

Venous pseudoaneurysm of the great saphenous vein stump as late complication of flush saphenofemoral ligation and stripping

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ABSTRACT

Guidelines now recommend endovenous thermal ablation over open treatment of saphenous incompetence, but flush saphenofemoral ligation and stripping remain relevant when appropriately applied and expertly executed. Complications are rare but could be severe, needing further surgical correction. We report a unique case of a late venous pseudoaneurysm of the great saphenous vein stump after flush saphenofemoral ligation and stripping, successfully treated with surgical sac excision. We highlight the importance of continuous follow-up for patients previously submitted to open venous surgery. (*J Vasc Surg Cases and Innovative Techniques* 2018;4:63-6.)

Varicose veins of the lower limbs are part of the spectrum of chronic venous disease and affect a range between 5% and 30% of the adult population.¹ Although minimally invasive techniques are gaining spreading diffusion, saphenectomy is still the most performed surgical procedure in the rest of the world, in particular in countries with limited health resources available.

Many guidelines now recommend endovenous ablative therapies over open treatment of saphenous incompetence, considering the shorter recovery time and reduced pain and morbidity. Nevertheless, flush saphenofemoral ligation (FSFL) and stripping of the great saphenous vein (GSV) remain relevant when appropriately applied and expertly executed. Acute complications of open surgery have been described extensively in the literature,²⁻⁴ whereas late complications have not been widely reported, apart from recurrences.⁵

We report a rare case of late venous pseudoaneurysm (VPA) of the GSV stump that occurred about 3 years after FSFL and stripping. It was successfully treated with new ligation and surgical sac excision. Signed informed consent for publication was obtained.

CASE REPORT

A 48-year-old woman presented to our emergency department with a left inguinal mass. At admission, the symptoms

were pain and a sensation of burning and heaviness in the groin that increased at the end of the day and was exacerbated by the standing position. Clinical conditions had progressively worsened in the last 3 months. She had been referred by her practitioner to the general surgeon; a crural hernia was suspected. The colleague ruled out this diagnosis with a clinical and ultrasound examination and immediately sent the patient to our attention.

She had a silent clinical history with the exception of bilateral chronic venous disease (Clinical, Etiology, Anatomy, and Pathophysiology clinical class 2) treated at our institution by a senior surgeon (A.B.) skilled in venous surgery with FSFL and invaginated stripping of the GSV on the right side in 2012 and on the left in 2013.

According to our protocol, FSFL was performed in both interventions with a double ligation, one close to the saphenofemoral junction (SFJ) with absorbable 3-0 polyglactin 910 tie (Vicryl; Ethicon, Somerville, NJ) and the second with 2-0 coated braided polyester nonabsorbable tie (Ti-Cron; Covidien, Dublin, Ireland) 1 cm above the stump. The patient was then submitted regularly to clinical follow-up and to sclerotherapy of residual small-diameter veins and telangiectasias for aesthetic concerns by the same surgeon.

At clinical examination in the upright position, the patient presented with a 5.0-cm bluish tender bulge on the inguinal surgical scar of the prior intervention, flattened when pressed. The result of the cough impulse test was positive, with a palpable thrill evoked at the SFJ by Valsalva maneuver. She was immediately submitted to venous Doppler ultrasound (DUS) examination, which confirmed the presence of a saccular VPA of the GSV stump with a diameter of 48 × 30 × 50 mm (Fig 1, a) that spontaneously refilled after Valsalva maneuver (Fig 1, b and c) and a communication door of 18 mm. No incompetence of the iliac-femoral vein was observed at DUS above the SFJ. The presence of arteriovenous fistula was excluded by means of DUS examination.

The next day, the patient was submitted to surgery under local anesthesia and sedation, through an oblique groin incision of 7 cm at the inguinal fold, to obtain full exposure of the VPA and the common femoral vein. The VPA sac was carefully isolated to avoid unwanted hemorrhage (Fig 2, a). A 4.0-cm segment of the common femoral vein was also surgically exposed.

