

The Aberrant Obturator Artery and its Clinical Implications

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Received: Dec 19, 2023; Accepted: Dec 26, 2023; Published: Dec 29, 2023

Citation: Granite G. (2023) The Aberrant Obturator Artery and its Clinical Implications. J Anatomical Variation and Clinical Case Report 1:106

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INTRODUCTION

Within the intricate framework of the human body, the aberrant obturator artery (AOA) emerges as a subtle yet significant variation. It is intriguing not only anatomists, but also clinicians, surgeons, and medical researchers alike. The obturator artery (OA) is usually a branch of the internal iliac artery (IIA) with a well-defined path within the pelvis to supply the muscles of the pelvis and the adductors of the thigh. These muscles include the obturator externus, adductor magnus, adductor minimus, adductor longus, adductor brevis, pectineus, and gracilis muscles. The obturator artery also provides a branch that supplies the head of the femur.

Although the route of the OA is well understood, aberrations of this vessel have been increasingly recognized within medical literature. In addition, AOAs are being encountered in surgery and during anatomical dissection at a growing rate, shedding light on the potential clinical implications of this intriguing vascular variant. The most common AOAs include branching from the inferior epigastric artery (IEA) (a branch of the external iliac artery (EIA)) or branching directly from the EIA. Other less common alternative origins include the common iliac artery, inferior gluteal artery (IGA), internal pudendal artery (IPA), a

common trunk for the IGA and the IPA, iliolumbar artery, or by a dual root from both IIA and EIA sources.

CLINICAL IMPLICATIONS

Accidental hemorrhage is the leading cause of obstetrical mortality in the United States of America. It is also the leading cause of maternal deaths in the developing world. Thus, a thorough understanding of the IIA branching patterns and their possible vascular variations is essential for obstetric surgeons. This is also crucial knowledge for general surgeons and interventional radiologists performing pelvic procedures and interventions, such as pelvic surgeries, hip replacements, and hernia repairs.

Vascular communication(s) between the OA and the EIA or IEA, commonly referred to as *corona mortis*, meaning ‘crown of death’, are examples of AOAs that can result patient mortality due to its iatrogenic injury causing significant hemorrhage and difficult hemostasis. This is an arterial branch variation that usually originates from the EIA, IEA, or coexists with the OA and anastomoses with it, creating an arc or ‘crown’ around the internal end of the femoral canal above the superior pubic ramus. Performing

preoperative angiographic analysis to know the pelvic vascular pattern and having the awareness to assess for possible AOAs can decrease the risk of iatrogenic injury.

Equally, radiologists interpreting imaging studies, particularly angiograms and computed tomography (CT) scans, must be vigilant in identifying AOAs. Failure to recognize such variations may lead to misdiagnoses, impacting treatment planning and procedural outcomes.

During childbirth, knowledge of the AOAs becomes crucial for obstetricians managing complicated deliveries. Awareness of these variations can aid in anticipating potential challenges and implementing appropriate measures to ensure the safety of both mother and child.

Understanding the clinical significance of AOAs extends beyond surgical and diagnostic considerations. It opens avenues for research into potential associations with certain pathologies, providing insights into the broader physiological implications of these vascular variations.

CONCLUSION

The AOA is common in medical literature, frequent in occurrence, and must assume a prominent role in

clinical medicine. Its nuances demand the attention of healthcare practitioners and educators across various specialties, prompting a reevaluation of traditional anatomical assumptions. Performing preoperative angiographic analysis to know the pelvic vascular pattern and having the awareness to assess for possible AOAs can decrease the risk of iatrogenic injury. It may also modify the surgical procedures to minimize the postsurgical complications. Familiarity with AOAs is equally important for anatomy instructors to convey such information to their students on the presence and frequency of such vascular variations.

In the dynamic landscape of medical knowledge, the AOA stands as a testament to the intricacies of human anatomy and the essential need for healthcare practitioners and anatomists to understand and be knowledgeable of the wide array of anatomical variations in the human body.

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