



Aplasia of the Great Saphenous Vein

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ABSTRACT

Variations in the superficial venous system are very common, and the establishment of these variations at the preoperative period is important for determining the appropriate treatment modality. By presenting a case of rarely seen long-segment great saphenous vein (GSV) aplasia, we want to bring attention to the anatomical localization of GSV on routine color Doppler ultrasound imaging and GSV aplasia. (*JAREM 2016; 6: 62-4*)

Keywords: Great saphenous vein, aplasia, venous variations, color doppler ultrasound

INTRODUCTION

Color Doppler ultrasound (CDUS) is used to evaluate chronic venous disease (CVD) of the extremities. Anatomical variations in the venous system are commonly seen (1). To choose an appropriate treatment modality, a good evaluation of venous variations is necessary. A sufficient understanding and evaluation of the venous anatomy is important for choosing the appropriate treatment modality. Great saphenous vein (GSV) aplasia is very rare, and it was defined and discussed in this report.

CASE PRESENTATION

A 37-year-old female patient visited our radiology department for the evaluation of a varicose vein. She had pain in her right leg, together with a varicose vein and did not have a history of venous thrombosis or any operation for her varicose vein. The patient was investigated in the standing position with CDUS (Aplio 300 TM; Toshiba, Otawara, Japan). We used the Valsalva maneuver and distal decompression techniques to evaluate for reflux in the venous system. During the color Doppler investigation, it was detected that she had GSV aplasia, beginning close to the saphenofemoral junction (SFJ) to the ankle in her right limb. The saphenous compartment was empty above and below the knee and in the middle of the thigh (Figures 1-3). The tributary vein left the saphenous compartment 10 cm away from the medial malleolus, and after that, it was located in the subcutaneous adipose tissue (Figure 4). The varicose subcutaneous tributary branch showed reflux during the Valsalva maneuver (Figure 5). The varicose vein continued outside the saphenous compartment; then, they joined the saphenous compartment near SFJ. GSV was a little blind ending at the upper thigh near (approximately 5 cm) SFJ (Figure 2). SFJ was normal. The sonographic images of the left limb showed a normal GSV in the saphenous compartment. She had no segmental aplasia at the left GSV (Figure 2).

She had a normal deep vein in her limbs. We did not detect any thrombosis sign.

DISCUSSION

Great saphenous vein aplasia means that there is no vein in the saphenous compartment. While the incidence of aplasia at SFJ has been reported to be 0.3% in limbs having no varicosities, this has been 1.2% in limbs having segmental aplasia and a varicose GSV. For the development of reflux and varicosities, aplasia is a significant risk factor (2, 3).

Bailey (4) was the first to describe the "Egyptian eye sign" to identify "GSV in the thigh in a transverse scan by ultrasound". The superficial fascia is echogenic on the scan, and it is easily detected. The Egyptian eye sign must be detected to be able to say that GSV is present. Therefore, this sign allows GSV to be easily identified and differentiated from parallel subcutaneous tributaries. Tributaries run parallel or beside the track of GSV, but they are not situated within a saphenous eye on CDUS. A tributary can be the major superficial vein; however, because it is located outside the saphenous compartment, it is not considered as a saphenous trunk (5). To diagnose segmental aplasia of GSV, it must be shown that GSV left the saphenous compartment and that there is no other vein in it. If a normal or smaller vein in the compartment at the thigh and about the knee was seen, this was not diagnosed as segmental aplasia. In our case, the saphenous compartment was empty between 10 cm above the medial malleolus and about SFJ, and there was a subcutaneous varicose tributary branch; as a result, we diagnosed this as a long-segment GSV aplasia.

CONCLUSION

The treatment options for the varicosity of GSV include the conservative approach, sclerotherapy, endovenous laser treatment, and junction ligation with or without vein stripping. Consequently, for choosing more successful and efficient treatment options, understanding the venous system anatomy and being aware of variations are important.

