A review of literature along with a cadaveric study of the prevalence of the Giacomini vein (the thigh extension of the small saphenous vein) in the Indian population

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Abstract
Short saphenous has most variable anatomy in the inferior extremity which become more relevant especially in varicose vein surgery. Present study on cadavers was undertaken to report the prevalence of the thigh extension of the short saphenous vein (Giacomini vein) in the Indian population and to discuss it with the prior studies reported in the literature on other populations. Dissection was performed on both the sides of 50 embalmed cadavers to study the prevalence of the Giacomini vein. Mode of termination of the proximal extension of the short saphenous vein in the thigh was studied for different criteria. Ninety-two percent of the lower extremities showed prevalence of the Giacomini vein. In 71% specimens the short saphenous vein terminated into the popliteal vein. Most common mode of extension in the thigh was anastomosis with the great saphenous vein. Prevalence of Giacomini vein in Indian population was highest (92%) compared to previous studies by various authors in other populations. Aforementioned anatomical facts including the mode of termination of the thigh extension of the short saphenous vein can be important for surgeons planning intervention in this area. The complex anatomy of this vein and different reports in the literature regarding its clinical significance suggest further studies in this direction.

Keywords: short saphenous vein, Giacomini vein, cadaver, varicose vein, review.

Introduction
Varicose vein surgery is the most common source of medico-legal action in surgical practice and 20% of varicose vein surgery is performed for recurrent disease. The small saphenous vein in its modal pattern flows into the popliteal vein by means of a terminal arch at sapheno-popliteal junction [1].

Giacomini described a thigh extension from the short saphenous vein that passed to join with the greater saphenous vein, which since then bears his name, and described also other destinations of the thigh extension to deep vein through perforators or an end as multiple tributaries in the superficial tissues or muscles [2, 3].

Review of literature showed the prevalence of the Giacomini vein in different studies as follows: 86.3% [4], 82.2% [5], 52% [6], 85% [7] and 95% [8]. Color duplex studies reported prevalence of the thigh extension of the small saphenous vein as 63.2% [9] and 70.4% [10]. Georgiev M et al. discussed Giacomini’s observations and described the aforementioned prevalence as 86.3% [2, 3]. Caggiati A (2001) in his study on both the cadavers and duplex scanning reported Giacomini vein prevalence as 65% [11]. Zierau UT et al. reported that the Giacomini vein is present in 2.5–10% of all patients having a phlebography because of varicosis [12].

No literature is available on the Indian population, which comprises of nearly 15–20% of world population. Present work was undertaken to study the prevalence of the Giacomini vein in the Indian population and to discuss it with the data available in the literature reported on other populations.

Material and Methods
Fifty embalmed cadavers (100 inferior extremities) including 21 females and 29 males were dissected on both right and left sides. Popliteal fossa, back of the leg, and back of the thigh were exposed to study the prevalence of the Giacomini vein (the thigh extension of the small saphenous vein). Mode of termination of the proximal extension was studied in the thigh for following criteria:
1. Short saphenous vein terminating in the popliteal vein;
2. Short saphenous vein not terminating in the popliteal vein;
3. Short saphenous vein terminating entirely into popliteal vein without any further extension in the thigh;
4. Short saphenous vein terminating in the popliteal vein and sending anastomotic branch to the great saphenous vein;
5. Short saphenous vein terminating in the popliteal vein and sending proximal branch in the thigh not to the great saphenous vein;
6. Short saphenous vein not terminating in the popliteal vein and ascending proximally to join the great saphenous vein;
7. Short saphenous vein not terminating in the popliteal vein rather continuing proximally in the thigh but not joining the great saphenous vein.

Results

Following important observations were noticed:
• 92 out of 100 specimens (lower extremities) showed prevalence of Giacomini vein (Figure 1);
• In eight out of 100 specimens there was no extension of the short saphenous vein into the thigh.

Discussion


Data regarding mode of termination of the short saphenous vein differed from earlier reports by various authors [3, 4, 10].

Bush RG and Hammond K [13] reported that when short saphenous vein insufficiency coexist, varices secondary to thigh extension branch (Giacomini vein) are common. Further, the incidence increases when both short saphenous vein insufficiency and great saphenous vein insufficiency exist.

On the other hand, Delis KT et al. described that Giacomini vein which is found in more than two third limbs is unaffected by the anatomy of short saphenous vein termination [14]. Its presence proved insignificant to the extent, pattern, sites, and clinical severity of venous competence.
Delis KT et al. suggested that the Giacomini vein is 10 times less susceptible to valvular incompetence than great saphenous vein and short saphenous vein trunks together ($p<0.01$) [10].

Delis KT et al. reported that the Giacomini vein was far less often susceptible to reflux than the saphenous trunks were [14].

Delis KT et al. concluded that the Giacomini vein is worth considering for arterial bypass surgery in infrainguinal arterial reconstruction when great saphenous vein is unavailable [10].

Highly variable anatomy of the short saphenous vein makes it all time subject of interest keeping in view the large number of surgeries performed for varicose veins.

Conclusions

While planning varicose vein treatment and other related surgeries ethnic variations and racial differences regarding prevalence of the Giacomini vein should be looked for better results. The variable anatomy and different prevalence of the short saphenous vein and its thigh extension branch in different population groups’ of the world suggest more multidisciplinary studies.

References


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