



**ORIGINAL RESEARCH PAPER**

**Medical Science**

**A RARE VARIATION OF ORIGIN OF OBTURATOR ARTERY –A CASE REPORT.**

**KEY WORDS:** External iliac artery, internal iliac artery, obturator artery, posterior division, variations

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**ABSTRACT**

**Introduction:** Obturator artery is the branch of anterior division of internal iliac artery. Variations in its origin are quite common and are very important from surgical point of view. **Methods:** To study the variations in the origin of the obturator artery. **Results:** Commonest variation of its origin from the posterior division of internal iliac artery was found. Its embryological basis and clinical significance is discussed here. **Conclusions:** Knowledge of anomalous origin of obturator artery from posterior division is helpful to vascular surgeons while planning endovascular treatment.

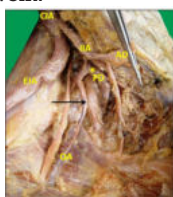
**INTRODUCTION-**

The abdominal aorta bifurcates into the right and left common iliac arteries to the left side of the fourth lumbar vertebral body. These arteries diverge as they descend to divide at the level of the sacroiliac joint into external and internal iliac arteries. The external iliac artery is the principal artery of the lower limb, and the internal iliac artery provides the principal supply to the pelvic viscera and walls, the perineum and the gluteal region. The internal iliac artery, formerly known as the hypogastric artery, is the main artery of the walls and contents of the pelvis. The arrangement of the branches of the internal iliac artery is very variable. Each internal iliac artery, 4 cm long, descends posteriorly to the superior margin of greater sciatic foramen where it divides into the anterior trunk, which continues in the same line toward ischial spine, and a posterior trunk, which passes back to the greater sciatic foramen. Obturator artery is one of the branches of anterior division of internal iliac artery. It runs forward along the lateral wall of pelvis with the obturator nerve and leaves the pelvis through the obturator canal. Although the obturator artery is considered the branch of the anterior division of internal iliac artery, it shows numerous variations in its origin.[1]

The obturator artery runs anteroinferiorly from the anterior trunk on the lateral pelvic wall to the upper part of the obturator foramen. It leaves the pelvis through the obturator canal and divides into anterior and posterior branches. In the pelvis, it is related laterally to the fascia over obturator internus and is crossed on its medial aspect by the ureter and in the male by the vas deferens. The obturator nerve is above the artery, the obturator vein below it. Inadvertently abnormal obturator artery may get cut during enlargement of the femoral ring in reducing a femoral hernia.[2]

**CASE REPORT**

During routine cadaveric dissection Obturator artery was found to arise from the posterior division of internal iliac artery [Figure 1] in male cadaver of approximately 65 year old. Obturator artery after arising from posterior division it run anteriorly through obturator canal along with obturator nerve and obturator vein.



**Figure 1: Obturator artery arising from the posterior division of internal iliac artery.**

**DISCUSSION**

Normally, the obturator artery originates from the anterior division of internal iliac artery, but it shows numerous variations in its origin. The blood vascular tree has at all times been a particularly interesting phase of the anatomical study. Its influence on the development of the individual, its practical importance in medicine, surgery, and anesthesia is very important. Awareness of the variations of arteries is essential during surgery for safe and successful surgeries. Levi reported two roots for the obturator artery, one from the anterior division and the other from the posterior division.[3] According to Jusoh et al., obturator artery was arising from the posterior division and also it was giving rise to the inferior vesical artery in 5.8% cases. It was found to arise from the external iliac in 7.1% of cases.[6] In the present study obturator artery was arising from the posterior division of internal iliac artery .

Benjamin Lipchitz found the origin of obturator artery from the internal iliac before its division into anterior and posterior divisions in 9.1% cases, while as a common stem with middle rectal in 5.4% of cases. The obturator was arising from the inferior gluteal in 2% of cases; also it was found that it was arising from the internal pudendal in 4% of cases, it was also reported that the obturator artery was arising from the femoral artery in some cases.[4]

Bergman et al. observed that obturator was arising as a common stem with the internal pudendal and inferior gluteal arteries in 2% of cases; also it was arising as a common stem with iliolumbar from the internal iliac artery.[5]

Sometimes it was seen arising separately from the According to Jusoh et al., obturator artery was arising from the posterior division and also it was giving rise to the inferior vesical artery in 5.8% cases. It was found to arise from the external iliac in 7.1% of cases.[6] Dubreuil-Chambardel has described different types of origins of obturator artery as follows- • From the anterior division of internal iliac artery • From the internal pudendal artery. • From inferior gluteal artery. • From a common trunk for inferior gluteal artery and internal pudendal artery. • From the posterior division. • From the lateral sacral artery • Obturator and iliolumbar As a common stem from the trunk of internal iliac artery.[7] Pushpa M. S. et al. observed anomalous branching pattern of Internal iliac artery which showed origin of the obturator artery from the posterior division instead of arising from anterior division of Internal iliac artery [8]

Mangala M Pai et al found that in 79% of the specimens, the obturator artery was a branch of the internal iliac artery. It branched off at different levels either from the anterior

division or posterior division, individually or with other named branches. In 19 cases, the obturator artery branched off from the external iliac artery as a separate branch or with the inferior epigastric artery.[9] Parsons and Keith reported variations in the branching pattern of the obturator artery. It originates within the pelvis from external iliac or the hypogastric (internal iliac artery), the anterior or posterior division of the later, or a branch of either division.

Variations Percentage • As a separate trunk from the anterior division 36.4% • From the inferior epigastric 18.1% • Separately from the hypogastric trunk 16.4% • From the posterior division 14.5% • From the internal iliac before its division 9.1% • In common with the middle rectal (middle hemorrhoidal)[10] 5.4%

Embryologically, the anomaly may be explained on certain factors. As per description by previous researchers, Obturator artery has been reported to arise late in the development. Unusual selection of channels from the primary capillaries is thought to account for the anomalies affecting the arterial patterns. A simple view is that the most appropriate channels enlarge with the others retracting or disappearing, which may result in the final arterial pattern. In the later period, the persistence of the arterial channels near the posterior division may have resulted in the anomalous origin of the obturator artery from the posterior division of the internal iliac artery while the anterior channels may have disappeared.

**CONCLUSION**

Anomalous origin of obturator artery from the posterior division may be beneficial to vascular surgeons ligating the internal iliac artery. The obturator artery is known to supply the head of the femur and in the event of the obturator artery arising from the posterior division of the internal iliac artery; it may be spared during any injury to the anterior division. Obturator artery arising from the external iliac artery is called as aberrant obturator artery. General surgeons dealing with laparoscopic herniorrhaphy should be aware of the aberrant obturator artery that crosses the superior pubic ramus and is susceptible to injuries during surgery. It may cause serious complications during femoral ring procedures or laparoscopic interventions. It may compress the external iliac vein and can result in venous stagnation in the lower limb. Besides, it may be an additional source of bleeding in cases of hemorrhage secondary to pelvic fracture. The "corona mortis " is an anatomical variant, an anastomosis between the obturator and the external iliac or inferior epigastric arteries, located on superior pubic ramus. It is significant because hemorrhage may occur if the corona mortis is accidentally cut and achievement of subsequent hemostasis is difficult .Orthopedic surgeons planning an anterior approach to the acetabulum, such as the ilioinguinal or the intrapelvic approach, must be cautious when dissecting near the superior pubic ramus.[11]

**Abbreviations-**

CIA - common iliac artery, IIA - internal iliac artery, EIA - external iliac artery, OA - obturator artery, AD - anterior division, PD - posterior division

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