



ORIGINAL RESEARCH PAPER

Anatomy

AN ABNORMAL BIFURCATION AND REUNION BEFORE TERMINATION OF GREAT SAPHENOUS VEIN – A RARE CASE REPORT

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Dr. S. Divya Arokia Remy

Anatomy postgraduate, Government medical college and hospital, cuddalore.

Dr. E. Manikandan*

Assistant professor, Government medical college and hospital, cuddalore.
*Corresponding Author

ABSTRACT

Background: The exhibits variations in its course, branching pattern, and termination, which are clinically important during venous imaging and surgical procedures. These variations may lead to diagnostic challenges and intraoperative difficulties. Awareness of such anatomical variations is essential for accurate diagnosis and safer clinical interventions **Methods:** During routine anatomical dissection of a male adult cadaver we found abnormality in the course and termination of prompting detailed documentation **Results:** While performing routine dissection of the left lower limb of an elderly male cadaver as part of undergraduate anatomy teaching, a unilateral bifurcation of the great Saphenous Vein was observed. The two divisions reunited at the mid-thigh level. **Conclusion:** Proper understanding of variations of would be immense help in planning of Varicose vein treatment and Coronary Bypass Graft Procedure where it is used as autograft, which will enhance the patients outcome, which is the crux of this paper Morphologically, duplicated GREAT SAPHENOUS VEIN and persistence of the accessory great saphenous vein are two most clinically significant anatomical variations of the great saphenous vein.

INTRODUCTION

The (Great Saphenous vein) known as the long saphenous vein, is the longest superficial vein of the lower limb. It normally follows a single continuous course from the medial marginal vein of the dorsal venous arch of the foot. It ascends anterior to the medial malleolus, accompanied by the saphenous nerve along the medial aspect of the lower limb, and terminates in the femoral vein at the saphenofemoral junction.(1) Although the general anatomy of the GREAT SAPHENOUS VEIN is well established, variations in its course, duplication, tributary pattern, and termination have been documented. Such variations are clinically important, as they may influence venous imaging, surgical procedures, and vascular interventions.

GREAT SAPHENOUS VEIN has approximately 10 to 20 valves and forms several connections with the deep veins at different points along the lower limb, except past the mid thigh area. (1)

GREAT SAPHENOUS VEIN duplication and persistence of accessory GREAT SAPHENOUS VEIN are two most frequently recorded anatomical variations of GREAT SAPHENOUS VEIN.

According to other previously published scientific literature, 5 different types of anatomical variations of GREAT SAPHENOUS VEIN in the thigh (2) and knee region (3) are recorded, which involve the presence of an accessory or duplicated GREAT SAPHENOUS VEIN.

Bifurcation and reunion before termination are less frequently mentioned, which makes this study unique.

Case Report

During routine dissection of the left lower limb of an elderly male cadaver for undergraduate medical students at the Anatomy Department, noticed unilateral bifurcation of the great saphenous vein, which reunited at the mid-thigh level.

In the present case, the GREAT SAPHENOUS VEIN followed normal formation from the medial marginal vein, and as it ascended at the level of the mid thigh, it bifurcated into two branches of equal calibre, approximately 10 cm from the medial epicondyle of the femur, and reunited as a single vein at the mid thigh, approximately 15 cm from the pubic tubercle. It then ascended, passed through the saphenous opening, and drained into the femoral vein. The total length of the bifurcation was approximately 20 cm from the bifurcation point to the reunion site.

No such variation was found in the opposite lower limb.

DISCUSSION

GREAT SAPHENOUS VEIN holds great clinical importance because its wall has high content of muscular and elastic fibers, is superficial, and is readily accessible, and serves as an excellent graft for coronary artery bypass; therefore, anatomic variations can change the outcome of venous imaging and procedural planning.

The typical GREAT SAPHENOUS VEIN is a single trunk with frequent variations but terminology used for these variations is not uniform in the literature, and the terms duplication, reduplication, bifurcation and accessory saphenous vein have sometimes been used interchangeably

According to Ricci and Caggiati, the relationship between the venous channel and saphenous compartment emphasizes that short segments of division with later reunion represent segmental duplication rather than true duplicated GREAT SAPHENOUS VEIN. (4)

Chen et al. pointed out that the presence of two parallel venous channels does not necessarily indicate true GREAT SAPHENOUS VEIN duplication and classified it into three types based on its relationship with the femoral vein, into 3 types. These are duplication with a common junction, duplication with separate junctions, and insular duplication with a common junction. (5)

A similar case was reported by Kumar et al (6), who described GREAT SAPHENOUS VEIN bifurcated into anterior and posterior channels of unequal calibre in the knee region and subsequently reunited in the thigh before its termination into the femoral vein. The present study differs in that both branches have equal calibre and are present in the mid thigh region, approximately 20 cm.

Duplication of unilateral Great Saphenous vein with multiple intercommunications among its branches throughout its length and reunited at the mid thigh was also recorded by Al Talawah and Soames et al. (7).

There are also studies that suggest that duplication of the GREAT SAPHENOUS VEIN can be associated with recurrence following treatment of varicose veins (3,5). Therefore, preoperative duplex ultrasonography is mandatory before intervention.

With the available isolated case report reunion after bifurcation

of Great Saphenous vein is less frequently mentioned, it is mentioned in Kumar et al.(6). Similarly, Padavinangadi et al. reported a unilateral double Great saphenous vein with eventual convergence into a single venous drainage pattern, highlighting the variability of Great Saphenous Vein duplication and its potential clinical significance.

Hence The present study contributes to limited literature on Great Saphenous vein bifurcation and reunion

CONCLUSION

Bifurcation and reunion of the Great Saphenous Vein is an important anatomical variation with significant clinical and surgical implications. Awareness of this variation is essential during venous mapping, treatment of varicose veins, and GSV harvesting to ensure accurate diagnosis, effective treatment, and proper surgical planning.

FIGURE:1

Figure shows Great Saphenous vein showing bifurcation and reunion at mid thigh region

Red arrow: Bifurcation point

Green arrow: Reunion point



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