

Case Report

A Unilateral Accessory Obturator Vessels Variations; Case Report and Literature Review

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Abstract:

The presence of an accessory obturator artery was described in May literature; this variant has clinical implications in surgical operations and interventional radiology. During a routine dissection of the deep structures in the pelvic region of a 60-year-old male cadaver in the laboratory of the Department of Anatomy at the National University in Khartoum, Sudan, anatomical variation was discovered on the right side of the pelvic wall: an accessory artery and vein were traversing the right obturator canal. The right accessory obturator artery emerges from the right inferior epigastric artery and descends to join the main right obturator artery; also, the associated right accessory vein was terminated into the right obturator vein. The obturator vessels exhibited a normal path of origin. Awareness of such variations is critical when performing surgical procedures.

Keywords: Accessory, Obturator, Artery, pelvis and variation.

Introduction:

The accessory obturator artery often originates from the external iliac artery. Furthermore, the obturator or accessory obturator artery can develop alongside the inferior epigastric artery or from a shared trunk of the external iliac or femoral arteries[1]. The Austrian population has the lowest incidence rate of the accessory obturator artery in both Europe and the world [3]. A previous study introduced a new classification based on the shape of the accessory obturator artery. The first kind is the auxiliary obturator artery, which arises directly from the external iliac artery, whereas the second type arises indirectly from the external iliac artery, either directly or indirectly through a common trunk of the inferior epigastric artery.[4]. In the current study, the accessory obturator artery originating from the femoral artery accounts for 1.1%. Treating physicians should use extreme caution while repairs to femoral or inguinal hernias or performing internal stabilization of ventral pubic fractures[5, 6]. The current case intended to demonstrate the variation in accessory obturator vessels in order to call attention to their clinical significance.

Case Presentation:

A unilateral accessory obturator vascular variation was discovered during the dissection of a formaldehyde 60-year-old male cadaver in the Department of Human Anatomy, Faculty of Medicine, National University, for the establishment of a reproductive course for students in the semester, academic year 2021-2022. The pelvis was dissected in accordance with Cunningham's Manual of Practical Anatomy, with the fasciae removed and the deep structures and vessels cleansed and preserved. The right side of the obturator canal revealed an accessory obturator artery and vein, with the artery joining the main right obturator artery and the vein terminating into the obturator vein within their course in the canal (Figs. 1 and 2). However, when these vessels were traced and investigated for their point of origin, it was discovered that the auxiliary obturator was derived from the inferior epigastric artery, as well as the accessory obturator vein was linked to the inferior epigastric vein. The primary right obturator artery and vein had a normal origin, course, and distribution. Also, the left side has normal obturator vessels.



Fig .1: shows the following structures after the pelvic dissection: AO: Accessory Obturator vessels, EIA: External Iliac Artery, EIV: External Iliac Vein, CI: Common Iliac Artery, ON: Obturator Nerve, OV: Obturator vessels, PS: Pubis symphysis, S: Sacrum.



Fig .2: demonstrating the following structures: AA: Accessory Obturator Artery, AV: Accessory Obturator Vein, EIA: External Iliac Artery, EIV: External Iliac Vein, IIV: Internal Iliac Vein, IIA: Internal Iliac Artery, CI: Common Iliac Artery, OF: Obturator Foramen, OV: Obturator vessels, PS: Pubis symphysis, IEV: Inferior Epigastric Vessels.

Discussion:

Previous studies have identified vascular variations in Sudanese people [7]. An analysis of research subjects revealed that 6 out of 7 people with unilateral or bilateral aberrant obturator arteries had their supplementary obturator artery come from the deep inferior epigastric artery, which made up 33.3% of the instances [8]. When assessing donor dead bodies of midwestern Americans, an abnormal obturator artery appeared in around 16.7% of the cases; it originated from the inferior epigastric artery [9]. In a 55-year-old male cadaver at Kasturba Medical College, an aberrant obturator artery has been found that originated from the inferior epigastric artery and crossed the external iliac vein to enter the obturator canal, accompanied by the obturator vein and nerve [10].

In the current case report, an accessory obturator artery and vein were present on the right side of the obturator canal. The accessory obturator artery originated from the inferior epigastric artery and connected the right obturator artery, while the accompanying vein was joined to the right obturator vein.

