Variations of lateral circumflex femoral artery and profunda femoris artery — a case report

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Received November 3rd, 2012; accepted April 1st, 2013

Abstract
Profunda femoris artery and its branches are extensively used in different diagnostic and therapeutic interventions. Any knowledge on anatomical variations gains importance to prevent iatrogenic complications. During routine dissection for medical graduates, a variant vascular pattern of profunda femoris artery and lateral circumflex femoral arteries was observed in an adult cadaver. On right side, profunda femoris artery had a high level of origin from the medial side of femoral artery and the lateral circumflex femoral artery originated from the femoral artery. On the left side, a short length lateral circumflex femoral artery branched out from profunda femoris artery, rest all branches were as usual.


Key words [profunda femoris artery] [lateral circumflex femoral artery] [femoral artery]

Introduction
Profunda femoris is the chief artery of thigh mainly arising from the lateral side of femoral artery about 3-4 cm distal to the inguinal ligament. It gives off muscular branches, medial and lateral circumflex femoral arteries and perforating arteries. Recent trends uses profunda femoris artery for hemodialysis, vascular reconstructive procedures and various radiological imaging techniques. Its branches are used as long pedicle during breast reconstruction surgeries [1] and lateral circumflex femoral artery flap is used to correct large defects in the face due to gunshot wounds [2]. Plastic surgeons use the muscular branches while incorporating myocutaneous flaps. Several studies and case reports have been reported on its unilateral variations. But the combination of variations of profunda femoris artery and lateral circumflex femoral artery in a single cadaver is rare in literature. This case has been reported for the awareness of surgeons in order to avoid iatrogenic complications while dealing with the anterior compartment of thigh.

Case Report
During routine dissection of lower limb in the Department of Anatomy of Mahatma Gandhi Medical College and Research Institute a variant vascular pattern was observed in an adult male cadaver on both the limbs. On the right limb profunda femoris artery branched from medial side of femoral artery just beneath the inguinal ligament and coursed down behind the femoral vessels and terminated as usual (Figure 1). On its course it gave all the branches except lateral circumflex femoral artery. Lateral circumflex femoral artery arose from femoral artery just distal to its origin of profunda femoris artery and further branched into ascending, transverse and descending branches (Figure 2). On the left limb profunda femoris artery branched out of femoral artery about 3 cm below the inguinal ligament. Few inches down it gave rise to lateral circumflex femoral artery, which had a short course laterally of about 1-2 mm (Figure 3) and immediately branched out to give ascending, transverse and descending branches (Figure 4). Medial circumflex femoral artery branched out from medial side of profunda femoris artery which coursed behind the femoral vessels and branched into anastomosing branches.
Pseudoaneurysm during cannulation of percutaneous femoral artery is common to occur. The puncture site is usually profunda femoris artery or femoral artery distal to the origin of profunda femoris artery, hence its necessary to know the level of origin of profunda femoris artery [3]. In a study done in 100 dissected thighs only one side had a high origin of profunda femoris artery at the level of inguinal ligament [4]. A high origin of the artery at or above the inguinal ligament was found in 1.2% of the subjects in 253 lower limb arteriograms from Czech Republic [5]. It was reported in another case that the artery originated less than 1 cm distal to the inguinal ligament [6]. In a study done in 224 femoral triangles around 39% of cases profunda femoris artery was found to arise either from medial or posterior aspect of femoral artery. Out of that 5 cases profunda femoris artery was coursing superficial to femoral artery [7]. In a study done in Indian population, two out of 64 extremities (3.1%) reported profunda femoris artery came from medial side of femoral artery [8]. In the present case profunda femoris artery had a high origin and also emerged from medial aspect of femoral artery further coursed behind femoral vein.

Lateral circumflex femoral artery and its branches are used in various bypass surgeries in iliofemoral region as well as in cranial cavity [9]. In a study done in 64 extremities it was reported that the lateral circumflex femoral artery originated from femoral artery in around 18.75% (12 cases). Other similar cadaveric studies the occurrence were reported as 16.6%, 13.2% and 43.33%, respectively [10–12]. Bilateral origin of lateral circumflex femoral artery from the femoral artery has been reported [13]. Hollinshead reports that in about 15% of cases lateral circumflex femoral artery branched from femoral artery proximal to the profunda femoris artery [14]. Baptist et al. have reported the origin of lateral circumflex femoral artery from femoral artery [15]. Prakash et al. concluded that the circumflex branches of profunda femoris artery branched directly from femoral artery when it was associated with lower level of separation of the profunda femoris artery from the femoral artery [8]. But in present case lateral circumflex femoral artery branched out of femoral artery after a higher level separation of profunda femoris artery which was found to be rare in literature.

On the left side, the lateral circumflex femoral artery originated from the profunda femoris artery and was found to be very
Variant arteires in groin

short in its course for about 1-2 mm, after which it branched into its respective branches and the transverse branch was found to course between the anterior and posterior divisions of femoral nerve. This was found to be rare in literature and present case is the first to report it.

References


