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JANUARY 23-25 2020



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COMPLICATIONS IN VARICOSE VEIN SURGERY.

*Dr Inga Vanhandenhove
AZ Monica - Antwerp*



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Disclosure

Speaker name:

Inga Vanhandenhove

I do not have any potential conflict of interest



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SHaring **I**nterventional **T**rouble





- Phlebology. 2019 Apr;34(3):201-207.
Treatment of varicose veins, international consensus on which major complications to discuss with the patient: A Delphi study.
de Mik SM1, Stubenrouch FE1, Legemate DA1, Balm R1, Ubbink DT1.
- study reached a consensus on which complications of varicose vein treatments physicians consider **major** or **minor**



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- important in order to standardise the **informed consent procedure** and improve **shared decision-making** (treatment options in VV R/)
- but: still based on what **physicians** and not necessarily the **patient** deem to be major complications
- **medicolegal** reasons
- **legislation** on informed consent is different in different countries and clear guidelines are not always available or based on court rulings



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- On the one hand, we want our patients to be **fully informed** about their possible **treatment options**.
- On the other hand, we do not want **frightened** patients by presenting **every potential complication** (e.g. risk of stroke with permanent disability after foam sclerotherapy due to an air embolism, in patients with a patent foramen ovale?)



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COMPLICATIONS AFTER EVLA - RFA -

...

- may be divided into **early** and **late** complications
- most serious potential complication involves **misidentification of the anatomy** with duplex ultrasound, leading to the placement of the tip in a wrong position or even in a deep vein



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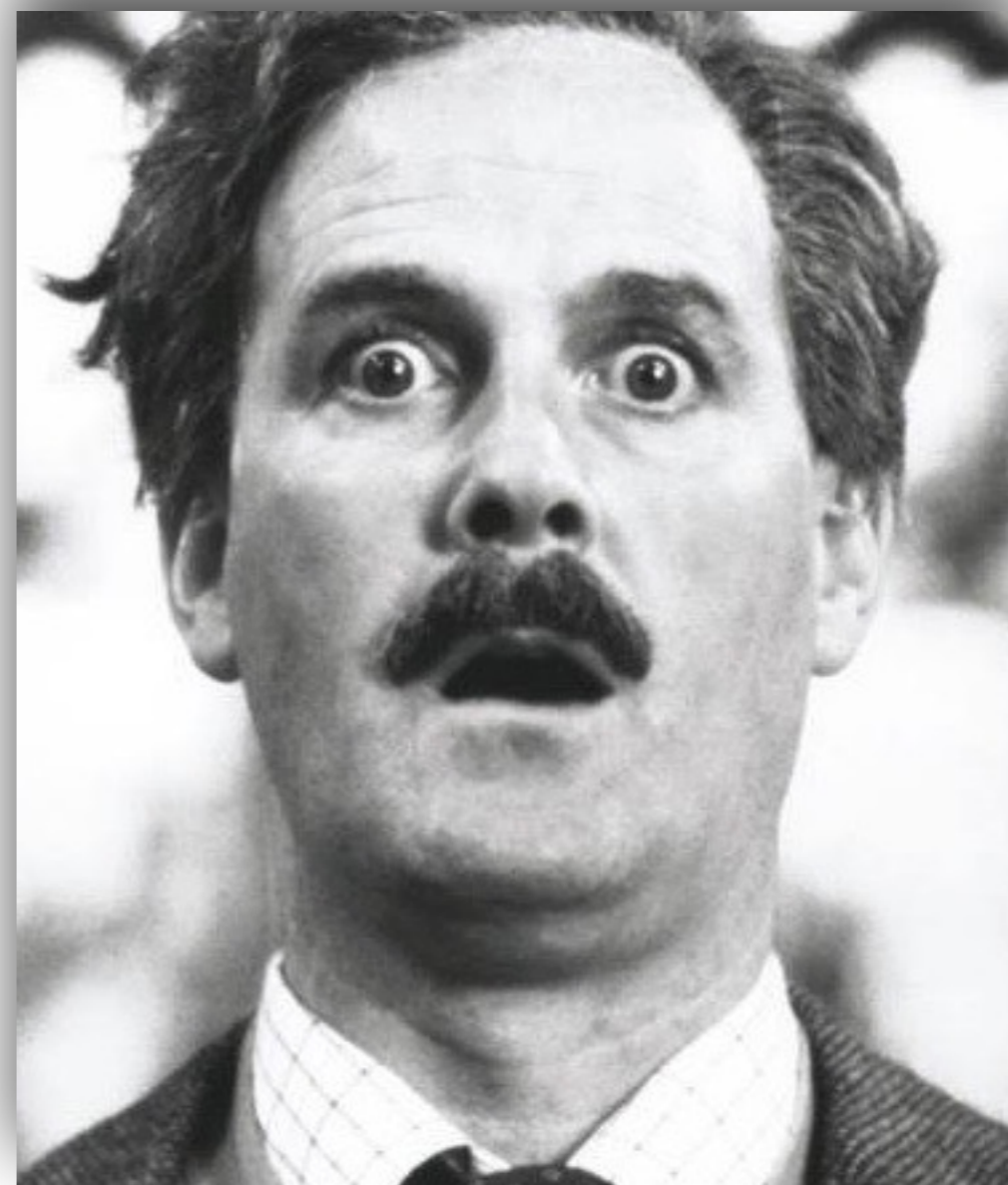


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- **stripping**: ligature of the deep vein or stripping of the artery!





