequency ablation).
Conclusion: Both endovenous laser ablation and radiofrequency ablation are efficient in great saphenous vein occlusion on the long term. Lacking long-conducted large trials, the efficacy and reliability of ultrasound guided foam sclerotherapy to treat great saphenous vein-reflux is not affirmed.

Both endovenous laser ablation and RFA are efficient in GSV occlusion-long term.

Randomized clinical trial comparing endovenous laser ablation, radiofrequency ablation, foam sclerotherapy and surgical stripping for great saphenous varicose veins

L. H. Rasmussen, M. Lawaetz, L. Bjoern, B. Vennits, A. Blemings and B. Eklof

Danish Vein Centres, Naestved, and Surgical Centre Roskilde, Roskilde, Denmark
Correspondence to: Dr L. H. Rasmussen, Danish Vein Centres, Eskadronsvej 4A, 4700 Naestved, Denmark (e-mail: lhr@varix.dk)

Bac[...]ound: This randomized trial compared four treatments for varicose great saphenous veins (GSVs).
Meth[...]: Five [...]ized to endove[...]ided foam s[...]ion. Miniphle[...]fore surgery, a[...]
Results: A[...]ent) of the GSV[...]oups respectively[...]and one a deep[...]ded. The mean(s[...]and 2·25(2·23) r[...]25), 1 (0–30), 1 ([...]nds, was 3·6 (0–[...]cific quality-of-li[...] the SF-36® doma[...]rmed better in the sho[...]
Conclusion: All treatments were efficacious. The technical failure rate was highest after foam sclerotherapy, but both radiofrequency ablation and foam were associated with a faster recovery and less postoperative pain than endovenous laser ablation and stripping.

580 limbs, 500 patients

Inclusion criteria

- Symptomatic varicose veins with GSV reflux
- $C_2 – C_4$

Exclusion criteria

- Previous DVT
- Axial deep venous reflux

PODCAST AVAILABLE ONLINE

Paper accepted 15 March 2011
Published online in Wiley Online Library (www.bjs.co.uk). **DOI:** 10.1002/bjs.7555

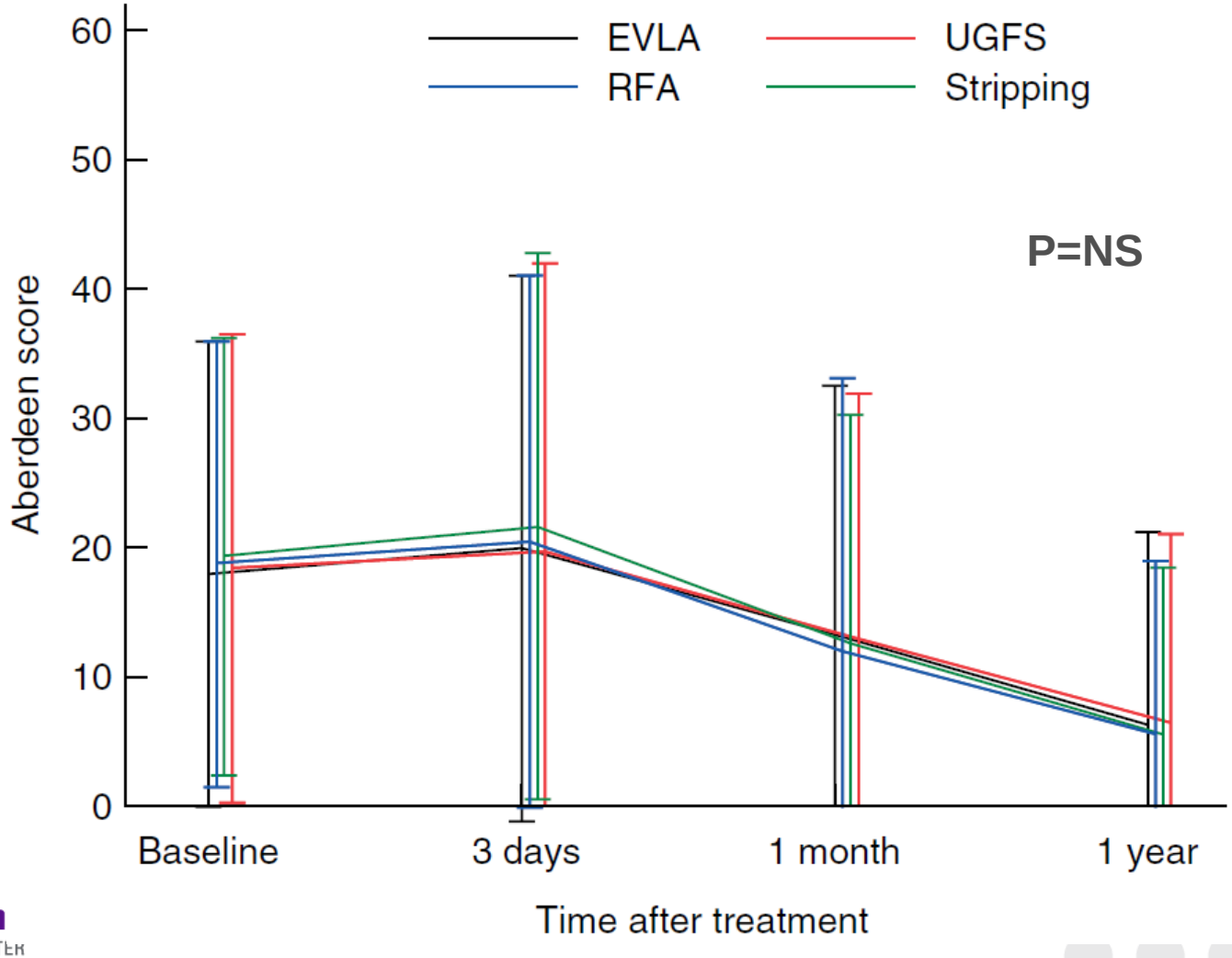
Br J Surg. 2011

Primary Endpoint GSV Closure

Patent GSV with Reflux

	EVLA N=144 n(%)	RFA N=148 n(%)	*P* value
3 days	0 (0)	0 (0)	.053
1 month	1 (0.7)	0 (0)	.20
1 year	7 (5.8)	6 (4.8)	<.001

Disease Specific Quality of Life (AVVSS)



Randomized clinical trial comparing endovenous laser ablation, radiofrequency ablation, foam sclerotherapy, ...veins with 3-year follow-up.

2013

Randomized clini… ablation, foa… veins with …

Rasmussen L…

Author i…

Abstract

INTRODUCT… laser ablatio… assessing re…

METHODS: … high ligation … examinations … below .05 we…

RESULTS: A… (KM estimate… part of the tre… 14.9%), 24 (… recurrent var… different betw… 37 (KM estima… stripping groups, … groups with no difference betw…

CONCLUSIONS: All t… …e efficacious and resulted in a similar improvement in VCSS and QOL. However… …and reoperations were seen after UGFS.

All RFA and LASER were efficacious and resulted in similar improvement.

Concluding Remarks

- There is no significant difference between laser and RF in terms of
  - Efficacy
  - QOL
  - Safety profile
  - **Clinical Equipoise**

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