

AN ANATOMICAL VARIATION OF GREAT SAPHENOUS VEIN : A RARE CASE REPORT

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ABSTRACT

The longest vein in the body and a superficial vein of the leg is called the great saphenous vein (GSV, also known as the "long saphenous vein"). Blood is being brought back from the foot, leg, and thigh to the deep femoral vein at the saphenofemoral Junction along the length of the lower limb. The clinical significance of GSV has gained interest in its anatomical variations. The variant vein and GSV are frequently confused because of their extensive tributary system. The two clinically significant structural variations of the GSV that are commonly used interchangeably are duplication and persistence of accessory GSV. GSV in this case, we found a duplicate GSV that originates from the lower one-third of the leg region, and both veins are of even calibres, which before drain into the femoral vein reunites to form a single vein. Finding such variations of the duplicate GSV, which is a rare variation of the GSV, is difficult from a therapeutic and diagnostic perspective, especially in venography procedures where it could cause iatrogenic traumatic injury to the vessel.

Key words: Accessory great saphenous vein, bifurcation, duplication, great saphenous vein.

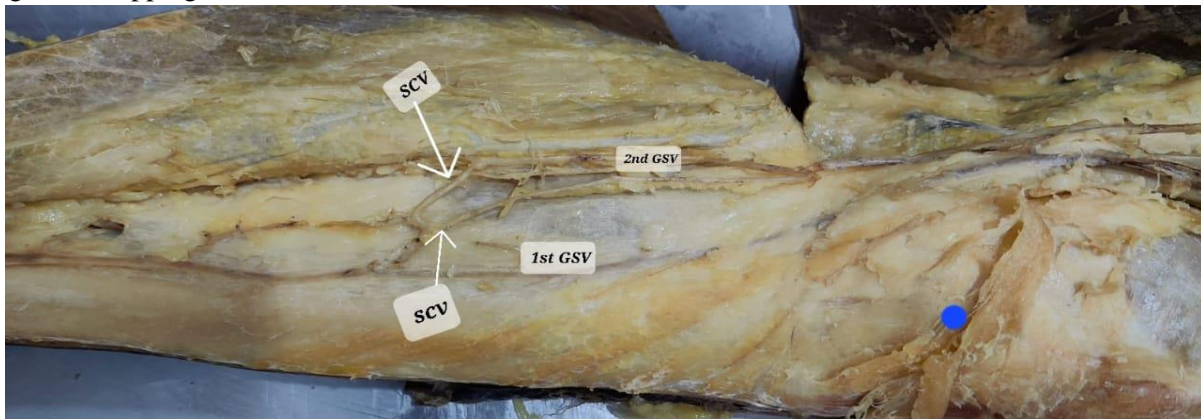
INTRODUCTION

Great saphenous vein (GSV), which is formed by continuation of dorsal venous arch (Medially) and medial marginal vein. It can also feel on front of me-

dial malleolus. GSV then goes medially along with the saphenous nerve, it rises up the medial side of the leg from where it is situated in front of the medial

malleolus. It follows the medial side of the thigh before becoming superficial close to the knee. It enters the femoral vein through the saphenous opening after invading the cribriform fascia in the medial compartment of the thigh. The saphenous arch, which connects to the common femoral vein in the femoral triangle, is formed at the saphenofemoral junction. It has between 10 and 20 valves and numerous communications with the deep veins at various lower limb regions, with the exception of above mid-thigh level.¹ The simplest diagnostic method for GSV is its easy identification at the mid-thigh level due to its typical ultrasonic "saphenous eye" appearance.² While the "Egyptian eye" view, which distinguishes the GSV from other tributaries³, is used to describe the appearance of the GSV in the transverse view between the superficial and deep fascia. Clinically, varicosity most frequently affects the GSV and its tributaries. The standard treatment for varicose veins involves ligating and stripping the GSV and its tributaries.⁴

The GSV is an easily accessible superficial vein of the lower limb that is clinically significant for vascular implantation due to the sufficient interval between its tributaries and perforating veins. It is frequently used for coronary arterial bypass grafting (CABG) because its wall contains many elastic and muscle fibres related to any other superficial vein.⁵ The current scientific literature establishes up to five different types of anatomical variations of GSV in the thigh⁶ and knee region⁷ that involve the existence of an additional or duplicated GSV. The two anatomical variations of GSV that are most clinically significant from a morphological perspective are duplicated GSV and persistence of accessory GSV. However, both of these variations are frequently misinterpreted as synonyms. The current study aims to describe the double great saphenous vein variation about iatrogenic varicosity.