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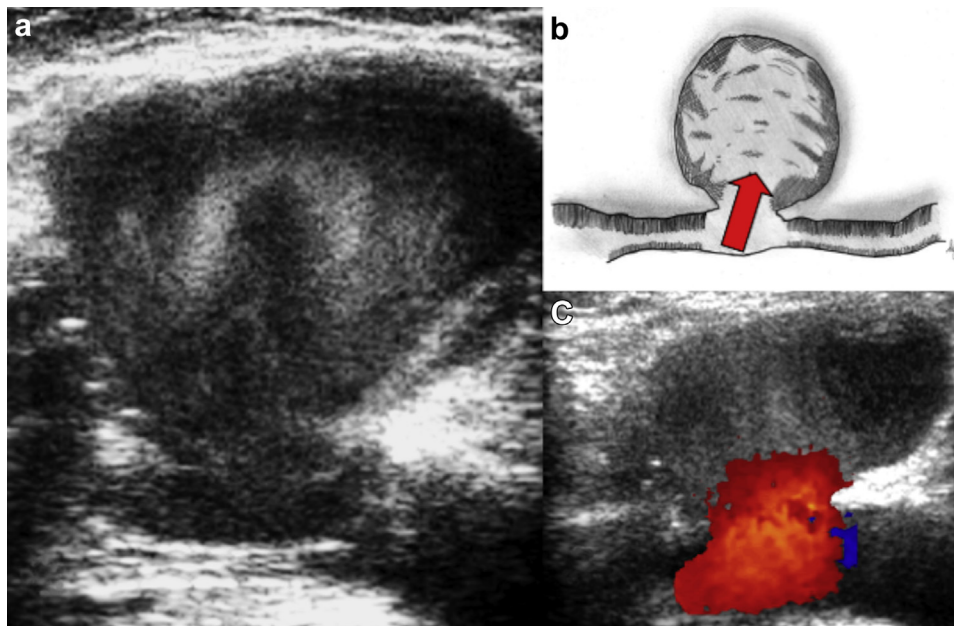


Fig 1. a, Doppler ultrasound (DUS) imaging of a 5-cm-diameter venous pseudoaneurysm (VPA) of the great saphenous vein (GSV) stump after previous flush saphenofemoral ligation (FSFL) and stripping. **b,** Graphic representation of the refilling of the VPA from the common femoral vein (*red arrow*). **c,** DUS imaging of the reflux of the flow inside the VPA after Valsalva maneuver.

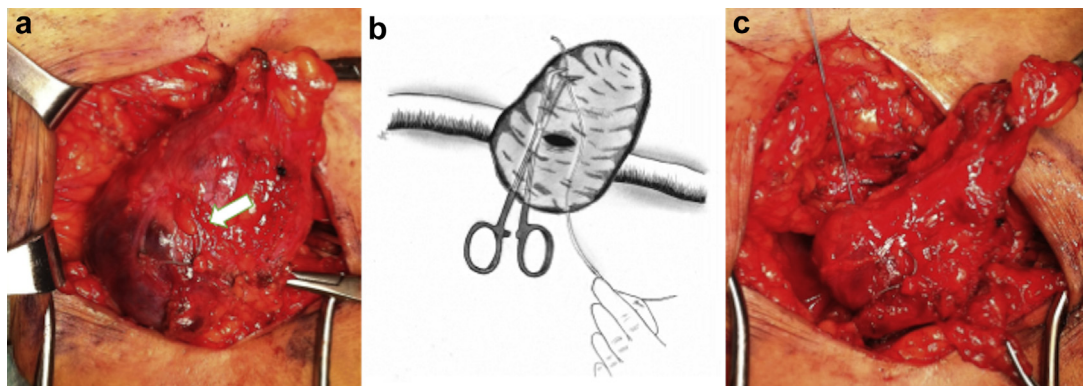


Fig 2. a, Intraoperative imaging of the venous pseudoaneurysm (VPA) with remnants (*arrow*) of the nonabsorbable tie used for flush ligation. **b,** Simulation of the passage of a new nonabsorbable tie with a Mixer-O'Shaughnessy 8-inch forceps at the neck of the VPA. **c,** Emptying of the VPA after ligation of the tie.

After the isolation of the VPA was completed, the remnant of the previous tie became visible (Fig 2, a). The origin of the VPA was closed by means of a new nonabsorbable 2-0 tie (Ti-Cron) performed through a Mixer-O'Shaughnessy 8-inch forceps (Fig 2, b and c) and completed with a 3-0 nonabsorbable running suture (Prolene [Ethicon]; Fig 3, a and b) to prevent further recurrences. The VPA, at this point flat, was opened and finally excised (Fig 3, c).

The patient was discharged with antithrombotic prophylaxis (nadroparin calcium, 3800 anti-Xa IU), and compression stockings (20-30 mm Hg) were prescribed for 20 days after surgery. She fully resumed her usual activities after 5 days. Neither additional complications nor recurrences were observed at 4 years of follow-up.

DISCUSSION

The widespread use of endovenous techniques is gradually replacing open surgery for varicose vein treatment in the United States and Europe. Nowadays, saphenectomy is considered a second choice, to be proposed only in case of contraindications to other techniques.⁶⁻⁸ Nevertheless, in many countries, the lines are still not well defined, and FSFL with saphenectomy is still largely performed or even remains the most common treatment.⁹⁻¹² Notwithstanding the advantages of endobliterative techniques related to faster recovery, the outcomes of surgery are similar.¹³⁻¹⁵

Acute complications occurring after FSFL, with or without vein stripping, are usually minor; wound