SKIN BURNS FOLLOWING EVLA- RFA

- relatively rare, higher incidence with RFA than EVLA
- full thickness / superficial burn
- avoid treatment of veins close to the skin surface
- adequate **tumescent anaesthesia**





INFECTION

- extremely rare
- one case report of **septic thrombophlebitis** following an EVLA procedure, requiring surgical intervention



NERVE DAMAGE

- **saphenous** and **sural** nerve (sensory)
- **sheath and catheter** introduction
- **needle tumescent anaesthesia** (rate is inversely related to the operator experience with perivenous ultrasound-guided anaesthesia)
- direct **thermal injury**
- causes a **cutaneous paresthesia** or **dysesthesia**, usually transient
- greater volumes of tumescence may be required during ablation of the SSV



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NERVE DAMAGE

- **common peroneal** nerve is a motor and sensory cutaneous nerve, close to the saphenopopliteal junction
- risk of being injured from **heat transfer** from the laser while treating the **saphenopopliteal junction**
- many of these **nerve injuries** can be avoided by careful needle entry under **ultrasound guidance**, large volume **tumescence** and avoidance or judicious use of ablation in **areas** at high risk of nerve injury

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Fig. 5. Popliteal stage arteriography depicting an AV fistula between branches of the popliteal artery and a genicular vein after an EVLA procedure.



ARTERIOVENOUS FISTULA

- < concomitant **venous and arterial injuries**
- **heat** induced injury < thermal energy from the laser
- **needle** injury during tumescent anaesthetic administration
- **US**
- perivenous structure impossible to **isolate** from the vein by the tumescent anesthesia: skip it



Fig. 5. Popliteal stage arteriography depicting an AV fistula between branches of the popliteal artery and a genicular vein after an EVLA procedure.



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ARTERIOVENOUS FISTULA

- routine post-procedure **duplex** examination
- within the first 30 days after treatment (up to 2 Y)
- **no symptoms**
- **leg swelling**
- one patient (AVF at the common femoral vein) developed **high-output cardiac failure**, decompensated while developing severe dyspnea, abdominal distention and leg swelling



ARTERIOVENOUS FISTULA

- **close spontaneously**
- **persistent** in long-term follow-up, but remain **asymptomatic**
- AVF was associated with a significantly high rate of **GSV recanalization**
- **conservative approach** advised
- intervention: **open repair, embolization or stent grafting**



MECHANICAL / TECHNIQUE PROBLEMS

- **laser fracture** (don't leave the lost part!)
- **retained venous access sheaths**
- **deliver thermal energy only beyond the introducer!**
(if you still use one)

Retained Laser Fibre Following Endovenous Laser Ablation[☆]

J.R.H. Scurr,^{1,2*} J. Martin,¹ T.V. How,² I. Gambardella¹ and J.A. Brennan¹

¹Regional Vascular Unit, Royal Liverpool University Hospital, UK

²Department of Clinical Engineering, University of Liverpool, UK

Int Surg. 2012 Oct-Dec; 97(4): 293–295.

doi: [10.9738/CC155.1](https://doi.org/10.9738/CC155.1)

Retained Foreign Body After Laser Ablation

[Shiyan Ren](#),¹ [Peng Liu](#),¹ [Wei Wang](#),² and [Yuguan Yang](#)¹



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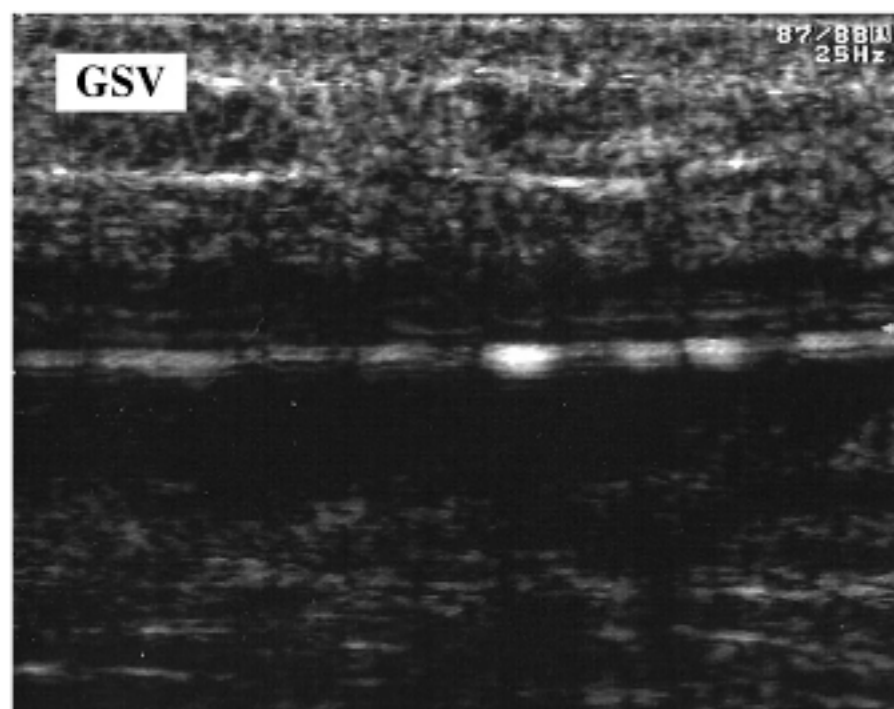


Fig. 1. Duplex confirming foreign body in the great saphenous vein (GSV).