Informed Consent: Written and verbal informed consent was obtained patient who participated in this study.



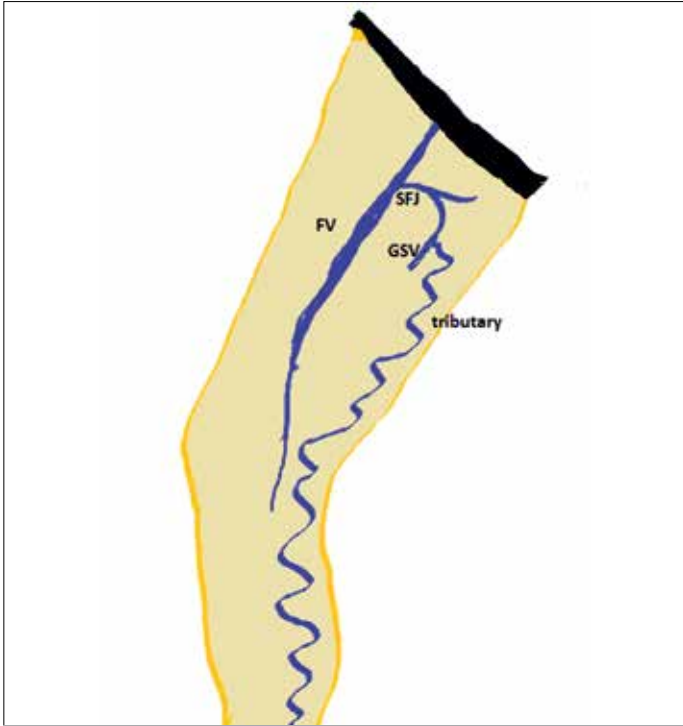


Figure 1. Diagrammatic representation demonstrating the anatomy of the great saphenous vein (GSV) and varicosities of the tributary vein in our case (right leg)
 FV: femoral vein, SFJ: saphenofemoral junction

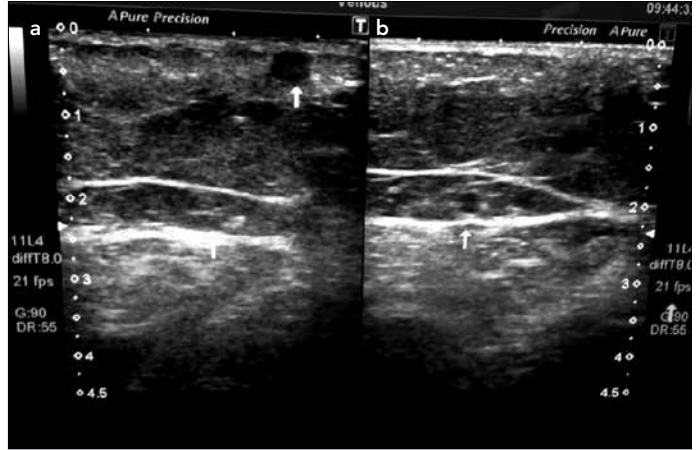


Figure 3. a, b. B-mode imaging taken at the middle of the right and left thigh: (a) The empty saphenous compartment at middle level of the right thigh and dilated varicose tributary branch located in the subcutaneous tissue and (b) the great saphenous vein (GSV) in the saphenous compartment at the same level of the left thigh

