

Original Article

STUDY OF MEDIAL CIRCUMFLEX ARTERY

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ABSTRACT

Background: The proper knowledge of the course and ramification of blood vessels of lower limbs is very important for surgeons and interventional radiologist. Medial circumflex femoral artery usually originates from posteromedial aspect of the profunda femoris, but often originates from femoral artery itself. It has an important role in supplying blood to femoral neck and head, fatty tissue in acetabular fossa and used in flaps reconstructive surgery.

Methods: 50 adult lowerlimbs were procured from embalmed cadavers of J.J.M. Medical College and S.S.I.M.S & R.C, Davangere, Karnataka, India for the study. Dissection of femoral triangle was carried out according to Cunningham's manual. Site and mode of origin of the branches of femoral artery were studied, configuration of the femoral origins of medial and lateral circumflex femoral artery and their prevalence were studied.

Results: Out of 50 extremities, Medial circumflex femoral artery took origin from profunda femoris in 41 specimens and from femoral artery in 9 specimens.

Conclusion: The knowledge of normal origin and variation of medial circumflex femoral artery is very valuable in preventing iatrogenic injury to these vessels during surgical procedures of femoral triangle.

KEYWORDS: Medial circumflex artery, Femoral artery, Lower limb arteries.

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INTRODUCTION

The course and ramification of the lower limb vessels have received attention from anatomists and surgeons. Medial femoral circumflex artery is a medial branch of the deep femoral artery, while, in some cases, it originates from the femoral artery. Medial femoral circumflex artery is a vital artery supplying the head and neck of femur, adductor thigh muscles and adipose tissue in the acetabular fossa [1,2].

Medial circumflex femoral artery has a great importance in the flap plastic surgery as a vascular pedicle content, such as the transverse upper gracilis flap, and medial circumflex femoral perforator free flap. At the upper margin of the adductor magnus, it gives off its transverse and

ascending branches and anastomoses with the lateral circumflex femoral artery, inferior gluteal artery, this anastomosis within the intertrochanteric fossa is known as the cruciate anastomosis. In case of an occlusion of the FA, the circulation of the lower extremity is accomplished via this anastomosis[3,4].

The intraosseous vascular anatomy of the head of the femur has been well described. The blood supply to the weight bearing portion is derived from the medial femoral circumflex artery. The deep branch of the medial femoral circumflex artery gives rise to two to four superior retinacular vessels and, occasionally, to inferior retinacular vessels.

The medial epiphyseal artery usually perfuses only the perifoveolar area and rarely supplies a significant area of the head. Branches from the metaphyseal and lateral femoral circumflex arteries contribute very little. The anterior aspect of the extraosseous course of the medial femoral circumflex artery has been described in textbooks of anatomy, but the portion of the medial femoral circumflex artery most important to the hip surgeon is the peripheral extracapsular division of the deep branch, which can be damaged during a posterior approach[5,6,7].

In study of Tanyeli E et al, the distance between the branching point of medial femoral circumflex artery and the midpoint of IL was also measured. Authors were unable to find any information about this distance in other studies. In the cases with medial femoral circumflex artery branching directly from femoral artery the mean distance (2.5 ± 1.4 cm) was smaller than in the cases in which medial femoral circumflex artery branched from deep femoral artery (5.9 ± 1.5 cm). These distances may be useful for clinicians dealing with this artery[8]. The medial circumflex artery knowledge is very important in femoral triangle surgeries.

MATERIALS AND METHODS

50 adult lowerlimbs were procured from embalmed cadavers of J.J.M. Medical College and S.S.I.M.S & R.C, Davangere, Karnataka, India for the study. Dissection of femoral triangle was carried out according to Cunningham's

manual. Site and mode of origin of the branches of femoral artery were studied, configuration of the femoral origins of medial and lateral circumflex femoral artery and their prevalence were studied.

RESULTS

Out of 50 extremities, Medial circumflex femoral artery took origin from profunda femoris in 41(82%) specimens and from femoral artery in 9(18%) specimens.

DISCUSSION

Medial circumflex artery, which shows different branching patterns, is an important artery in supplying blood to the head and neck of the femur, to the adductor muscles and to fatty tissue in the acetabular fossa, because of its close relationship with this area there is a high risk of severing the artery after trauma or during operations such as total hip arthroplasty[9]. In our study out of 50 extremities, Medial circumflex femoral artery took origin from profunda femoris in 41(82%) specimens and from femoral artery in 9(18%) specimens. Comparing the results from our study with the literature, different results were obtained. Siddarth et al., found that Medial circumflex artery originated from FA or Profunda femoris in 26% and 63% of cases[10], Massoud and Fletcher in 6.4% and 81% (19), Emura et al., in 11.6% and 61.7% [11], Samarawickrama et al. in 31% and 62% of cases [12].

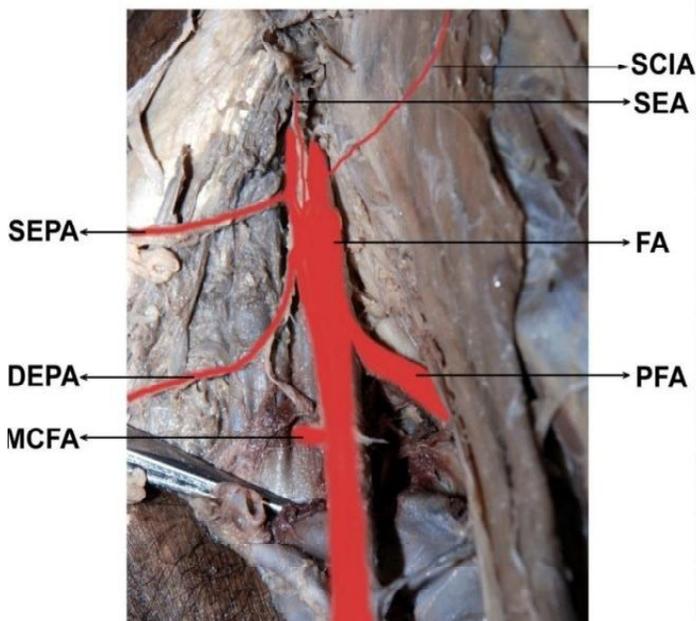


Fig. 1: Medial circumflex femoral artery took origin from profunda femoris.

Dixit et al., reported that Medial circumflex artery arose from femoral artery or deep femoral artery in 20.63% and 62.5% of the cases [13], Clark et al., in 40% and 53% of cases [14], Prakash et al., in 32.8% and 67.2% of cases [15]. Basar et al., in the study conducted on 600 femoral angiography stated that Medial circumflex artery originated from the FA in 48.9%, and from the deep femoral artery in 51.1% of cases [16]. Arterial supply of the femoral head is usually compromised after femoral neck fractures. The medial circumflex artery is the main artery that supplies the femoral head and neck and it is usually injured during femoral neck fractures. Therefore, clinicians and surgeons who are interested in this region should be familiar with the variations of this artery. Aseptic necrosis of the femoral head could occur after femoral neck fractures [17]. The Knowledge of medial circumflex femoral artery important in lowerlimb surgeries and it also helps in plastic surgeries grafts.

Conflicts of Interests: None

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