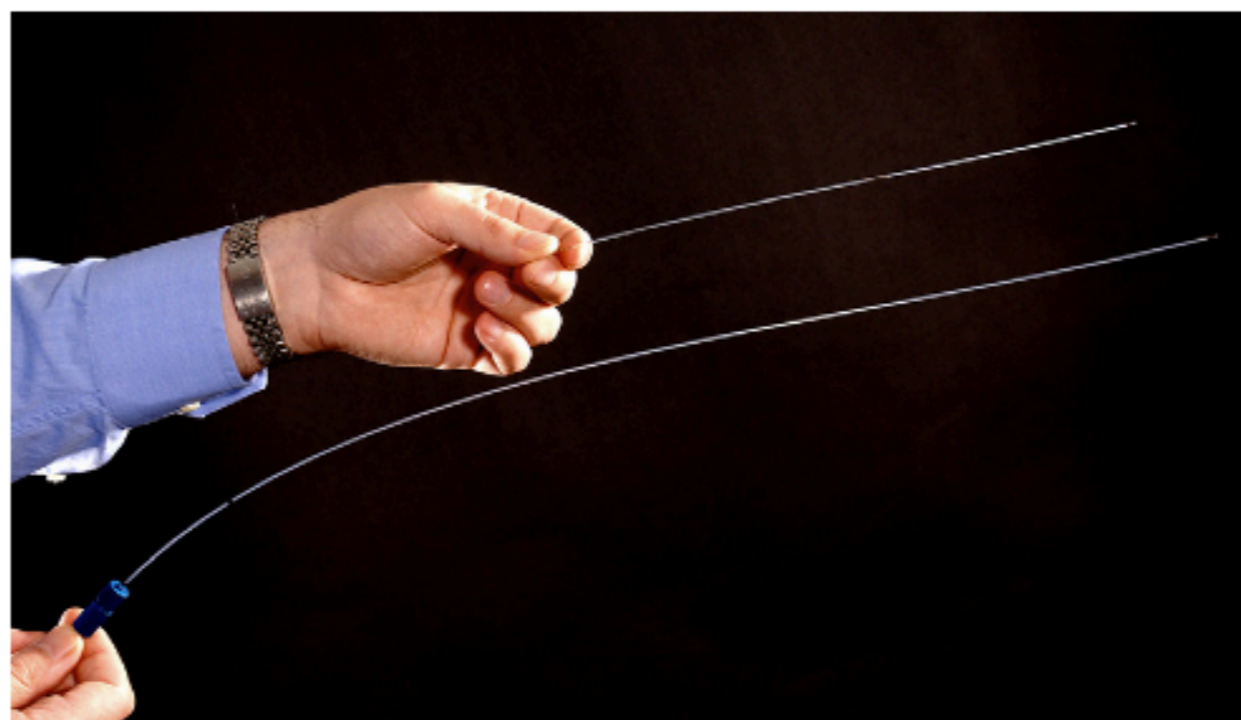


Fig. 2. Retained length of EVLA fibre (top), compared to a complete laser fibre (bottom).

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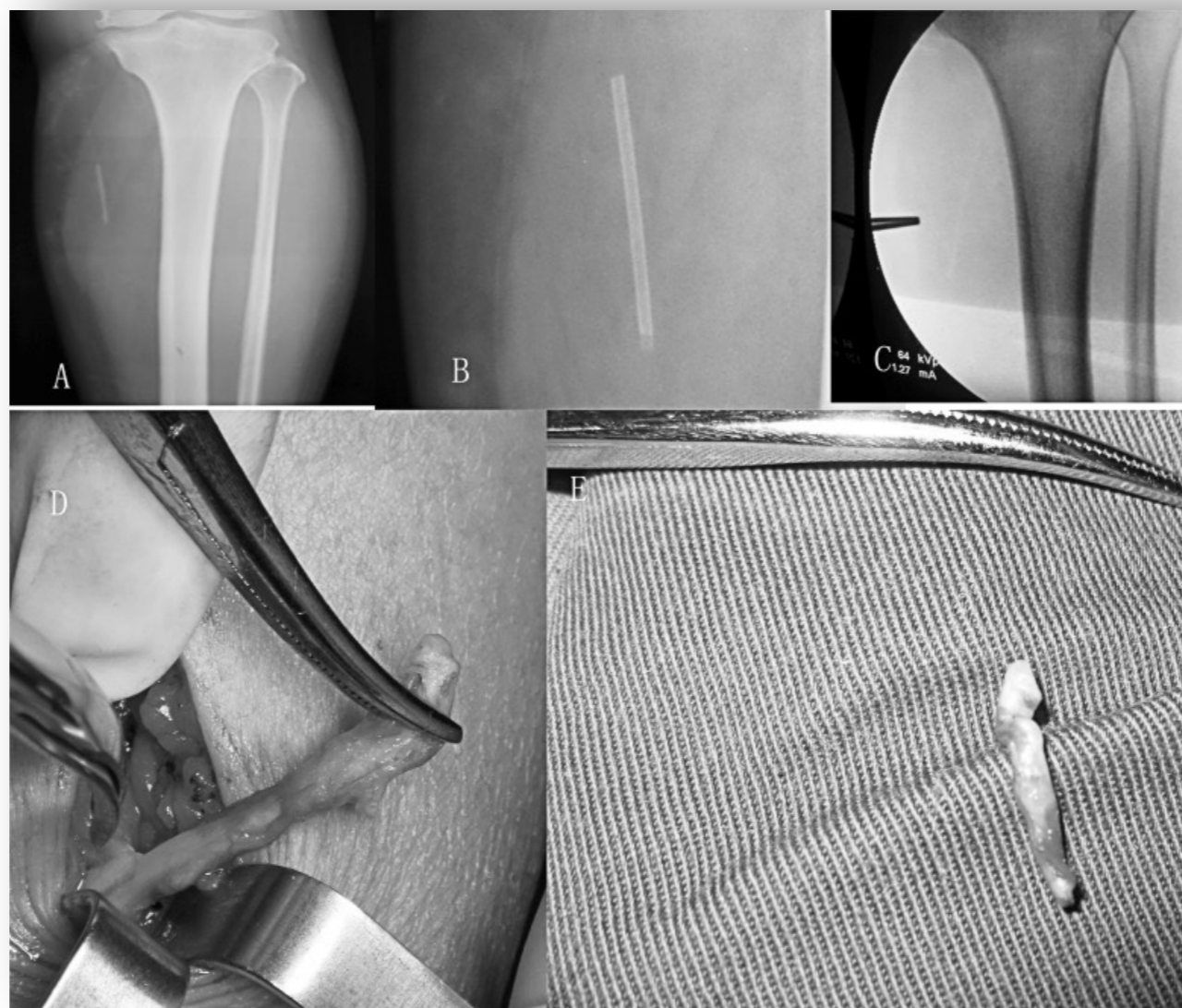
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A retained foreign body in the left leg before (A and B) and after (C) surgical removal. It was removed under local anesthesia (D) and encased with surrounding tissue (D and E).

