Research Paper

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Bilateral High Origin of Profunda Femoris Artery- a Case Report and Embryological Review

Medical Science

KEYWORDS : Profunda femoris artery. Femoral artery

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ABSTRACT

Profunda femoris artery and its circumflex branches are encountered during cannulation of femoral artery of various clinical and diagnostic techniques. Anatomical knowledge of the variations of femoral artery and its branches is therefore required to minimize complications. We report a case of bilateral high origin of profunda femoris artery during routine dissection of lower limbs of a middle aged male cadaver. These variations may be due to the divergence in the mode and proximo distal level of branching or aberrant vessels that connect with principal vessels, arcades or plexuses.

INTRODUCTION

The profunda femoris artery or deep artery of thigh is a largest branch of femoral artery, originating in the femoral triangle, from the posterolateral aspect of femoral artery about 3.5 cm distal to the mid point of inguinal ligament.(fig.1) This vessel is useful for the doppler imaging, ultrasound, arteriography, and angiography and also magnetic resonance imaging.(1). In present case report variation in the normal branching pattern of profunda femoris artery were observed in both femoral triangle of male cadaver. The aim of this study is to discuss the anatomy, embryological basis and clinical significance of this abnormality along with relevant review of literature.

MATERIAL AND METHODS

During routine dissection of middle aged male cadaver a bilateral variation was noted in the lower extremity. The incision was given in the skin, which was reflected to clean the superficial fascia. The superficial inguinal lymph nodes, superficial lymph vessels and nerves were dissected by fine dissection. The fascia lata was incised and femoral triangles were exposed. The femoral sheath and its contents including femoral artery were identified. The profunda femoris vessel and its medial and lateral circumflex arteries were dissected and identified. Their relation with other structures of femoral triangle was also seen.

OBSERVATION

In the present case an unusual high origin of profunda femoris artery was observed bilaterally.

- On right side – just below the mid point of inguinal ligament.(fig.2,3)
- On left side – just behind the mid point of inguinal ligament. (fig.2,4)
- A bilateral high origin as reported here is a rarity.

DISCUSSION AND CLINICAL SIGNIFICANCE

The knowledge of variations in the origin of DAT and its branches is of great significance for preventing pseudoeneurysm, flap necrosis, particularly tensor fascia latae, when used in plastic and reconstructive surgery.Due to its high position PFA can be damaged when the femoral artery is punctured for various cardiac interventional procedures.(2)

The profunda femoris artery commonly arises from femoral artery around 3.5 cm distal to the inguinal ligament. In the present case, there is an unusual bilateral high origin of the profunda femoris artery. Quain, found in one out of 431 (0.23%) cases, the profunda femoris artery was originating from the femoral artery just above the inguinal ligament, in seven cases (1.6%), just deep to the inguinal ligament, and in 13cases (3.01%), within half an inch below the ligament (3). Another study by

Siddharth et al. (1985) on 100 thighs, they found the origin of PFA at a median distance of 4.4 cm from the inguinal ligament. In one case (1 of 100; 1%) it arose at the level of the inguinal ligament.(4).

EMBRYOLOGICAL BASIS

The femoral artery developing from the rete femorale (capillary plexus) that is connected proximally with the femoral branch of external iliac artery and distally with the axis artery. The axis artery of the lower limb arises from the dorsal root of the umbilical artery. The PFA develops in the rete femorale, appears as a branch of the femoral artery after regression of the rete femorale. Anatomical variations in the origin of the PFA occur due to variability in the pattern of regression of the rete femorale.(5)

CONCLUSION

These variations of the origin of profunda femoris artery from the femoral artery can become a matter of great concern to orthopaedic surgeons, radiologists, plastic surgeons and general surgeons, any of whom may perform surgical procedures in this area. Therefore anatomical and embryological knowledge of the branching pattern of the femoral artery and its branches is important.

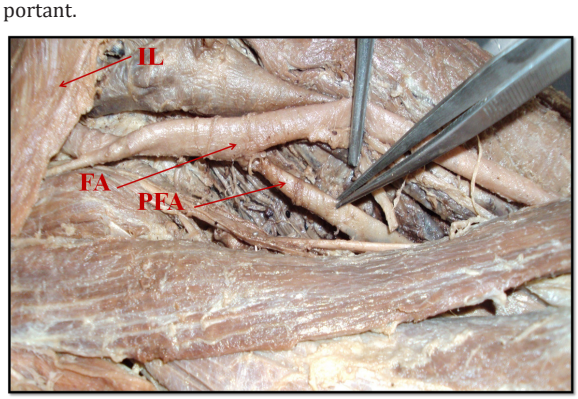

Fig.1 Normal relationships of the origin of profunda femoris artery from common femoral artery. PFA- profunda femoris artery,I.L- inguinal ligament

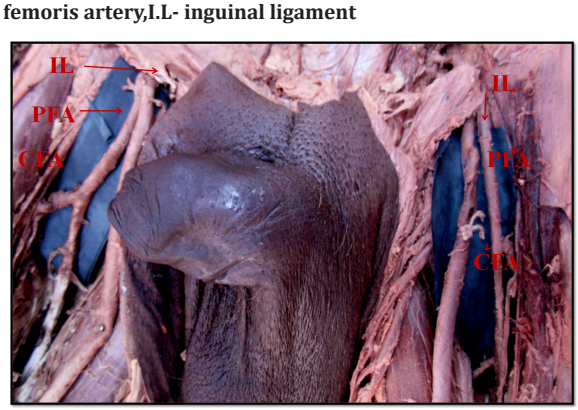

Fig.2 Bilateral high origin of the profunda femoris artery from the common femoral artery. CFA- common femoral arterty

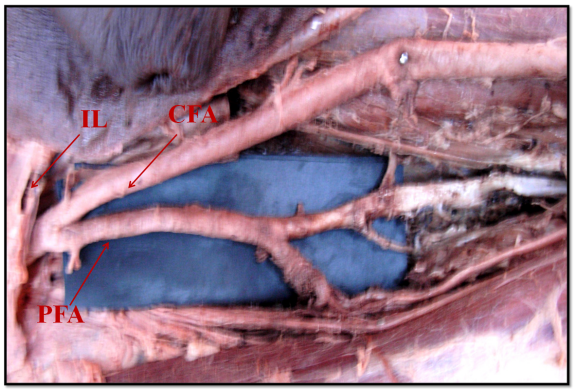

Fig.3. High origin of profunda femoris artery arising from the common femoral artery on right side

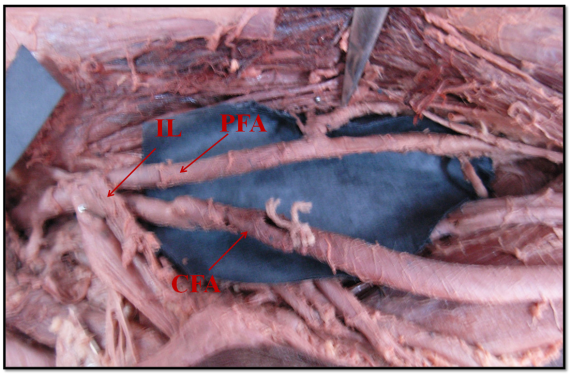

Fig.4 High origin of profunda femoris artery arising from the common femoral artery on left

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