Great saphenous veins start on the dorsum of the foot and ascend the limb, duplicating GSV originates from the lower one-third of the leg region. In the calf, there are two saphenous communicating veins (SCV). (1st GSV- First great saphenous vein, 2nd GSV-Second great saphenous vein, SCV-saphenous communicating vein).

[Figure 1]

CASE REPORT:

In this article, we found a rare variation of duplicate GSV that was found in the Left lower limb of a 60-year-old human male cadaver during regular dissection for postgraduate students at the Department of Rachana Sharir, National Institute of Ayurveda, Jaipur. The entire lower limb was dissected to study the entire course of the great saphenous vein and its branches. An elderly male cadaver's left limb was

found to have two great saphenous veins, the main GSV which began on the dorsum of the foot and ran anterior to the medial malleolus, and duplicate GSV arise from the main GSV at the level of lower one-third of the leg. Both veins were connected by two communicating veins at the mid-calf level and passed medially at the knee joint. (Figure 1) After that, both veins run parallel in the thigh region. A lateral accessory saphenous vein joined the double saphenous

veins in the proximal thigh to form a single saphenous trunk draining into the femoral vein.

[Figure 2]



Double great saphenous veins ascending medially in the thigh. After a mid-thigh communication, both saphenous veins drain into the femoral vein via a single trunk (1st GSV. First great saphenous vein, 2nd GSV. Second great saphenous vein).

[Figure 2]

DISCUSSION

The venous pattern is believed to be more volatile than the arterial one. The positioning of the lower limb's venous drainage system can differ from individual to limb.⁸

The GSV is a clinically significant, easily accessible superficial vein of the lower limb. Due to the sufficient interval between its branches and perforating veins, a useful length of it can be used for vascular implantation.

Numerous reports of variations in its formation, course, and branching pattern exist. Duplicate GSV reports, on the other hand, are sporadic; they occur at a rate of about 1%. Additionally, it is stated that both GSVs lie on the common plane when duplication persists.⁹ GSV, with its variant formation, is said to arise in the remaining cases and continue down to the first common metatarsal vein of the medial side of the great toe and, in 70% of cases carrying on from the dorsal venous arch at the proximal part of the metatarsal bones.¹⁰ different types of GSV duplication exist, depending on how it relates to the femoral vein. Insular duplication with a common junction, duplication with separate junctions, and duplication with a common junction.¹¹ Great saphenous vein duplication is more common in men than in women, more prevalent unilaterally than bilaterally, and more prevalent

in the thigh than in the leg (Corrales et al, 2002). The duplication in the current study was unilateral and found in a male cadaver.

The presence of accessory GSV and duplicated GSV are two significant anatomical variations of GSV that are frequently misinterpreted for one another. When GSV is duplicated, the two parts will typically be in the same plane, have a similar calibre, and share a drainage area.¹² Compared to the corresponding normal GSV, an accessory saphenous vein typically reduces in size and frequently lacks a common cutaneous drainage area. But just before reaching the saphenofemoral junction, both veins converge. According to duplex ultrasonography, a standard for accurate phlebographic detection of actual GSV duplication, the prevalence of GSV duplication is between 1.6 and 2 percent.

The morphological and clinical perspectives have been reported in addition to the presence of duplicated GSV.^{13,14} The most frequent cause of the persistence of duplicated GSV is the GSV's recurrent incompetence. According to reports, one of the critical risk factors for the duplicated GSV is the GSV's intermittent incompetence in this condition.¹⁵ When performing peripheral vascular surgery to treat cerebrovascular disorders, the preferred vein is GSV.^{16,17}

The available treatments for varicose veins include the conservative method, ultrasound-guided sclero-

therapy, and junction ligation with or without vein stripping.¹⁸ Interventional treatment modalities demand knowledge of venous anatomy and its atypical variant forms. If significant anatomical variations are not identified, incomplete saphenofemoral junction surgery could result from surgical or less invasive procedures.

CONCLUSION

Surgeons, radiologists, and phlebologists should be aware of the rare and clinically significant variant form of GSV and its duplication. Varicosity is one of the most important clinical manifestations of the lower limbs' superficial veins. Since it can recur even after stripping or sclerotherapy, it demands a careful examination for the presence of double GSV.

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