## *МОРФОФУНКЦИОНАЛЬНЫЕ ОСОБЕННОСТИ «CORONA MORTIS»*

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## *MORPHOLOGICAL AND FUNCTIONAL FEATURES OF THE «CORONA MORTIS»*

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The «corona mortis» is an anatomical variant, an anastomosis between the obturator and the external iliac or inferior epigastric arteries or veins. It is located behind the superior pubic ramus at a variable distance from the symphysis pubis (range 40-96 mm). In normal obturator artery is a branch of the anterior division of the internal iliac artery. It has marked variations in its origin and course compared to all the other branches of the internal iliac artery. Abnormal or aberrant obturator artery is defined as the origin of obturator artery from the external iliac artery or its branches. It is actually the enlarged pubic branch of the inferior epigastric artery. Accessory obturator artery is the presence of an extra obturator artery in addition to the normal counterpart. When both the normal and accessory obturator arteries are present with rich anastomoses at the obturator canal it is known as “corona mortis” or “crown of death”. This anastomosis testifies to the importance of this feature, as significant hemorrhage may occur if accidentally cut and it is difficult to achieve subsequent hemostasis. It constitutes a hazard for orthopedic surgeons especially in the anterior approach to the acetabulum.

Crown of death was observed in a female cadaver during dissection of pelvis for a thesis work. After dissection of pelvis the left pelvic half showed the obturator artery arising from the anterior division of the internal iliac artery and the accessory obturator artery from the inferior epigastric artery (Figure 1). The two arteries were anastomosing at the upper margin of the obturator foramen and passing through the foramen as a single vessel(Figure 2).

Rusu described the morphological patterns of corona mortis and classified in three types as I-III. The first type(I) – arterial corona mortis. This type subdivided into:

I.1. obturator artery (from the external iliac artery );

I.2. obturator artery from the inferior epigastricartery ;

I.3. anastomosis of the obturator artery and epigastric artery;

I.4. pubic branches of the obturator artery, in the absence of any anastomosis with the epigastric artery system.

The second type (II)- venous corona mortis:

II.1. obturator vein draining into the external iliac vein;

II.2. obturator vein draining into the inferior epigastric vein;

II.3. venous anastomosis of the obturator vein and epigastric vein.

III. combined, arterial and venous corona mortis.

Our specimen corresponds to type I.3 of this classification where there was anastomosis of the obturator artery and the inferior epigastric artery. When we compared our results with another studies, we found that the accessory obturator artery has been described in 30-40% of specimens. So this case can be called rather normal then abnormal. In different studies the arterial connection between the internal and external iliac systems was found in 28.5% out of 98, in another to be 0% of 54 hemipelves and 34% of 55 hemipelves.

Also we found that the venous corona mortis has been described in more studies than the arterial. For example: Berberoglu found the venous corona mortis in all cases (14 cases) by anatomical examination, and in 34 of 36 cases by laparoscopic examination. Additionally, it was observed in 35 of 50 cases (70%) by Tornetta and in 26% by Missankov, May be it is because a venous anastomosis

is more probable than an arterial one, its importance needs to be appreciated by surgeons in order to avoid venous bleeding. However there was no venous corona noted in our specimen.

The average distance between the arch of the lacunar ligament and the anastomotic vessels in our In our specimen was 12.5. In the others studies this distance was 12.8 ± 3.55 mm. So it's similar with our results. This distance is of importance in denoting the risk of anastomosing vessel from getting injured during surgery for femoral hernia.

The surgical relevance of the vascular relations of the superior branch of pubis (in trauma, orthopedic approaches, hernia repair, embolizations and intra-arterial infusions) recommends a detailed knowledge of the morphological and topographical possibilities of the crown of death and the individual evaluation of this risky anatomical structure. Because if the vessels are cut, there will be bleeding from both the ends since both the normal and the accessory obturator arteries are originating from 2 major vessels.

