

## A Case of Double Profunda Femoris Artery

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### Abstract

During a routine dissection of an adult male cadaver for academic purpose two Profunda Femoris Arteries (PFA) were seen arising from Femoral Artery (FA). Both were following an expected course. Double PFA is an extremely rare anatomical variation, only a few such cases are reported.

The two PFA, upper and lower were found to be arising 2 cm and 5 cm from Mid Inguinal Point (MIP) respectively. A thorough knowledge of variations of PFA is of great importance to avoid complications during surgical procedures.

The variations in PFA and its branches are very common and largely associated with one another. The PFA has an important role in collateral blood flow in atherosclerotic occlusive disease.

The common femoral artery is frequently accessed by radiologists and surgeons and is easily accessible to catheterization.

Knowledge of the Anatomy and variations in PFA is very important for surgeons to avoid any iatrogenic injury to the patient.

**Keywords:** Anatomical Variation; Lower limb; Two Profunda Femoris Artery; Case report.

## INTRODUCTION

PFA is a branch of FA. It is a chief source of blood supply in the three compartments of the thigh, anterior, medial and posterior compartment.

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The PFA arises from the lateral side of the femoral artery approximately 3-5 cm below the (mid inguinal point) MIP. PFA takes a spiral course around the femoral artery and femoral vein, and runs between the Pectineus and Adductor longus and enters the medial compartment of the thigh. Then PFA runs between the Adductor longus and Adductor brevis. In the lower part PFA runs between Adductor longus and Adductor magnus. Termination of PFA occurs by piercing the Adductor magnus and it continues as the fourth perforating artery.<sup>1</sup> From PFA various branches like Medial circumflex femoral artery, Lateral circumflex femoral artery, muscular branch, descending genicular branches, Perforating branches are given. During fetal life, axis artery of the lower limb known as Sciatic artery is formed. FA penetrates into the substance of the lower limb bud. It temporarily joins the sciatic artery at the site of future popliteal artery part. PFA



buds off from FA in its dorsal part and supplies the deep structures of the lower limb.

## MATERIAL AND METHOD

During routine cadaveric dissection of a 63 years old male of north Indian origin at ESIC Medical college and Hospital Faridabad, a rare vascular finding was noticed. Two PFA arising from FA were seen. Dissection of the femoral triangle was done. During the dissection, Sartorius was cut from the Anterior Superior Iliac Spine (ASIS) and reflected downwards. Rectus Femoris was cut at the upper part and reflected. Adductor longus was also cut and reflected downwards. FA with its branches were exposed. PFA site of origin was noted. Distance of origin of PFA from MIP was measured. Course of both PFA was dissected.

## RESULT

The Upper PFA arose 2 cm from MIP, while the lower PFA arose 5 cm from MIP. The upper PFA passed between Pectineus and Adductor longus and formed 1st and 2nd perforating arteries (Fig.1). The lower PFA passed below Adductor longus and gave 3rd and 4th perforating arteries. Muscular branches to the surrounding muscles were seen arising from both upper and lower PFA. The Lateral circumflex femoral artery and Medial circumflex femoral artery arose from upper PFA.



Fig. 1: upper and Lower PFA seen from the FA.

## DISCUSSION

Various authors<sup>2-6</sup> have studied the origin and variation of PFA. In a study by T. Gregory<sup>2</sup> a double PFA was encountered. The first of it was seen approx 5.4 cm below the MIP and after 1.2 cm it gave rise to muscular branches for Adductor Longus. A second PFA was seen 3.7 cm after the origin of the first PFA and 9.5 cm from the MIP. The lateral circumflex femoral artery and medial circumflex femoral artery were absent. In a study by Lakshmi V<sup>3</sup> the site of origin of PFA was observed. Most commonly PFA arise from the lateral side (86%), whereas in our case the upper PFA arose posterolaterally and lower PFA arose laterally. The distance of PFA from the inguinal ligament ranged between 3-4 cm,<sup>3</sup> whereas in our case upper PFA arose 2 cm from the inguinal ligament. In a study by George A<sup>4</sup> pattern- of origin of PFA from FA was noted and it was found that 3.33% of PFA arose from left side with MCFA as a common trunk and in 6.67% PFA arose from as a common trunk with LCFA, but in 1.67% cases trifurcation was noted (PFA originated from FA with both the circumflex arteries at a common point). In study of T. Manjappa<sup>5</sup> and S. Waghmode<sup>6</sup>, the site of origin of PFA was posterolateral in 60% cases, similarly in present study upper PFA was originating from the posterolateral side whereas lower PFA was originating from the lateral side. Medial and lateral circumflex femoral PFA arteries arose from upper PFA, whereas in study by T. Gregory they were absent from both PFA.

## CONCLUSION

Angiography of PFA is a mainstay investigation in case of peripheral occlusive arterial disease, suspected congenital vascular anomaly, arterial status in trauma and imaging of vascular malignancies.<sup>2</sup> Mostly the variation of PFA is asymptomatic, they are usually incidental findings in the Operation Theater (OT) or in Dissection Hall (D.H) or may be seen during angiography<sup>7</sup>. Knowledge of vascular anomalies of PFA will be a great help in proper planning and management of PFA lesions. Variation in PFA occurs due to developmental anomalies, and clinicians should be aware about such developmental anomalies.

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