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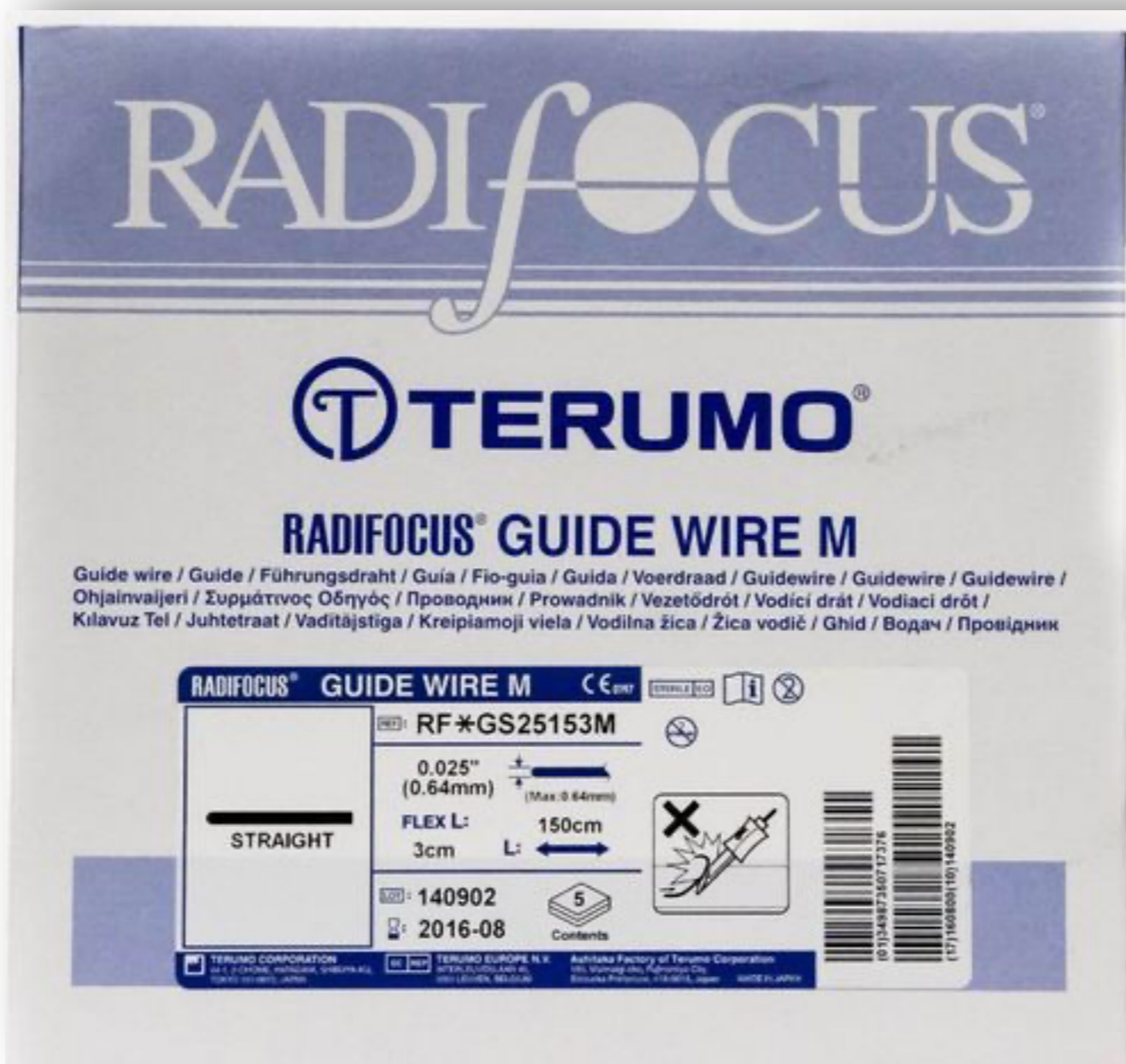
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Necrotizing fasciitis after ambulatory phlebectomy and stripping, performed with use of tumescent anesthesia





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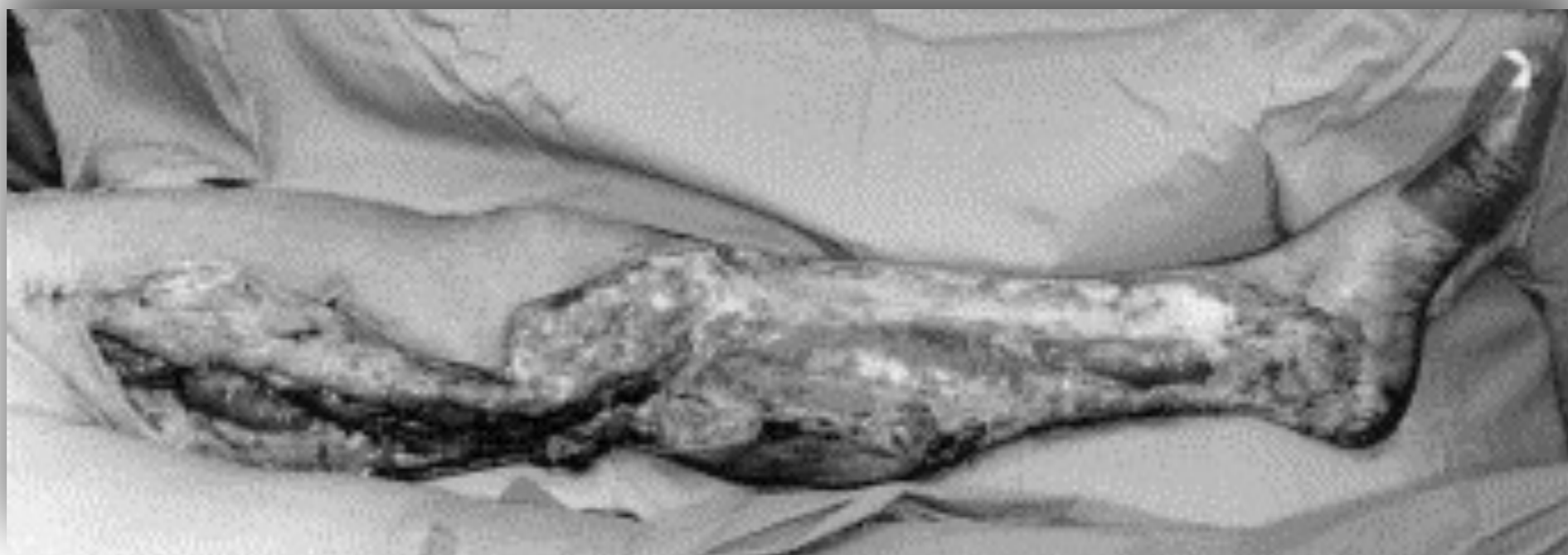
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full-thickness skin
necrosis