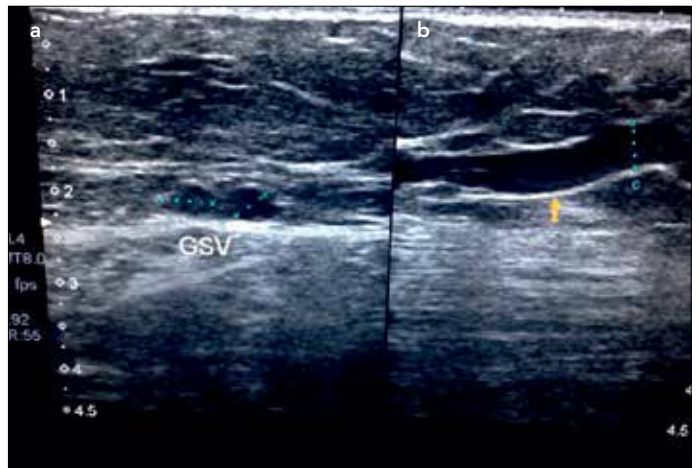


Figure 4. a, b. B-mode transverse imaging from the upper 1/3 of the thigh: (a) The great saphenous vein (GSV) and its branch in the saphenous compartment and (b) subcutaneous tributary branch exiting from GSV at this level

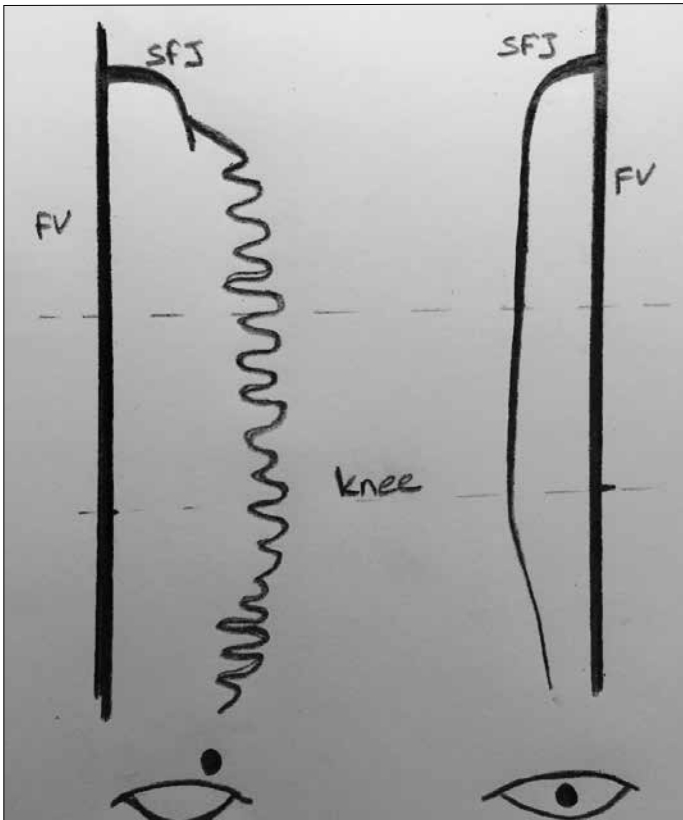


Figure 2. The anatomic imaging of both extremity veins, and below, schematic imaging inside the saphenous compartment
 FV: femoral vein, SFJ: saphenofemoral junction

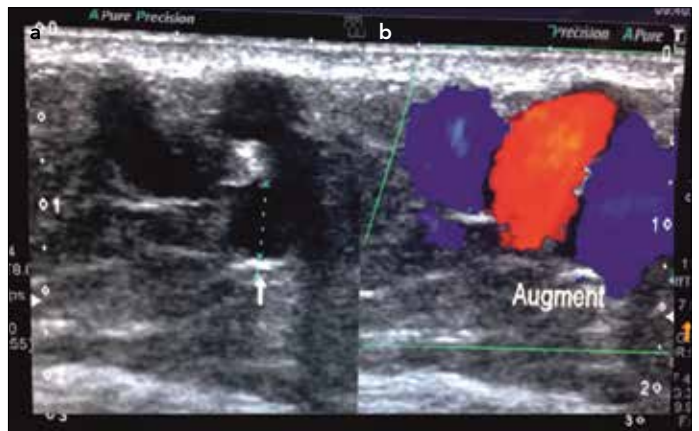


Figure 5. a, b. B-mode and color Doppler ultrasound transverse imaging taken at the middle of the thigh: (a) Subcutaneous tributary varicosity and (b) reflux flow in varicose veins

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