

Case Report

DUPLICATED GREAT SAPHENOUS VEIN AND ITS CLINICAL SIGNIFICANCE – ANATOMICAL VARIATION

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ABSTRACT

Duplicated great saphenous vein (GSV) is very rare in its course, tributaries and termination. The calibre of duplicated great saphenous vein almost similar to main great saphenous vein, whereas, accessory saphenous vein is smaller in size. Low incidence ($\leq 1\%$) of duplicated great saphenous vein was reported in previous literatures. We reported unilateral duplication of great saphenous vein in a 62 year old male cadaver. Recurrent incompetence of the great saphenous vein is the most common predisposing factor in duplication of great saphenous vein. Knowledge in understanding anatomical variations of venous system is more significant while planning vascular surgeries.

Keywords: Duplicate, Saphenous, Variation, Vein

INTRODUCTION

The great saphenous vein (GSV) is one of the superficial veins of the lower limb. It is the longest vein in the body, running along the length of the lower limb (Moore and Dalley, 2006). It originates from dorsal venous arch of foot on medial side ascends in front of the tibial malleolus and obliquely crosses the lower part of the medial surface of the tibia to its medial border and ascends to the knee. It reaches the saphenous opening in the thigh and drains into the femoral vein (Standring *et al.*, 2005). Accessory saphenous vein is generally smaller in size, whereas duplicate GSV will have the same caliber (Mozzon *et al.*, 1989; Al-Sayigh, 2014). Complete duplication of great saphenous vein and its morphology was very rare unlike its variant patterns of tributaries and variations in formation and termination (Caggiati *et al.*, 2002). GSV grafting is major choice for cardiac surgeons in coronary artery bypass surgery. Duplicated great saphenous vein in the present report gives basic knowledge in understanding the vascular variations and their clinical importance.

CASES

During routine cadaveric dissections for undergraduate medical students, we observed duplicated GSV on the right lower limb in a 62 year old male cadaver. The origin of normal GSV was originated from the dorsal venous arch, whereas duplicated GSV also originated from the dorsal venous arch but anterolateral to normal GSV and traversed anterior to the medial malleolus (Figure 2). Duplicated GSV joined with normal GSV below the knee and again duplicated just above the knee, entered medial side of thigh till its termination. Duplicated GSV not received any tributaries before terminating into femoral vein, whereas normal GSV received its tributaries before draining into femoral vein at saphenous opening (Figure 1).

DISCUSSION

Duplicate GSVs are very uncommon as their occurrence rate is estimated to be 1%. When duplication persists, both GSVs lie in the same plane (Ricci and Caggiati, 1999). Duplicated GSV can be found below or above the knee. A case of duplicated GSV with the same origin and course as that of main GSV and with multiple intercommunications at mid-calf and mid-thigh levels (Waseem and Roger, 2014). A unilateral duplicated GSV below the knee at the level of medial condyle of tibia with the eventual reunion of both to form a single saphenous vein with eventual termination into femoral vein (Nakhate *et al.*, 2014). GSV has a great clinical importance, as it is a vein of choice for the grafts in peripheric vascular surgery in the treatment of cerebrovascular diseases (Tuncer *et al.*, 2002; Karabulut *et al.*, 2001).

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Recurrent incompetence of the GSV is the most common predisposing factor of the persistence of duplicated GSV (Kurt *et al.*, 2014). Embryologically, angiogenesis means sprouting from existing vessels. It is mediated by vascular endothelial growth factor (VEGF) which stimulates the proliferation of endothelial cells at points where new vessels are to be formed from existing. The duplicated vein in our report may be due to angiogenesis in the posteromedial aspect of the thigh leads to the formation of additional vein (Santulli, 2013). Duplicated GSV in our report is in mere agreement with some of the previous literatures and gives better knowledge in understanding anatomical variations of venous system (Waseem and Roger, 2014; Nakhate *et al.*, 2014).

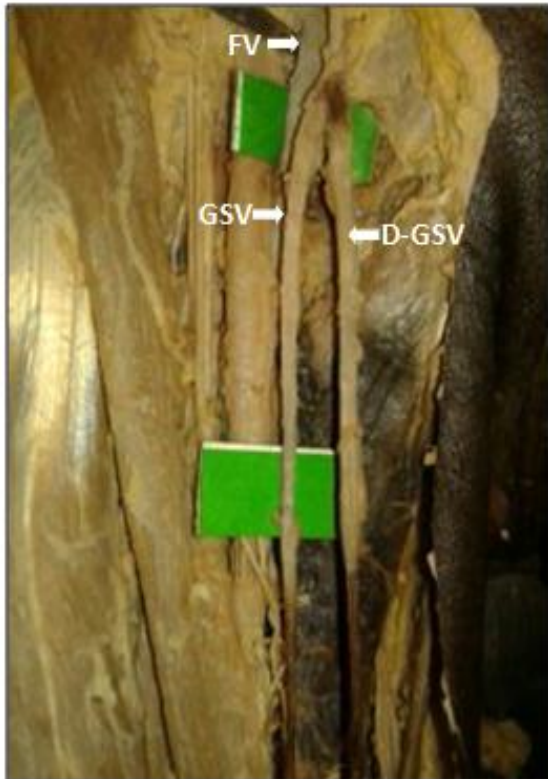


Figure 1: Termination of Normal GSV and Duplicated GSV through Saphenous Opening into Femoral Vein in Upper Part of Thigh (D-GSV: Duplicated Great Saphenous Vein; GSV: Great Saphenous Vein; FV: Femoral Vein)

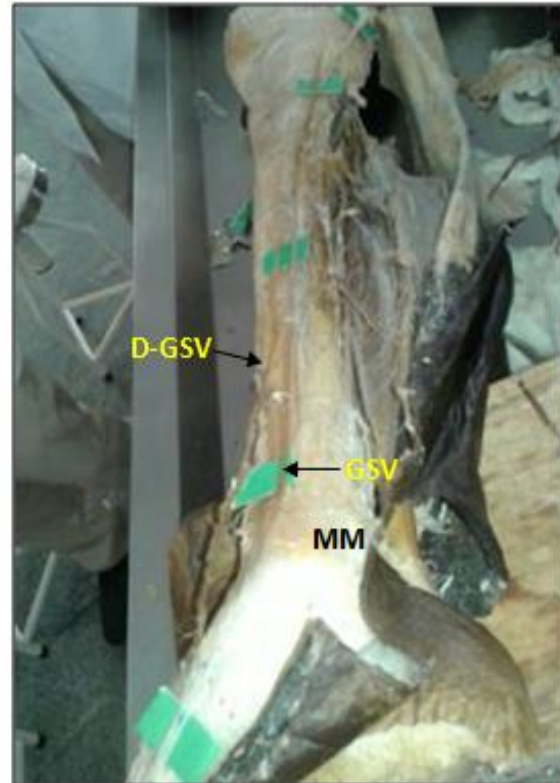


Figure 2: Origin of Great and Duplicated Saphenous Veins from Dorsal Venous Arch of the Foot on Anterolateral and Anterior to the Medial Malleolus (D-GSV: Duplicated Great Saphenous Vein; GSV: Great Saphenous Vein; MM: Medial Malleolus)

Conclusion

Duplication of great saphenous vein is very rare and knowledge of such variation is having clinical significance while planning vascular surgeries.

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