Another case found arterial and venous anomalies in a Brazilian cadaver. In this

uncommon variety, the obturator artery began from the external iliac artery, traveled past the external iliac vein to the obturator foramen, and was accompanied by two obturator veins with distinct courses [11]. A left half of the pelvis of an adult male cadaver aged about 70 years showed the absence of the normal obturator artery. The accessory obturator artery arose from the external iliac artery and coursed backwards, crossing the superior ramus of the pubis and entering the obturator foramen, associated by the accessory obturator vein, which ended on the internal iliac vein. [12] In this case, the obturator arteries originated commonly from the anterior division of the internal iliac arteries, and their distribution was uniform with no patterns of variation. However, the right obturator receives the accessory obturator artery, and the accessory vein joins the obturator vein. A study found an elevated amount frequency of venous corona mortis in South Indian adult cadaveric pelvises. The study looked into 73 cadaveric pelvic sections and discovered that 8 (22%) had an aberrant obturator vein[13]. Mapping these blood vessels is becoming increasingly important as surgeons select for different routes to the

Bogros area and place a synthetic mesh that requires solid anchors in herniorrhaphies.[14] Prior to surgery imaging evaluations are useful for identifying arterial variation in order to support suitable therapies.

Conclusion:

In this case, a unilateral right accessory vessels were observed to connect the external and internal iliac vessels. Knowledge of accessory obturator vessels is critical for avoiding surgical problems. Being aware of these variations helped to reduce the danger of hemorrhage while performing surgical procedures.

Conflict of interests:

None

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References:

1. Adachi B. Das arteriensystem der Japaner [The arterial system of the Japanese]. Vol. 1. Kyoto: Kawade Shobo; 1928.
2. Bilhim T, Zipser NU, Ozturk O, et al. Angiographic anatomy of the male pelvic arteries. *AJR Am J Roentgenol.* 2014;203(4):W373-W382.
3. Missankov A, Asvat R, Maoba K, et al. Variations of the pubic vascular anastomoses in black South Africans. *Cells Tissues Organs.* 1996;155(3):212-214.
4. Al Talalwah W, et al. Internal iliac artery classification and its clinical significance. *Clasificación de la arteria ilíaca interna y su significación clínica. Rev Argent Anat Clin.* 2014;6(2):63-71.
5. Berberoğlu M, Zengin MF, Zırh NC, et al. Corona mortis: an anatomic study in seven cadavers and an endoscopic study in 28 patients. *Surg Endosc.* 2001;15:72-75.
6. Bilgiç S, Sahin B. Rare arterial variation: a common trunk from the external iliac artery for the obturator, inferior epigastric and profunda femoris arteries. *Surg Radiol Anat.* 1997;19:45-47.
7. Abdelmtalab M. Bilateral Variation of Radial Artery: Two Case Reports and Literature Review. *J Res Appl Basic Med Sci.* 2022;8(3):145-149.
8. Granite G, Meshida K, Wind G, et al. Frequency and clinical review of

- the aberrant obturator artery: A cadaveric study. *Diagnostics (Basel)*. 2020;10(8):546.
9. Diemer C, et al. Analysis of Variation in the Origin of the Obturator Artery in Midwestern American Donor Bodies. *Cureus*. 2024;16(2).
 10. Maneesha S, Sharma T, Singh R, Arora AK, et al. Variations of obturator artery in man. *Anat Physiol*. 2012;2(3):105-108.
 11. Goke K, Costa CF, Ferreira Filho AA, et al. Rare origin of the obturator artery from the external iliac artery with two obturator veins. *J Vasc Bras*. 2016;15(2):250-253.
 12. Nayak SB, Shetty SD, Gandla SR, Patil P, Jetti R, et al. Multiple Variations in the Pelvic Vasculature – A Case Report. *J Clin Diagn Res*. 2015;9(2):AD01-AD02.
 13. Nayak SB, Rai BS, Prabhu L, Somayaji SN, Pai MM, et al. A South Indian cadaveric study on obturator neurovascular bundle with a special emphasis on high prevalence of ‘venous corona mortis’. *Injury*. 2016;47(7):1452-1455.
 14. Bendavid R. The space of Bogros and the deep inguinal venous circulation. *Surg Gynecol Obstet*. 1992;174(5):355-358.