

Anomalous H-shaped communication of great saphenous vein tributaries at the saphenofemoral junction

Abstract

Anatomical variations at the saphenofemoral junction (SFJ) are common and have significant implications during varicose vein surgery. We report a rare anomalous H-shaped communication between tributaries of the great saphenous vein (GSV) involving the superficial inferior epigastric vein and posteromedial vein of the thigh, identified intra-operatively. Recognition of such variants is essential to prevent incomplete ligation and reduce recurrence.

Keywords: saphenofemoral junction, anatomical variation, varicose veins, venous anatomy, h-shaped communication, surgical anatomy, vein ligation

Volume 11 Issue 1 - 2026

Gurmeet Singh, Samrat Mohan Sunkar, Ankit S

Department of Surgery, Military Hospital, India

Correspondence: Gurmeet Singh, Department of Surgery, Military Hospital, Devlali Cantt, Nasik, Maharashtra, India, Pin-42240

Received: February 6, 2026 | Published: April 21, 2026

Introduction

The saphenofemoral junction exhibits considerable anatomical variability. Multiple tributaries commonly drain into the terminal GSV, including the superficial inferior epigastric vein (SIEV), superficial circumflex iliac vein, superficial external pudendal vein, and accessory saphenous veins. Anomalous inter-tributary communications may lead to technical difficulty during surgery and are a known cause of recurrent varicose veins if unrecognized.¹⁻⁵

An H-shaped communication between tributaries is a rare configuration and is sparsely reported in literature.^{2,3,6}

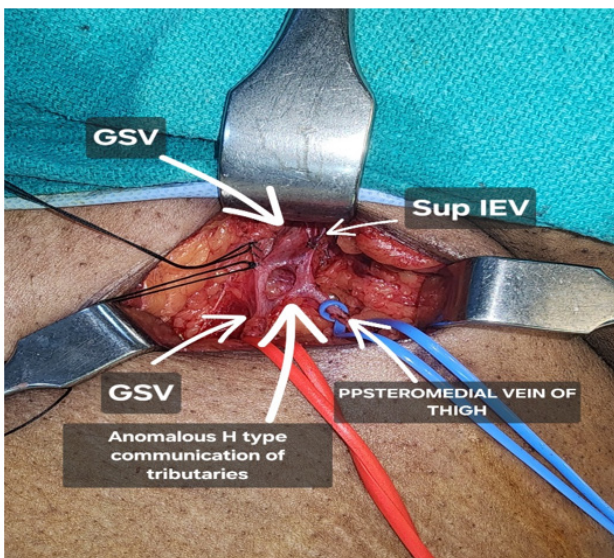


Figure 1 Intraoperative view of anomalous H-type communication at the saphenofemoral junction.

GSV, great saphenous vein; Sup IEV, superficial inferior epigastric vein

Case presentation

A 45 years old lady presented with symptomatic primary varicose veins of the right lower limb, with complaints of elongated. Dilated tortuous veins over right lower limb for 4 years. There was no history of deep vein thrombosis or prior venous surgery.

Clinical examination

- Dilated varicosities along the medial aspect of the thigh and leg
- Positive cough impulse at SFJ
- CEAP classification: C3 Ep as Pr
- CDFI Venous - Incompetent great saphenous vein at SFJ. Multiple dilated tributaries. No deep venous thrombosis

Intra-operative findings

- An anomalous H-shaped communication between two major tributaries, forming a transverse connecting channel between parallel tributaries before draining into the GSV.
- All tributaries and the anomalous communication were individually ligated and divided to ensure complete SFJ clearance.

Discussion

The anatomy of the SFJ is highly variable. Studies have shown that standard textbook anatomy is present in less than 40–50% of cases. Variations such as accessory saphenous veins, duplicated GSV, and anomalous tributary connections are common contributors to residual reflux and recurrence.^{1,2,4,5,7}

An H-shaped communication of tributaries is particularly important because:

- It may be mistaken for a single tributary
- Failure to ligate the transverse communicating channel can lead to persistent reflux.^{3,6}
- It increases risk of early varicose vein recurrence.^{3,6}
- It may cause intra-operative bleeding if unrecognized

Conclusion

Anomalous H-shaped communication of GSV tributaries is a rare but clinically significant anatomical variant. Meticulous skeletonization of SFJ is not an optional technique, but a critical surgical requirement given the high anatomical variability of saphenofemoral junction.

Acknowledgements

None.

Conflicts of interest

The authors declare that there are no conflicts of interest.

References

1. Caggiati A, Bergan JJ, Gloviczki P, et al. Nomenclature of the veins of the lower limbs. *J Vasc Surg.* 2002; 36(2):416–422.
2. Kockaert M, Tierney S, Feeley TM, et al. Anatomical variations of the saphenofemoral junction. *Phlebology.* 2012;92(3):322–325.
3. Pittaluga P, Labropoulos N, Leon LR. Recurrent varices after surgery: role of anatomy. *J Vasc Surg.* 2008;43(2):327–334.
4. Caggiati A. Anatomy of the saphenofemoral junction. *Phlebology.* 2015.
5. Gloviczki P, Comerota AJ, Dalsing MC, et al. The care of patients with varicose veins and associated chronic venous diseases: clinical practice guidelines of the society for vascular surgery and the American venous forum. *J Vasc Surg.* 2011;53(5 Suppl):2S–48S.
6. Perrin M, Guex JJ, Ruckley CV, et al. Recurrent varices after surgery (REVAS): a consensus document. *Cardiovasc Surg.* 2000;8(4):233–245.
7. Engelhorn CA, Engelhorn ALV, Cassou MF, et al. Patterns of saphenous reflux in women with primary varicose veins. *J Vasc Surg.* 2005;41(4):645–651.