

# A non-traumatic technique for removal of the great saphenous vein at varicose vein surgery

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## Abstract

Varicose vein surgery is one of the commonest surgeries performed in the Western world. Utilisation of a plastic stripper and olive or a perforation/inversion metallic stripper has been used to remove the great saphenous vein in the thigh. We describe a non-traumatic technique for removal of the great saphenous vein that has minimal complications.

## Keywords

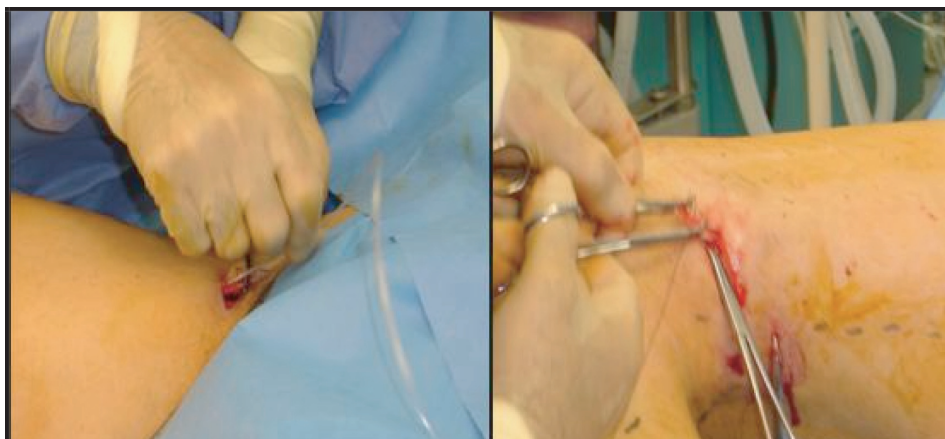
Great saphenous vein; stripping; non-traumatic.

## Introduction

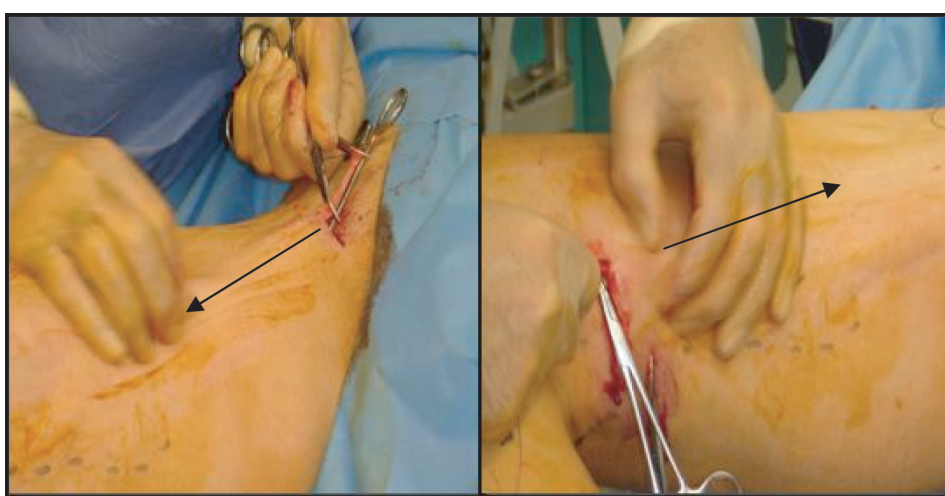
Varicose vein surgery remains one of the commonest general surgical operations performed in the UK. The routine stripping of the great saphenous vein (GSV) in addition to disconnection of the sapheno-femoral junction (SFJ) and multiple stab avulsions (MSA) has been advocated to reduce the incidence of recurrence of varicose veins<sup>[1]</sup>. The main techniques employed for stripping of the GSV are the conventional technique using a plastic stripper and olive head and the perforation/inversion (PIN) method using a metallic stripper. Indeed, GSV stripping is still performed today despite the introduction of radiofrequency ablation (RFA) and endovenous laser ablation of the GSV. Though these newer techniques are faster, less traumatic and less likely to cause nerve injury they still have not been adopted in all UK NHS hospitals as they require expensive equipment to undertake the technique and the long term outcome in terms of recurrence rates have not been fully evaluated<sup>[2]</sup>.