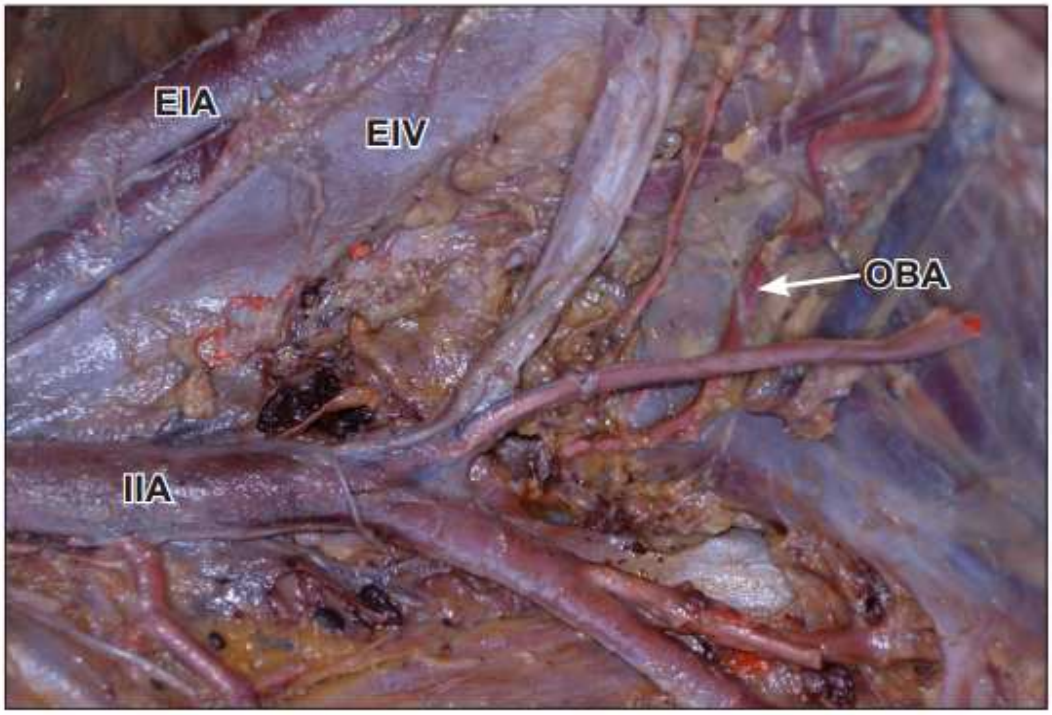


**Figure 1.** The picture of the left half of the pelvis showing the origin of the obturator artery from the anterior division of the internal iliac artery. *(**IIA:** internal iliac artery; **EIA:** external iliac artery; **EIV:** external iliac vein; **OBA:** obturator artery)*

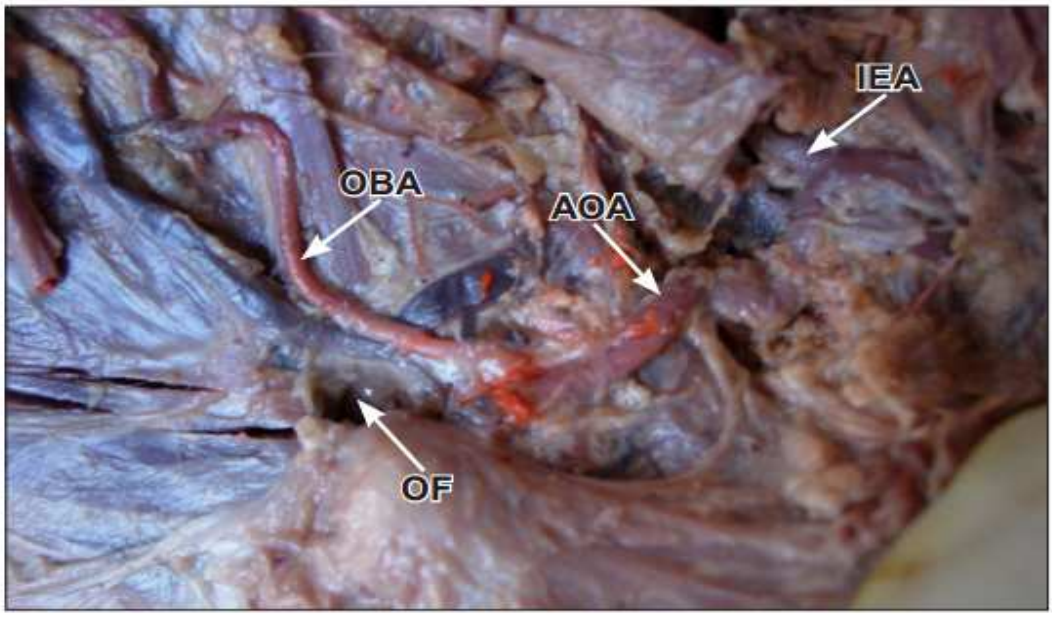


**Figure 2.** The two roots of obturator artery –one from the internal iliac artery *(**OBA:** obturator artery)* and the other *(**AOA:** accessory obturator artery)* from the *inferior epigastric artery* ***(IEA)***– are seen to anastomose at the upper margin of the *obturator foramen* ***(OF)*** to form corona mortis.