SHORT REPORT

The Saphenopopliteal Junction—Can You Put Your Finger on It?


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Objective. Duplex marking is the generally preferred method for pre-operative localisation of the saphenopopliteal junction (SPJ). However, patients with short saphenous incompetence usually have a palpable short saphenous vein (SSV) in the popliteal fossa. This study was undertaken to determine whether the upper end of a palpable SSV correlates with the SPJ. Should it do so, pre-operative duplex marking could be omitted.

Design, materials and methods. A prospective study of 50 consecutive primary SSV ligations was undertaken. The palpatory location (PL) of the top end of the SSV and the duplex predicted site of the SPJ were exactly marked and compared with the subsequent operative findings.

Results. Duplex was accurate to within 10 mm in 43 (86%) and 20 mm in 49 (98%) cases. Palpation was accurate to within 10 mm in only 10 patients (20%). The PL missed the SPJ by 10–20 mm in 14 and by more than 20 mm in 26. The mean distance between PL and SPJ location was 21 mm (range 0–53). The SPJ was located above and lateral to the PL in all but three cases (94%). When duplex was inaccurate the SPJ was in most cases either below or medial to the duplex location.

Conclusion. Palpation of the SSV trunk alone is inaccurate in locating the SPJ. Duplex remains the gold standard for the pre-operative localisation of the SPJ.

Key Words: Saphenopopliteal junction; Duplex; Palpation; Short saphenous vein.

Introduction

Saphenopopliteal reflux may be present in 20–25% of patients with primary varicose veins. Early recurrence after saphenopopliteal disconnection is common varying from 22 to 38.7%. The recurrence rate as well as the incidence of major neurological and vascular injuries is higher in saphenopopliteal than in saphenofemoral operations. This may be related to the more extensive dissection needed to locate the saphenopopliteal junction (SPJ). The venous anatomy within the popliteal fossa is highly variable and failure to locate the SPJ at operation is thought to be one of the more important causes of recurrence.

Pre-operative colour duplex marking increases the accuracy of localisation of the SPJ at operation and is considered to be the gold standard for this purpose. It has accuracy rates of between 74 and 98% in locating the SPJ within 2 cm. However, pre-operative duplex marking is resource and time intensive and invariably leads to prolongation of surgical waiting list times. Additionally, recent studies have brought into question the value of pre-operative marking in varicose vein surgery. In a recent publication, a patent and persistent SPJ was reported to have been found on post-operative duplex examination in 33% of patients undergoing full surgical exploration of the popliteal fossa for saphenopopliteal disconnection after pre-operative duplex marking.

Saphenopopliteal reflux is invariably associated with a palpable short saphenous vein (SSV) in the popliteal fossa. Palpation of the SSV trunk in the popliteal fossa has a sensitivity of 98% and a specificity of 75% in the diagnosis of saphenopopliteal incompetence. If the upper end of the palpable SSV can be correlated with the SPJ, a duplex scan for pre-operative marking could be omitted. The aim of our study was to determine the relationship between the upper end of a palpable SSV and the SPJ as defined by both duplex and by operation.
Patients and Methods

A prospective study of 50 consecutive primary SSV ligations for reflux was undertaken between April 2002 and December 2002. Repeat operations, as well as those cases where duplex could not locate a precise junction, were excluded. There were 30 women and 16 men. The mean age was 52.2 years (26–77). Half the operations were on the left and half on the right. Four patients had a bilateral operation. All operations were carried by one of two consultant vascular surgeons directly or by a higher surgical trainee with the consultant assisting.

Duplex marking of the SPJ was done on the morning of the operation. It was carried out by a single radiographer with a special interest in venous duplex scanning. A Phillips ATL (HDI 5000 Sono CT) colour duplex scanner with a 7/12 MHz transducer was used. The duplex-predicted site of the SPJ was marked on the overlying skin with an indelible marker. Immediately prior to operation the popliteal fossa was examined with the patient in the standing position and the knee slightly flexed. If the SSV was palpable, its top end (palpatory location-PL) was marked.

At operation popliteal exploration was carried out with the patient in the prone position. Access was through a 3 cm transverse incision at or just below the duplex skin mark. The SPJ was defined and its exact location in relation to the skin markings was recorded. The pre-operative palpatory skin marking

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Fig. 1. Distribution of the actual (operative location) SPJ (●) within the popliteal fossa. X-axis represents the mid-transverse plane and Y-axis the mid-vertical plane of the popliteal fossa.
and operative measurements were made by the same consultant vascular surgeon.

Results

Forty-six patients underwent 50 SSV ligations. The SSV could be palpated in the popliteal fossa in all cases. The SSV and SPJ were defined in all cases. A Giacomini vein was encountered in three cases, but in each of these a branch was found passing deeply into the popliteal vein at the site indicated by the duplex scan.

Fig. 1 shows the location of the SPJ with the midpoint of the popliteal fossa as the reference point. There was a tendency for the SPJ to be located above and lateral to the mid point of the popliteal fossa. Duplex was accurate to within 10 mm in 43 (86%) and 20 mm in 49 (98%) cases. Fig. 2 shows the relationship of the actual SPJ to the duplex-predicted site of the SPJ.

Palpation was accurate to within 10 mm in only 10 patients (20%). The PL missed the SPJ by 10–20 mm in 14 and by more than 20 mm in 26 (52%). Fig. 3 shows the distribution of the true SPJ in relation to the PL. The mean distance between PL and SPJ location was 21 mm (range 0–53).

The SPJ was located above and lateral to the PL in all but three cases (94%) (Fig. 3). When duplex was inaccurate the SPJ was in most cases either below or medial to the duplex location.

![Fig. 2. Position of the actual SPJ (●) in relation to the duplex mark. (′0′ point on graph represents the duplex mark and the circle represents a 2-cm perimeter around the duplex mark).]
The presence of a palpable vein in the popliteal fossa in all cases of primary SSV reflux in this study is in keeping with our previous findings. A Giacomini vein, which has a reported incidence of 3–18%, was observed in 3 cases (6%) in our series. As they had a branch passing into the popliteal vein, they were considered to be structurally similar to the regular SSV termination for the purpose of this study.

Duplex was highly accurate in correctly locating the SPJ to within an accuracy of 20 mm in 98% of cases. The comparative figure for SSV palpation was 48%. Palpation alone therefore cannot be recommended as a means of determining the site of SPJ and duplex continues to remain the gold standard for the preoperative localisation of the SPJ.

**Discussion**

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**References**


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