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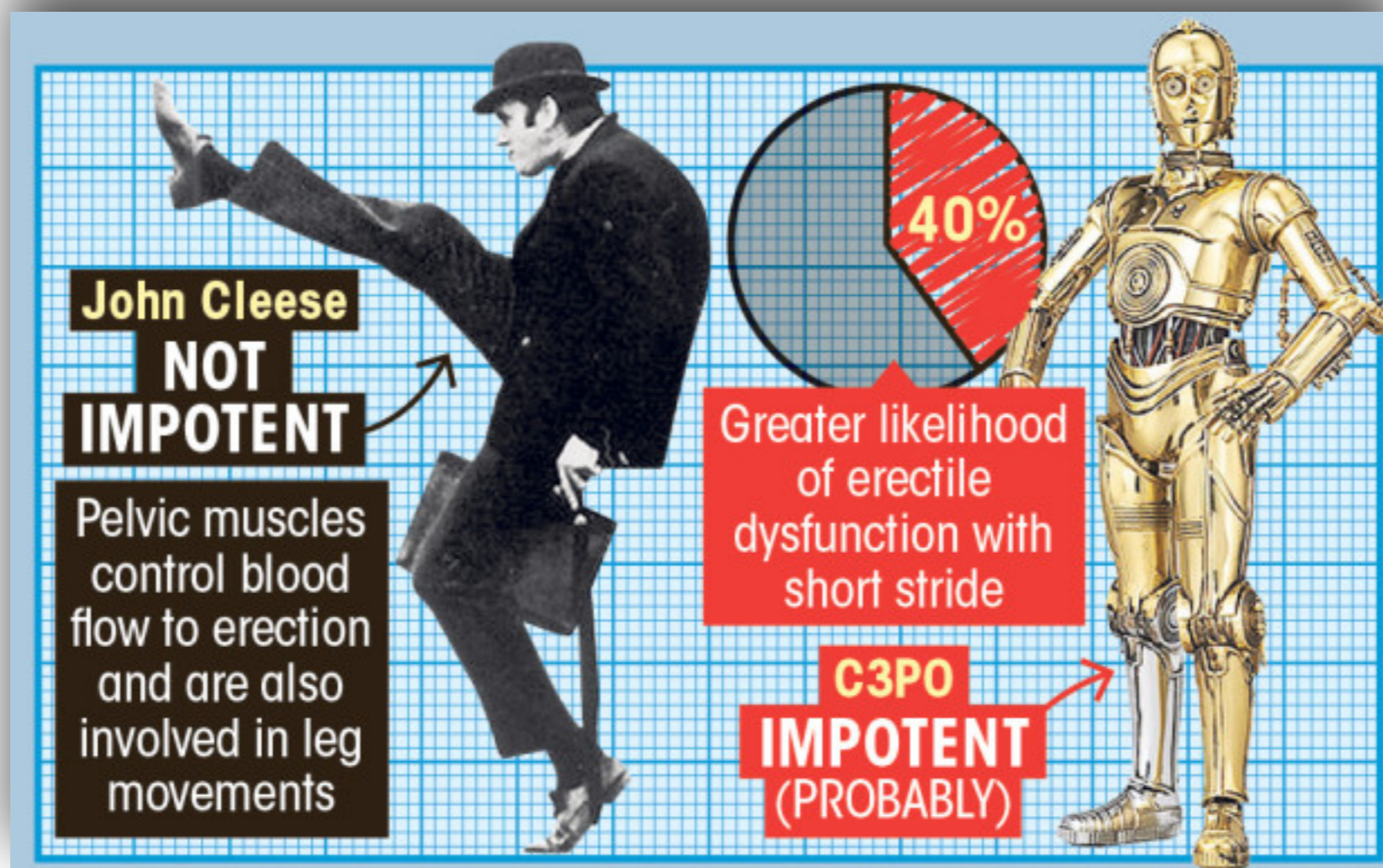
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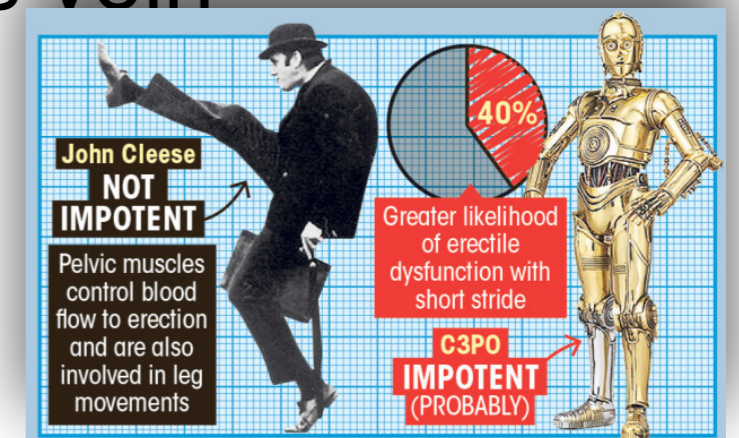
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ERECTILE DYSFUNCTION

- several cases of impotence following **stripping** of the internal saphenous have been reported
- erectile body of the penis is vascularized by the **internal pudendal artery**, but in case of a congenital anomaly, the supply derives from the **external pudendal**, passing under the arch of the internal saphenous vein





