

## 8. VARIATIONAL ASPECTS OF THE DEEP FEMORAL ARTERY



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**Introduction.** The deep femoral artery (DFA), also known as the deep artery of the thigh, classically, originates from the lateral semi-circumference of the femoral artery (FA), in the distal direction, at a distance of about 4 cm from the inguinal ligament. It is of huge interest both for the angiographic diagnostic procedures and for the vascular and endovascular surgeons, due to the role it has in the collateral circulation between the blood vessels in the pelvis and those ones in the popliteal-tibial area.

**Aim of study.** Studying the specialized references that describe the variational morphological peculiarities of the deep femoral artery.

**Methods and materials.** There have been studied 25 reference sources, 6 national and 19 international references. Aiming to achieve this goal, we have carried on a study, by examining and processing the information on this topic of study, from various sources.

**Results.** 22 sources provided the variants of origin of the deep femoral artery, as found with the frequency from 30 to 45%. In 80-85% of cases, the DFA originates from the FA. However, there are known variations of branching. In 48-60% of cases, the medial circumflex femoral artery (MCFA) and the lateral circumflex femoral artery (LCFA) originate from the DFA. In 25-34% of cases, the MCFA originates from the FA, while the LCFA originates from the DFA. In 9-12% of cases, the LCFA originates from the FA, and the MCFA originates from the DFA. There are also rare cases (1- 2%), when the DFA, MCFA and LCFA originate from the FA trifurcation. 20 reference sources have identified a range of anatomical variations of the DFA pathway, namely: in the majority of cases (from 40% to 55% of cases), the deep femoral artery goes in the posterolateral direction. It may also have the strictly posterior direction (from 20% to 40% of cases). It may also have the posteromedial pathway (from 5% to 14% of cases), or the strictly medial pathway (from 1.5% to 3.1% of cases). There are two extremely rare variations: DFA doubling, and DFA origin from the bifurcation of the external iliac artery, laterally to the femoral artery, with branching into the MCFA, LCFA, and two perforating arteries. Knowing the morphological variations of the deep femoral artery is essential for avoiding the arteriovenous femoral iatrogenic fistulas, which are caused by the femoral artery puncture.

**Conclusion.** Knowing the variations of origin and the pathway of the deep femoral artery and its branches, is very important for the successful results, both in the course of interventional and surgical procedures. Defining the vascular pattern before any and all invasive procedures will allow the surgeons to avoid iatrogenic injuries.