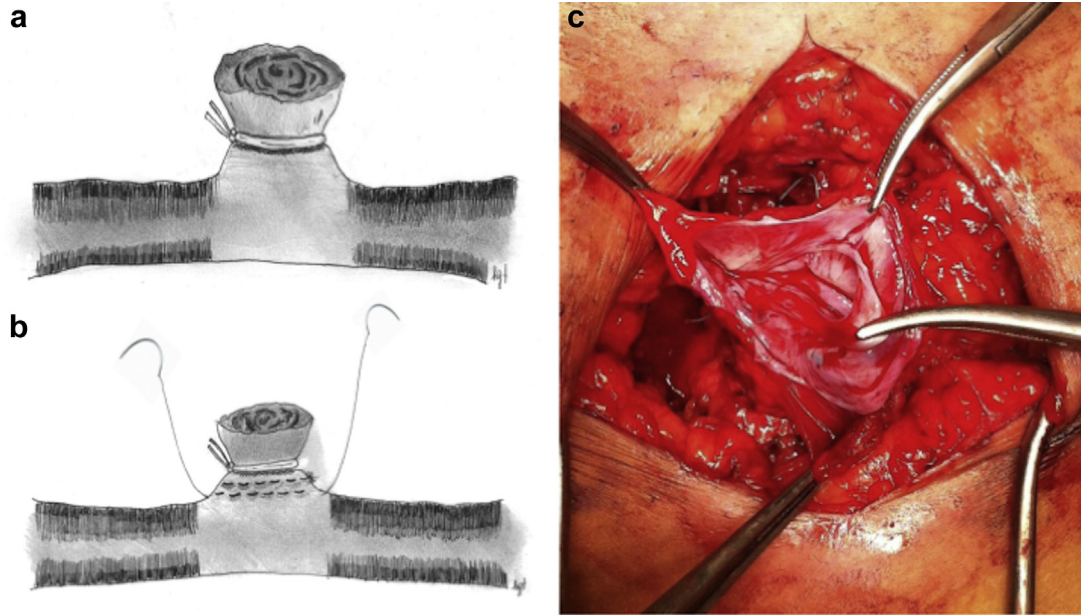


Fig 3. **a**, Graphic representation of the initial ligation of the neck of the venous pseudoaneurysm (VPA) with nonabsorbable 2-0 tie. **b**, Secondary safety running suture performed with a nonabsorbable monofilament 3-0 suture. **c**, Final opening of the sac of the VPA.

infections, hematomas, and lymphocele are the most frequent.^{3,4} Recurrences and lymphatic damage are the most common late complications.^{5,16} To our knowledge, the development of a late VPA after FSFL and saphenectomy is a rare event that has never been previously reported in the literature. On the contrary, some case reports have described the occurrence of VPAs after endovascular treatment, usually originating from an arteriovenous fistula between the GSV and arterial collaterals along its course. VPA after endovenous treatment required open surgical correction or repaired spontaneously.¹⁷⁻²⁰

The underlying cause of our VPA remains unclear. FSFL with disconnection of all the tributaries at the groin is a fairly standardized technique proposed by several authors in various textbooks of vascular surgery. It has been described as a single ligation,²¹ a double ligation with absorbable or nonabsorbable tie,²²⁻²⁶ or transfixion of the SFJ with a running monofilament nonabsorbable suture and a second distal tie on the saphenous stump.²⁷ The technique has then been improved over the years, mainly to prevent recurrences from neoangiogenesis. Primarily for these purposes, Frings et al²⁸ have recommended an additional suture of the endothelium stump with a monofilament suture or a two-layer running monofilament suture.

The first hypothesis could be related to tardive failure of the second coated braided polyester tie added to the expected reabsorption of the polyglactin 910 tie. Otherwise, the nonabsorbable tie could have slowly slipped from its original location at the SFJ as a result of the necrosis of the stump region given by the same knot.²⁹

DUS is the “gold standard” diagnostic method for noninvasive diagnosis of VPA to rule out, with high confidence, alternative hypotheses, such as recurrence, cavernoma, and arteriovenous fistula. In fact, in the case presented here, DUS clearly showed a “cul-de-sac” imaging without evidence of any efferent vessel or abnormal Doppler spectral trace.³⁰

We would also like to highlight that clinical conditions worsened gradually and belatedly, 3 years later and not immediately after open surgery.

Now, in light of preventing the occurrence of new VPAs, we always perform a double ligation with a 3-0 polypropylene proximal continuous suture together with a second free 3-0 nonabsorbable safety tie at the distal end of the GSV stump.

CONCLUSIONS

Although FSFL with saphenectomy is still one of the most commonly used techniques for varicose vein treatment all over the world, with millions of open surgical treatments performed during the last 50 years, we present an unusual late complication. The cause remains uncertain, despite a technically correct ligation of the SFJ during the primary intervention.

We want to emphasize the importance of listening to the medical history, focusing on clinical and ultrasound examination, which together could lead to an unpredictable diagnosis. Continuous follow-up should be mandatory also after open surgery of varicose veins.

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