



**ANATOMICAL VARIATIONS IN LEFT CIRCUMFLEX FEMORAL ARTERY – A CASE REPORT.**

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**ABSTRACT**

In the proximal thigh, the profunda femoris artery gives the lateral and medial circumflex femoral arteries, as well as perforating and muscular branches further away. Close to the root of profunda femoris artery, the lateral circumflex femoral artery originates laterally. It divides into ascending, transverse & descending branches. In the present case, during routine dissection for undergraduate students on a male cadaver, it has been found that the lateral circumflex femoral artery is originating from lateral aspect of the femoral artery proximal to the origin of profunda femoris artery. This variation has been observed on both the sides. Surgeons and orthopedics may find it useful to have accurate understanding of the anatomical variations of the lateral circumflex femoral artery, particularly when doing popliteal bypass surgery and anterolateral thigh flap surgeries. Surgeons must proceed cautiously in order to reduce the danger of iatrogenic damage due to the significant variability of this artery. Before undergoing surgery in the femoral region, radiographic evaluation of the vascular anatomy is highly recommended.

**KEYWORDS :** lateral circumflex femoral artery, profunda femoris artery, femoral artery

**INTRODUCTION**

The major arterial supply of lower limb is Femoral artery. It continues from the External Iliac artery behind the inguinal ligament, midway between the anterior superior iliac spine and the pubic symphysis and has several branches, including the superficial epigastric, superficial circumflex iliac, superficial external pudendal, deep external pudendal, muscular branches, profunda femoris artery, and descending genicular artery. The profunda femoris artery is the largest branch that arises posterolaterally from the femoral artery about 3.5 cm distal to the inguinal ligament.<sup>5</sup> The profunda femoris artery gives off the lateral and medial circumflex femoral arteries in the proximal thigh, as well as perforating and muscular branches more distally. The lateral circumflex femoral artery is laterally running branch given off near the root of profunda femoris artery. It passes between the divisions of femoral nerve, posterior to the sartorius and rectus femoris muscle, and divides into ascending, transverse, and descending branches.<sup>5</sup>

**Case Study**

In the present case, during routine dissection for undergraduate students on a male cadaver, it has been observed that the lateral circumflex femoral artery originates directly from the lateral aspect of the femoral artery proximal to the origin of the profunda femoris artery. It disappears from the femoral triangle beneath the sartorius and rectus femoris muscles. Here it trifurcates into ascending, transverse and descending branches. This variation in the origin of the lateral circumflex femoral artery has been observed on both the sides. Besides its trifurcation, the lateral circumflex femoral artery on the right side also gives few muscular branches. It has also been observed that the medial circumflex femoral artery gets origin from the profunda femoris artery and has ascending and transverse branches on both the sides.

**MATERIALS AND METHOD**

Human cadavers are willfully donated to the Department of Anatomy, B J Medical College, Ahmedabad, Gujarat. These cadavers are embalmed and preserved to be used in routine dissection for students. Instruments used for dissection were a scalpel with blade, toothed and toothless forceps, and a pair of scissors. Vernier calipers were used to measure the distance between mid-inguinal point (a point between anterior superior

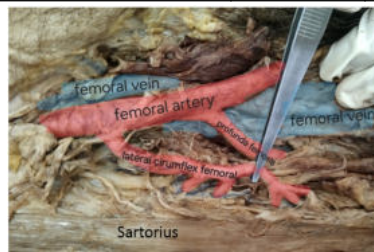
iliac spine and pubic symphysis) to origin of lateral circumflex femoral and profunda femoris artery. Dissection of femoral triangle was done according to Cunningham's Manual of Practical Anatomy. Femoral artery and Profunda femoris artery along with its branches are carefully traced while making observations.

**RESULT**

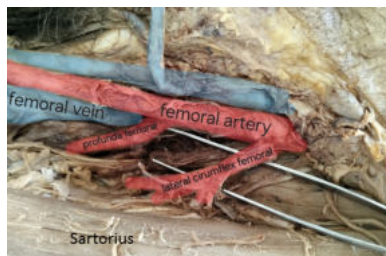
In the present case, it has been observed that lateral circumflex femoral artery is originating from lateral aspect of femoral artery on the right side at a distance of 2.3 cm from mid inguinal point and on the left side at a distance of 2.1 cm from mid inguinal point, which is 2.1 cm and 2.2 cm proximal to origin of profunda femoris artery respectively on right and left side.

**Table – 1 Distance From Mid Inguinal Point To Origin Of Arteries (pfa & Lcfa)**

Name of Artery	Right side	Left side
Profunda Femoris artery	4.4 cm	4.3 cm
Lateral Circumflex femoral artery	2.3 cm	2.1 cm



**Figure 1: Right Femoral Triangle**



**Figure 2: Left Femoral Triangle**

## DISCUSSION

Accurate knowledge of anatomical variations of the lateral circumflex femoral artery may convey important information to surgeons, especially during popliteal bypass surgery and anterolateral thigh flap procedures.<sup>6</sup> It is frequently explored for its use as a new arterial graft for coronary artery bypass grafting.<sup>2</sup> Anterior approach of hip surgery routinely requires the ligation of the ascending branch of the lateral circumflex femoral artery, so it may jeopardize vascularization of the proximal femur, especially in conditions of anatomical variations.<sup>3</sup> The descending branch of the lateral circumflex femoral artery may be utilized as a high-flow conduit for an extracranial-intracranial bypass surgery.<sup>1</sup> The ascending branch of the artery can be used as a supply for vascularized iliac transplantation.<sup>7</sup> The high degree of variability within this artery requires surgeons to proceed with caution to decrease the risk of iatrogenic injuries.

## CONCLUSIONS

Prior to performing surgical procedures in the femoral region, it is strongly recommended to conduct radiographic assessment of vessel anatomy to avoid iatrogenic injuries. This is due to the multiple observations noted for various origins and courses of the lateral circumflex femoral artery. Such injuries can be prevented by identifying the complex anatomical structure of the femoral region through imaging studies. Therefore, it is essential to undertake precautionary measures to ensure patient safety and successful surgical outcomes.

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