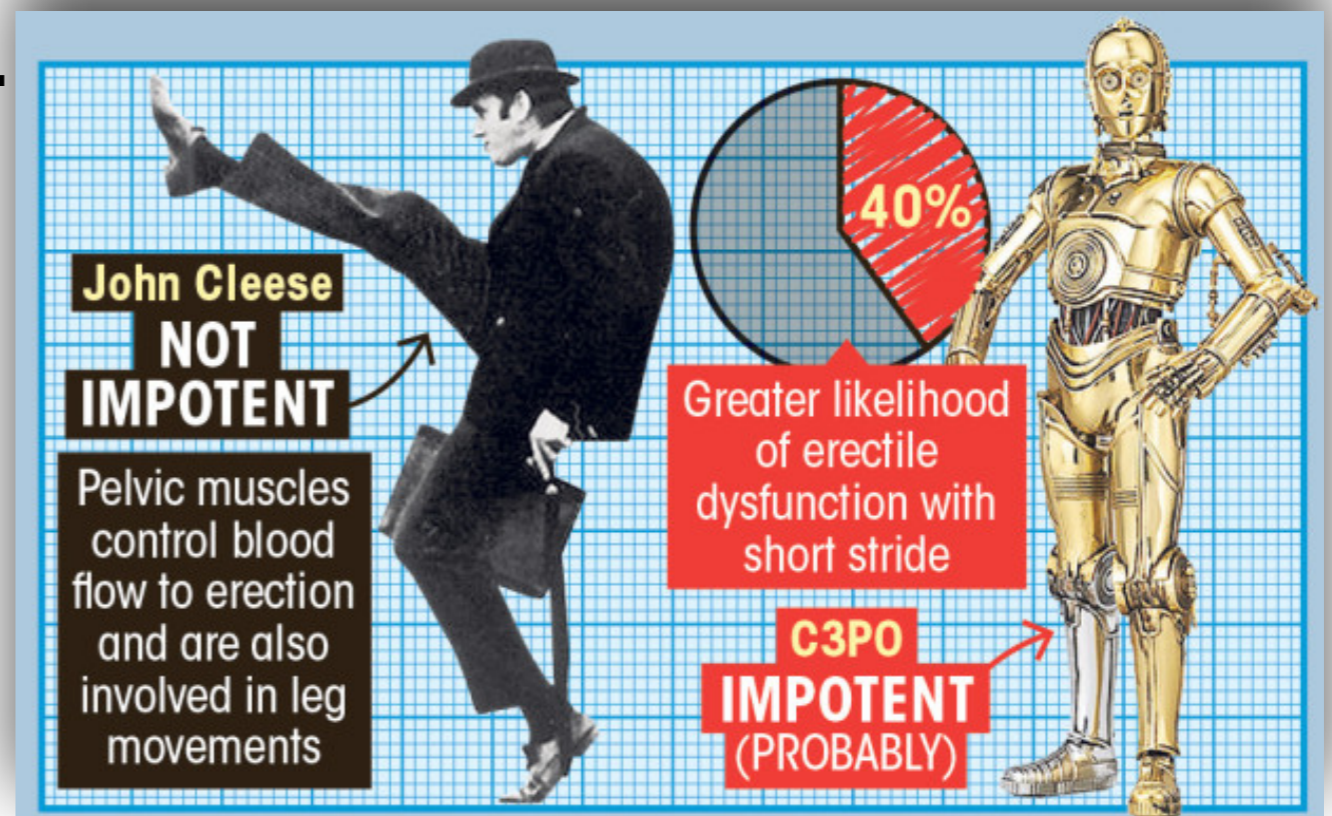
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ERECTILE DYSFUNCTION

- after **stripping**
- **before** and gone after .
- after **EVLA** ?



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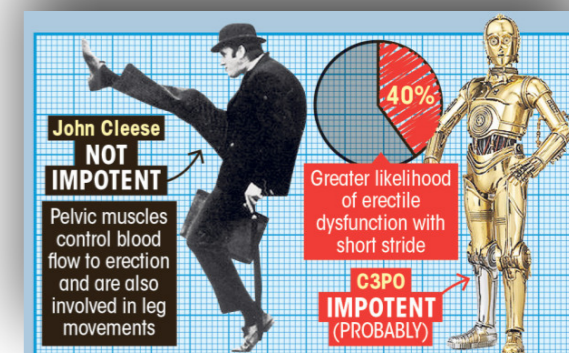
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Are side effects always undesirable?

Article Jan 2015

 Jens Cordes ·  M. Zimbelmann ·  Birgit Kahle

Introduction: The endovenous thermal ablation of the great saphenous vein due to varicosis changes the blood circulation in the groin. This could affect the venous drainage of the penis, especially the drainage of the corpus spongiosum over the...



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Erectile function improvement after endovenous varicosis therapy of the great saphenous vein

Article in several languages: English | [deutsch](#)

M. Zimbelmann, J. Cordes

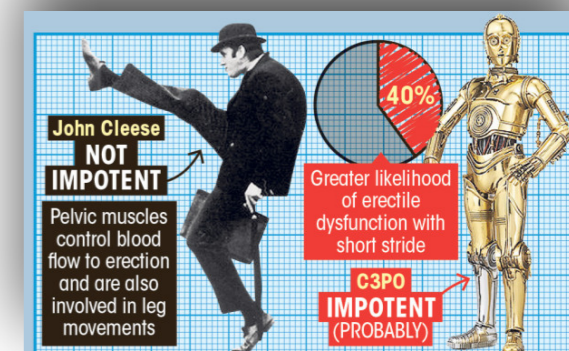
Phlebologie 2015; 44(04): 180-181
DOI: 10.12687/phleb2270-4-2015

Case report

Summary

There are no cases reported about endovascular varicosis therapy having an impact on the erectile function of the man. This case reports' patient had a stronger erection in the area of the glans penis after he underwent endovenous lasertherapy of the great saphenous vein.

This effect could also be explained with the anatomy of the veins because some of the blood of the penis is drained by the external pudendal vein which leads into the saphenofemoral junction. If there is a manipulation on the veins of the saphenofemoral junction it might have an impact on the drainage of the penis.



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[Ann Surg Treat Res.](#) 2018 Apr; 94(4): 219–221.

