

Communication between Profunda Femoris and Popliteal Vein: An Anatomical Variation

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Abstract: The small veins accompanying the arteries usually form the Profunda femoris vein and drain into the femoral vein. It rarely forms a direct communication with the lower end of the femoral or popliteal vein. The aim of our study was to observe a case of anatomical variation where there was connection between profunda femoris vein and popliteal vein. Routine dissection of right lower limb of a 55 years old formalin fixed female cadaver was done in Anatomy Department of RIMS, Imphal. The Profunda femoris vein was found to be connected to the popliteal vein, where the union of anterior and posterior tibial veins formed the latter. One of the important sites of thrombus formation in the lower limb is in the Profunda femoris vein, which may lead to pulmonary embolism. Therefore, variations related to the anatomy of veins of the lower limb are important to predict the diagnosis and treatment. Variations in anatomy of this region are also required to avoid unexpected surgical complications.

Keywords: Profunda femoris, Popliteal vein, Femoral vein, Embolism.

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I. Introduction :

Profunda femoris vein also known as deep femoral vein is one of the deep veins of the thigh. Profunda femoris vein (PFV) accompanies the fourth perforating artery (terminal part of profunda femoris artery). It receives blood from the inner thigh and proceeds superiorly and medially running alongside the profunda femoris artery¹. After emerging from the adductor magnus it ascends behind adductor longus and drains into the femoral vein almost at the level of inferior most part of ischial tuberosity. It may sometimes form a direct communication with the lower end of the femoral or popliteal vein. Sometimes profunda femoris vein may also receive the lateral and medial circumflex femoral veins and may drain into femoral vein distal to the saphenofemoral junction².

Objective

Present study has been done to gain knowledge of the anatomical variation of this vein of lower limb as deep vein thrombosis is very common in this part of lower limb.

II. Case Report

During Routine dissection of the popliteal fossa and flexor compartment of the right lower limb of an adult formalin-fixed male cadaver in the Department of Anatomy, RIMS, Imphal, the profunda femoris vein was found to be connected to the popliteal vein. The profunda femoris vein was dissected up to its termination.

The Profunda femoris vein was detected in the popliteal fossa and it was found to be connected with the popliteal vein, where the union of anterior and posterior tibial veins formed the latter. It ran upwards and pierced the adductor magnus, then proceeded to open into the femoral vein. A vein from the lateral head of gastrocnemius joined the profunda femoris vein about 5 cm from the beginning. The profunda femoris vein from the point where it joined the popliteal vein travelled a distance of 23 cm till it passed through an opening in the adductor magnus and emerged from the anterior surface of the muscle. It then ran upwards deep to adductor longus and ultimately drained into femoral vein in the upper part of the femoral triangle.

III. Discussion

One of the complex systems of lower limb is the venous anatomy. It is also highly variable possibly due to venous malformations occurring during the late development of the embryo. The profunda femoris vein represents the upper part of the embryonic axial vein³. The communication represents persistence of the connection. Studies by Edwards and Robuck⁴, Mavor and Galloway⁵ show communication of the profunda femoris vein with lower part of femoral vein and popliteal vein respectively and stated it to be about 38% for the

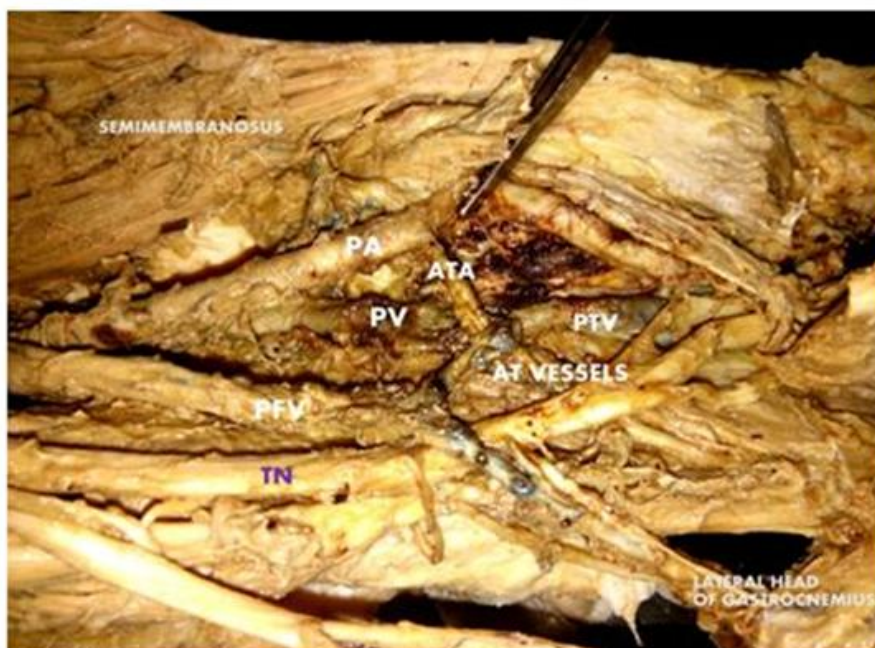
latter. Usually the venous variations have been studied through cadaveric dissections, ultrasonography or venography. According to Henry Gray, the profunda femoris vein, through its tributaries, connects distally with the popliteal vein, and proximally with the inferior gluteal veins⁶. Sujatha et al⁷ have reported a rare case in which profunda femoris vein was formed at the upper end of the popliteal fossa by the tibial veins, replacing most of popliteal vein. In the present study, Profunda femoris vein was found to be connected directly to popliteal vein along with a vein from the lateral head of gastrocnemius. The Profunda femoris vein was smaller in calibre compared to femoral vein.

IV. Conclusion

Knowledge of such anatomical variations is important to avoid unexpected surgical complications in this part of body and in prediction of diagnosis and treatment of deep vein thrombosis. It is because profunda femoris is one of the commonest sites of thrombosis causing pulmonary embolism³. It is also important for planning interventional procedures like ligation of the veins for preventing spread of deep vein thrombosis.

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DISSECTION OF RIGHT POPLITEAL FOSSA SHOWING UNUSUAL COMMUNICATION BETWEEN POPLITEAL VEIN AND PROFUNDA FEMORIS VEIN
PA: Popliteal Artery, PV: Popliteal Vein, TN: Tibial Nerve, PFV: Profunda femoris vein, AT vessels: Anterior Tibial Vessels, PTV: Posterior Tibial Vein, ATA: Anterior Tibial Artery.

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