

# The inferior epigastric artery arising from the internal iliac artery via a common trunk with the obturator artery

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**Abstract:** We report a rare case of a left inferior epigastric artery arising from the internal iliac artery via a common trunk with the obturator artery in an 84-year-old female cadaver. A common trunk for the inferior epigastric and obturator arteries firstly originated from the left internal iliac artery, at 3.0 mm below the bifurcation of the left common iliac artery. This trunk ran straight between the left external iliac artery and left external iliac vein, and was finally divided into the left inferior epigastric and left obturator arteries just superior to the inguinal ligament.

**Key words:** Inferior epigastric artery, Internal iliac artery, Obturator artery

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## Introduction

The inferior epigastric artery arises commonly from the external iliac artery just superior to the inguinal ligament. This artery runs superiorly in the transversalis fascia to enter the rectus sheath below the arcuate line, and finally anastomoses with the superior epigastric artery [1]. The origin of this artery is variable. It arises from the femoral artery below the inguinal ligament [2], or from the profunda femoris artery [2]. The inferior epigastric artery also has a high origin from the external iliac artery [2, 3], and is sometimes doubled [2]. In addition, this artery forms a common trunk with other arteries; the circumflex iliac artery [2], the obturator artery [2-7], the obturator and profunda femoris arteries [8], and the

obturator and medial circumflex femoral arteries [3, 9]. These common trunks originate from the external iliac artery [2, 3, 5-9]. We report a rare case of the inferior epigastric artery arising from the internal iliac artery via a common trunk with the obturator artery, which is the first case reported among Korean specimens.

## Case Report

A rare case of a left inferior epigastric artery was observed in an 84-year-old female cadaver, in which this artery formed a common trunk with the left obturator artery. The common trunk for these inferior epigastric and obturator arteries arose from the lateral surface of the left internal iliac artery, at 3.0 mm below the bifurcation of the left common iliac artery. This trunk was the first branch of the left internal iliac artery, which ran straight between the left external iliac artery and left external iliac vein without forming an anastomosis with any branches from the left external iliac artery, and terminated dividing into the left inferior epigastric and left obturator arteries just superior to the inguinal ligament

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(Fig. 1). After division, the left inferior epigastric artery took the usual course, running superiorly and entering the rectus sheath, while the left obturator artery crossed over the external iliac vein, and ran medially to enter the obturator canal. The bifurcation of the left common iliac artery was at 58.0 mm below the aortic bifurcation. Two left obturator veins were observed; one was inferomedial to the left obturator nerve, joining the left internal iliac vein, and the other was superior to the left obturator artery, joining to the left external iliac vein.

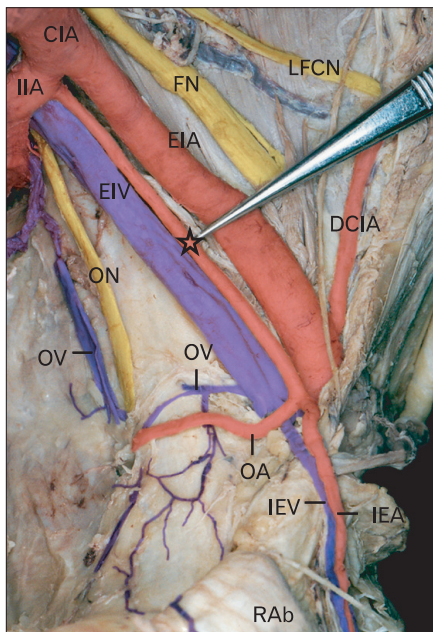
## Discussion

The inferior epigastric artery is variable in its origin [2-9], and may sometimes form a common trunk with the obturator artery [2, 3, 5-7]. The common trunk for the inferior epigastric and obturator arteries arose from the external iliac artery, occurring in 10.5-27.3% of the cases examined [2, 3, 5-7]. In contrast, the trunk originating from the internal iliac artery was reported in only 0.4% of 706 specimens [5]. The

formation of this common trunk might be related with the developmental stage, in common with other variations [10, 11]. Normal anastomosis between the inferior epigastric and obturator arteries through their pubic branches, may enlarge during embryonic development [2]. As the enlargement of this anastomosis continues, either of the inferior epigastric or obturator arteries may be gradually thinned and eventually disappear, from its site of origin to the arising point of its pubic branch. Consequently, these two arteries may have a common trunk from the external or internal iliac arteries.

In three previous reports which were similar to the current case, the trunk for the inferior epigastric and obturator arteries arose directly [3, 4], or in common with the superior and inferior vesical arteries [5], from the anterior division of the internal iliac artery. It ran inferolaterally, and crossed over the obturator nerve, and finally divided into the inferior epigastric and obturator arteries [3-5]. However, in the present case, the trunk for the inferior epigastric and obturator arteries had a higher origin than those of the previous reports, and arose directly from the internal iliac artery. Its course was straight between the external iliac artery and vein, and terminated dividing into the inferior epigastric and obturator arteries just superior to the inguinal ligament.

The inferior epigastric artery has been used in flap surgeries for reconstruction of the breast [12] and pediatric lower limb [13]. Thus, this variation needs to be taken into consideration when the rectus abdominis muscle and the inferior epigastric artery are harvested for the surgical procedures.



**Fig. 1.** The inferior epigastric artery (IEA) arises as a common trunk (star) with the obturator artery (OA) from the internal iliac artery (IIA). This trunk runs straight between the external iliac artery (EIA) and vein (EIV), and then bifurcates as the inferior epigastric and obturator arteries, just superior to the inguinal ligament. CIA, common iliac artery; DCIA, deep circumflex iliac artery; FN, femoral nerve; IEV, inferior epigastric vein; LFCN, lateral femoral cutaneous nerve; ON, obturator nerve; OV, obturator vein; RAb, rectus abdominis muscle.

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