Published online 2018 Mar 26. doi: [10.4174/astr.2018.94.4.219](https://doi.org/10.4174/astr.2018.94.4.219)

PMCID: PMC5880981

PMID: [29629358](https://pubmed.ncbi.nlm.nih.gov/29629358/)

Successful use of VenaSeal system for the treatment of large great saphenous vein of 2.84-cm diameter





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VENASEAL INJURY LAWYERS

May 31, 2017

By Shoop | A Professional Law Corporation

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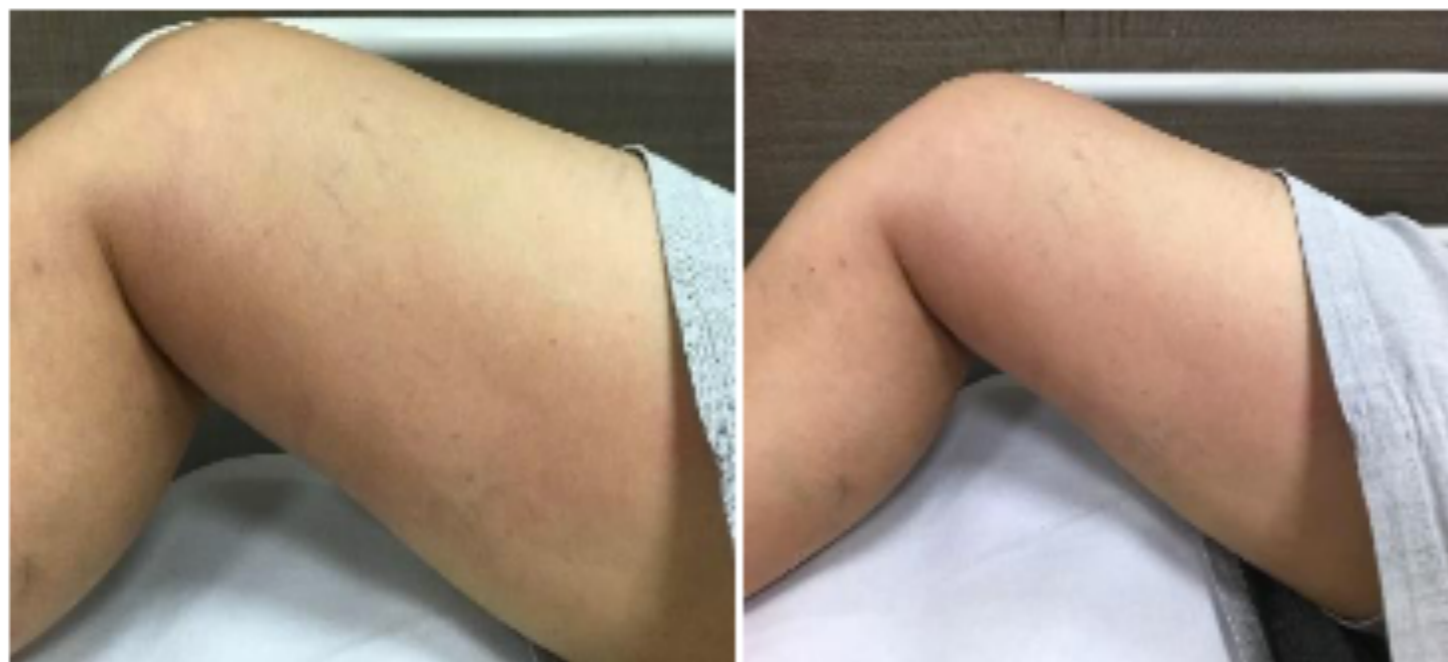


Figure 1: Erythematous rash following VenaSeal™ ablation of the right GSV over the medial thigh on post-operative day 21.

- **VenaSeal™ red skin reaction**



Figure 3: Resolution of phlebitis over the right medial thigh (A) and patch test area (B) 5 weeks post-operatively



Figure 2: Patch results showing infiltrated papules and few vesicles suggesting of a strong positive reaction at 48 (A) hours and 96 hours (B) respectively.

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Figure 2: Patch results showing infiltrated papules and few vesicles suggesting of a strong positive reaction at 48 (A) hours and 96 hours (B) respectively.

- **patch test** shows a strong positive reaction, suggesting an allergic contact dermatitis to the VenaSeal™ adhesive (n-butyl-2-cyanoacrylate)



Figure 3: Resolution of phlebitis over the right medial thigh (A) and patch test area (B) 5 weeks post-operatively

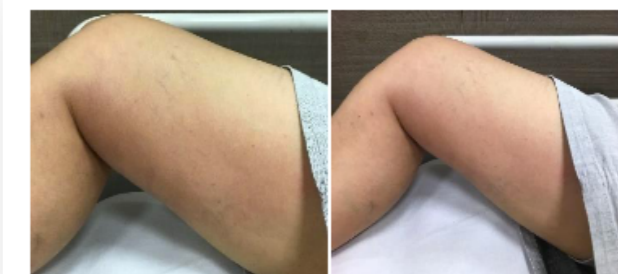


Figure 1: Erythematous rash following VenaSeal™ ablation of the right GSV over the medial thigh on post-operative day 21.

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Figure 3: Resolution of phlebitis over the right medial thigh (A) and patch test area (B) 5 weeks post-operatively

- symptoms completely resolved 2 weeks later, without steroids

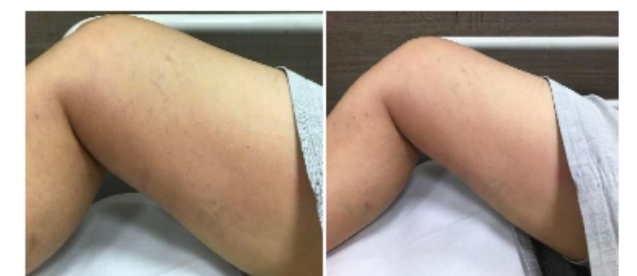


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[J Vasc Surg Cases Innov Tech](#). 2019 Sep; 5(3): 372–374.