The morbidity of GSV stripping is generally regarded as low, however saphenous nerve injury and bruising/wound haematoma are recognised complications which may be the subject of litigation<sup>[3]</sup>. The risk of saphenous nerve injury has been cited as a reason to avoid stripping below the knee and as part of the argument to use alternative methods for treating GSV incompetence such as PIN stripping, radiofrequency ablation and endovenous laser ablation.

We describe a novel technique for removal of the GSV in the thigh which we have found to be simple to learn and allows complete removal of the above knee GSV.



**Fig. 1.** Stripper passed into a side hole in the GSV in the groin and then down the GSV (left panel). The stripper is removed completely and the GSV is isolated, clipped and divided just above knee joint (right panel).



**Fig. 2.** Proximal clip on the GSV held taut, KY jelly applied to skin over the GSV and skin rubbed distally over the GSV (left panel). Similarly distal 2/0 Vicryl suture on the distal GSV held taut and skin over the GSV rubbed proximally (right panel).

## Technique

The SFJ is disconnected and the GSV is suture ligated with 2/0 Vicryl and a plastic stripper passed down through a sidehole in the GSV to just above the knee joint (Fig. 1, left panel). The stripper is then retrieved at the knee, the GSV isolated and the stripper removed from the GSV. The GSV at the knee is then clipped, divided and suture ligated with 2/0 Vicryl (Fig. 1, right panel). KY jelly is then applied to the skin over the path of the GSV. The proximal GSV clip is then held perpendicular to the groin incision so keeping the proximal GSV taut and the skin over the GSV rubbed firmly from below the groin wound distally so detaching the thigh perforators from the GSV (Fig. 2, left panel). The distal GSV suture is then held taut and the skin over the GSV rubbed firmly in a proximal direction from the distal thigh stab incision (Fig. 2, right panel). The vein is then removed through the groin incision.

## Discussion

Varicose veins have been shown to affect up to 15% of men and 25% of women in Western society. The majority of varicose vein surgery involves the GSV and its tributaries. There is considerable debate over the best method of stripping. The conventional plastic stripper is known to cause tissue trauma as the olive head is pulled along the subcutaneous tissues of the leg. The PIN method, in contrast, inverts the GSV thus causing less tissue trauma by making a stripping channel of narrower diameter. Previous papers looking at time taken to strip, length of

vein stripped, size of exit wound and area of resultant bruising showed no differences between these two techniques except that the PIN technique gave a smaller exit site<sup>[4]</sup>.

The technique we have described removes the GSV by manually disconnecting the GSV from the thigh perforators. We have found the technique is quick, easy to learn and allows complete removal of the GSV from the thigh. The risk of saphenous nerve injury and postoperative bruising/wound haematoma can be predicted to be very low using this non-traumatic technique of GSV removal. Indeed, saphenous nerve injury is a recognised and avoidable complication of stripping of the GSV especially to the ankle<sup>[3]</sup>. The saphenous nerve is located adjacent to the GSV throughout much of its course particularly from several centimetres below the knee to the medial malleolus. The nerve has several branches that cross directly over the GSV. The incidence of saphenous nerve damage as a consequence of conventional stripping to the knee is 7% and to the ankle is 39%<sup>[5]</sup>. The saphenous nerve and GSV are intimately related at the ankle and Holmes *et al.* have found these two structures to be intimately associated at knee level in 12% of legs<sup>[5]</sup>.

We have performed the non-traumatic technique of GSV removal on over 100 consecutive cases and have found that great saphenous vein breakage occurs in <5% of cases which were all early in our proficiency curve. It appears bruising and wound haematoma were less than with the traumatic stripping techniques but obviously a controlled trial is necessary. Our technique requires little force to separate the main GSV trunk from its tributaries; indeed both techniques of conventional and PIN stripping require force to strip the GSV and this force contributes to the risk of bruising and wound haematoma which may lead to the additional risk of an infected GSV tract haematoma.

## References

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