CASE REPORT

Variation in Origin and Branching Pattern of Lateral Circumflex Femoral Artery: A Rare Case Report

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The anatomical knowledge of the arterial variations of lower extremity including femoral artery (FA), profunda femoris artery (PFA) and its branches is important in minimizing complications during vascular reconstructive surgeries, surgical interventions for embolism and catheterization procedures. The lateral circumflex femoral artery (LCFA) is commonly a branch of the profunda femoris artery (PFA) and supplies blood to the upper end of the femur, vastus lateralis and the knee. The branches of LCFA are used in making anterolateral thigh flap for reconstruction of defects in face, aorto-popliteal bypass, coronary artery bypass grafting. Therefore, identification of variations of this artery is critical from a clinical and surgical point of view. In the present case, in the left lower extremity of a 50 yrs male cadaver, double origin of LCFA from lateral and anterior aspects of PFA was observed respectively. The branches of proximal LCFA were ascending, transverse and descending, whereas the distal LCFA gave transverse and descending branches besides muscular branches. On the right side only one LCFA was observed. LCFA is an important branch of PFA and the knowledge of its variations can be of great relevance during surgical and radiological procedures in the femoral region.

Keywords: Anatomy, Profunda femoris artery, Lateral circumflex femoral artery, Arterial variations
INTRODUCTION

The lateral circumflex femoral artery (LCFA) normally arises from the lateral side of the profunda femoris artery, passes between the branches of the femoral nerve near its origin, and then courses behind the sartorius and rectus femoris muscle. The artery ends by dividing into ascending, transverse, and descending branches. The ascending branch anastomoses with the superior gluteal and the deep circumflex iliac artery and supplies greater trochanter, head and neck of the femur. The small transverse branch enters vastus lateralis and participates in the formation of cruciate anastomosis. The descending branch follows the anterior border of vastus lateralis, and then anastomoses with the lateral superior genicular branch to participate in genicular anastomosis.

Variations in the origin of LCFA have been reported by various researchers. According to Uzel et al\textsuperscript{4} LFCA arises from PFA in 77.3\% and from femoral artery in 19.1\%. Bergman et al\textsuperscript{3} reported a case of double LCFA, one from the femoral artery and the other from the PFA. The knowledge of variations in the origin of LCFA and its distribution is of great significance for preventing anterolateral thigh fasciocutaneous flap necrosis when used in plastic and reconstructive surgery\textsuperscript{8}.

CASE REPORT

During the routine dissection for medical students an unusual origin and branching pattern of LCFA in left lower extremity was observed in 50 year old embalmed male cadaver. Two LCFA were seen arising from the lateral and anterior aspect of PFA at a distance of 2.3cm and 3.0cm from the origin of PFA respectively (Fig.1&2). The diameter of the proximal LCFA was 0.5cm and that of the distal was 0.3cm. The proximal LCFA gave ascending, transverse and descending branches. All the three branches passed behind the branches of femoral nerve. The distal LCFA gave two branches i.e. transverse and descending besides muscular branches. The two branches i.e. transverse and descending of the distal LCFA passed between...
the branches of femoral nerve. The origin of medial circumflex femoral artery (MCFA) was 0.3cm proximal to the origin of first LFCA and it was normal in its course, size, length and branching pattern (Figure 1).

**DISCUSSION**

Several variations of the origin of LCFA have been reported (Table1). The knowledge of these variations is of importance when clinical procedures are undertaken in the femoral region and in hip joint replacements. In the present case we report the double origin of LCFA from the PFA, which to our best knowledge has not been reported so far. According to Balachandra et al the anomalous pattern of LCFA could be due to a. presence of unusual compound arterial segments, b. aberrant vessels that connect with principal vessels, arcades or plexuses, c. divergence in the mode and proximodistal level of branching. Embryological basis for the variations in the origin and branching pattern of LCFA could be explained by the fact that during the developmental process some of the arterial channels regress whereas other channels enlarge and form definitive arterial pattern. The persistence of the channels that are supposed to disappear lead to various arterial anomalies.

The knowledge of the vascular variation of lower limb is important in vascular reconstructive surgeries, surgical interventions for embolism, catheterization procedures and in raising skin graft with pedicles.

**CONCLUSION**

The present case provides information on the rare occurrence of double origin of LCFA and its branching pattern. Documentation of this variation is highly significant for the interventional radiological procedures like angiography, colour Doppler as well as for preventing flap necrosis, when used in plastic and reconstructive surgery.

**CONFLICTS OF INTEREST**

None declared

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Lateral Circumflex Femoral Artery Variation


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