PMCID: PMC6699189

Published online 2019 Aug 7. doi: [10.1016/j.jvscit.2019.05.004](https://doi.org/10.1016/j.jvscit.2019.05.004)

PMID: [31440717](https://pubmed.ncbi.nlm.nih.gov/31440717/)

Persistent type IV hypersensitivity after cyanoacrylate closure of the great saphenous vein

[Andrew D. Jones](#), MD,^{a,*} [Edward M. Boyle](#), MD,^a [Randy Woltjer](#), MD,^b [Jason P. Jundt](#), MD,^c and [Adam N. Williams](#), MD^d

- 49-year-old woman, left leg **GSV reflux** and numerous branch varicosities
- history of **allergy** to sulfa and penicillin, but no allergy to CAE or adhesives
- **CAE** for GSV (5 cm distal to the saphenofemoral junction to the proximal calf)
- 3 mL of 1% **sodium tetradecyl sulfate** branch varicosities



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- **POD 7**: no complaints
- **US**: left GSV occluded from 2 cm distal from the SFJ, to the vein access point in the proximal calf
- **POD 13**: complaining of **leg pain and redness** (phlebitis? - allergic reaction?) R/diphenhydramine (Benadryl) and topical diclofenac (Voltaren 1% cream)
- **POD 17**: **progressive leg pain, chills, and erythema** over the medial thigh ; concern about infection R/cephalexin (Keflex) for 5 days
- **POD 21**: significant **improvement** in symptoms.



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- **POD 124:** complaints of **persistent leg pain, erythema and swelling**
- R/ methylprednisolone (Medrol) dose pack
- **patch test** to CA, methyl methacrylate 2% and a negative control with moderate (2+) reaction to the CA after 48 and 96 hours

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- **POD 200: vein endoscopically excised**, symptoms of pain and swelling in the treated limb persisted for **2 years**
- **histopathologic evaluation** of the removed tissue showed intraluminal foreign material and evidence of mononuclear cell infiltration

Excised great saphenous vein (GSV) with intraluminal foreign body





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Venaseal™ Cyanoacrylate Glue Rejection Following Endovenous Ablation - Another New Complication

PS Lew¹, YK Tan¹, TT Chong² and TY Tang^{*2}

¹Department of General Surgery, Changi General Hospital, Singapore ²Department of Vascular Surgery, Singapore General Hospital, Singapore

- 42-year-old male
- **Venoseal R/** of the right GSV and SSV for **CEAP 6**
- no previous drug allergies
- **2 weeks post-operatively** : multiple **painless large 'pustules'** with **surrounding erythema** along the treated veins
- R/ **anti-inflammatories** and **antibiotics** assuming phlebitic reaction and an element of underlying infection

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Figure 1: Left panel shows wounds on the calf following Venaseal ablation and glue cast is visible on the wounds overlying the LSV. Right panel is a close-up of the wound showing a frond of CAG protruding from the underlying great saphenous vein.

- pustules eventually burst and pieces of white glue casts were seen from each wound



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- more glue casts were extruded periodically over the next **8 months** until all the wounds were healed completely
- senior author no longer offers this option of venous ablation to patients with multiple drug allergies as he has found that a hypersensitivity reaction is more likely in these types of patients.

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Figure 2: Multiple healed wounds along the distribution of GSV. Those wounds were extruding glue casts and took about 8 months to heal completely.



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Varicose Vein Treatment , Varicose Veins , Vein Specialist • July 30, 2018

Patient forced to tear out chunk of leg following freak allergic reaction from FDA-approved VenaSeal™ Closure System





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- area in her lower leg was bright red, hot and didn't look well
- severe **pain** and **swelling** for several months, R/ ibuprofen
- **patch test** : after 10 months
- 18 inch vein stripped from upper to lower leg
- a 1 inch section of the incision wasn't healing
- 2 slivers of **glue** protruding





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Left leg postoperative sutures



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Wound vac after glue removal surgery.





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Scar and redness after surgery





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- risk of having or developing **allergic sensitization to CAC** (nail care industry workers...) should be informed of the presence of CA in this closure system and be offered alternative forms of treatment?
- according to allergists, exposing people to the seal before an operation can actually **increase the odds of a reaction.**
- Moreover, there is a concern about **false positives**, which means some people who could stand to benefit from the ease of the VenaSeal™ Closure System would be prematurely shut off from it.



CONTROVERSES ET ACTUALITES EN CHIRURGIE VASCULAIRE

CONTROVERSIES & UPDATES
IN **VASCULAR SURGERY**



JANUARY 23-25 2020

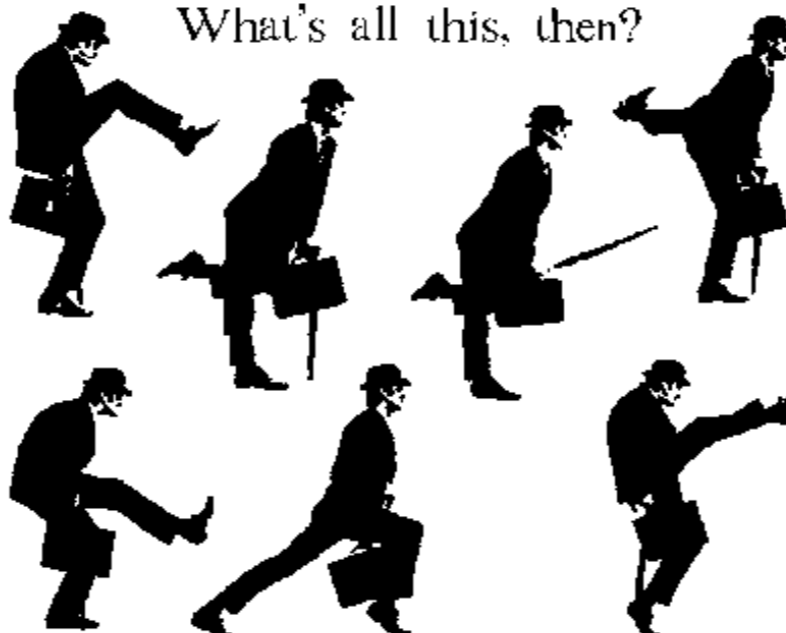
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• **S**Haring **I**nterventional **T**rouble



What's all this, then?





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