Incidence of Corona Mortis; Preperitoneal Anatomy for Laparoscopic Hernia Repair

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The present study 66 half pelvis of cadaver for vascular structure called corona mortis, vessel that connect between external iliac and internal iliac system. The vessel was found 77.27 % and the incidence of aberrant is 13.6 %. The average distance from symphysis pubis to the vessel is 5.28 cm and distance above superior pubic rami is 1.37 cm.

Keywords: *Corona mortis, Aberrant obturator artery, Incidence*

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In this era, laparoscopic surgery is accepted worldwide. Laparoscopic inguinal hernioplasty has been performed by many surgeons. The advantages of this operation are less painful, preferable cosmetics, decreased time to return to work and appropriate for patients with bilateral groin hernia, recurrent groin hernia or in patient with unilateral groin hernia who strongly prefer this kind of operation[1].

Understanding of the preperitoneal anatomy is very important for decreasing complication and recurrent. In general, external iliac vessels, inferior epigastric vessels and obturator vessels are risk to injury during laparoscopic hernia repair and usually identified.

But in some patients have the variable vessels that connect between inferior epigastric vessels and obturator vessels. These called corona mortis or aberrant obturator vessels. Corona mortis is composed of aberrant obturator artery and/or vein. Injury to that vein is easily control and no vigorous hemorrhage but injured artery could produce a large amount of bleeding. In patients who have the injury of this artery may need conversion from laparoscopic hernia repair to open surgery for stop bleeding.

From the recent studies, incidence of corona mortis was 10-43%[2-5] and the distance from pubic symphysis was 3.34-6.40 cm. But the distance above superior pubic rami has never been reported.

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Material and Method

The present study collected data from June 2004 to May 2005. The 33 cadavers, 66 half pelvises, (from Department of Anatomy, Faculty of Medicine Chulalongkorn University) were dissected at the preperitoneal area of the abdominal wall from inside to look for corona mortis. After identifiying the aberrant obturator artery and vein, the distance from pubic symphysis medially was measured to the point that the vessels crossed over the superior pubic rami. Also the distance from the point that the vessels crossed over the superior pubic rami to the anastomosis of the corona mortis to the inferior epigastric vessels was measured, reported in percentage of corona mortis and in centimeters of distance.

Results

Thirty three cadavers (66 half pelvises) are fifteen males (30 half pelvises) and eighteen female (36 half pelvises). Incidence of corona mortis was 77.3% (51/66), 83.3% in males (25/30), 72.2% in females (26/36). Aberrant obturator artery was found 13.6% (9/66), 21.2% in males (7/33), 5.5% in females (2/36) and vein was found in 77.3% (51/66). All of the aberrant obturator arteries were found with the vein. Average distance of corona mortis to pubic symphysis is 5.28 cm. All of aberrant obturator artery crossovered superior pubic

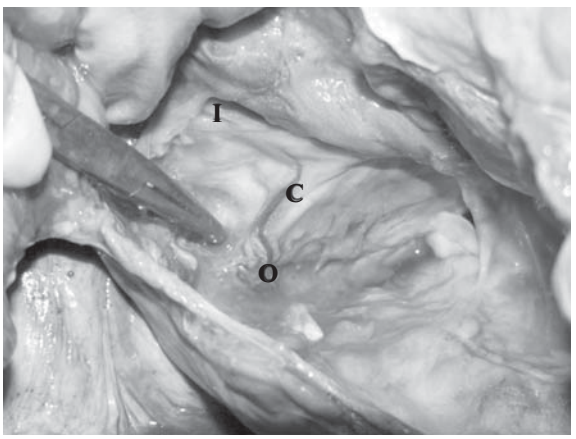

Fig. 1 **I** = Inferior epigastric vss.
C = Corona mortis
O = Obturator vss.

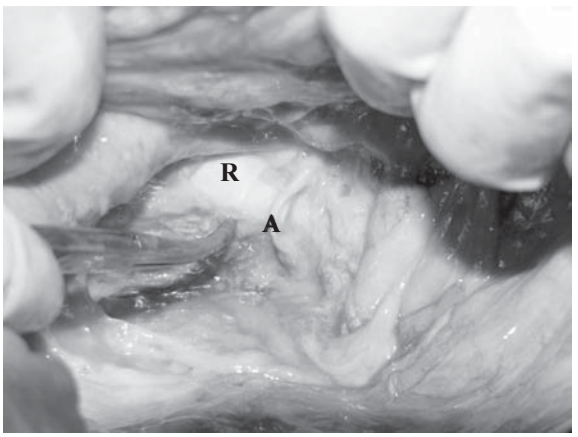

Fig. 2 **A** = Aberrant obturator artery
R = Superior public rami

rami and average distance to the anastomosis at inferior epigastric artery above the superior pubic rami was 1.37 cm.

Discussion

Unlike the previous study, the aberrant obturator a. in male (23%) was found more than female (5%). All connections of aberrant obturator artery from obturator artery to inferior epigastric artery crossovered superior pubic rami. These connections are prone to be injured during operations around the retropubic area especially laparoscopic surgery as laparoscopic hernia repair or laparoscopic prostatectomy.

In laparoscopic hernia repair the injury to corona mortis could happen during dissection of the preperitoneal space and hernia sac. Second, the vessels can be injured from tacker that use for fixing mesh to abdominal wall because the preperitoneal anatomy was masked by mesh. The knowledge of accurate anatomy of corona mortis provides the great advantage to decrease the incidence of surgical complications and improve the result of operation.

Reference

1. Davis CJ, Arregui ME. Laparoscopic repair for groin hernias. Surg Clin North Am 2003; 83: 1141-61.
2. Berberoglu M, Uz A, Ozmen MM, Bozkurt C, Taner S, Tekin A, et al. Corona mortis :an anatomic study in seven cadavers and an endoscopic study in 28 patients. Surg Endosc 2001; 15: 72-5.
3. Lokman K, Ilgin K, Erhan Y, Oktay B, Erhan S. Corona mortis: incidence and location. Arch Orthop Trauma Surg2002; 122: 163-4.
4. Lau H, Lee F. A prospective endoscopic study of retropubic vascular anatomy in 121 patients undergoing endoscopic extraperitoneal inguinal hernioplasty. Surg Endosc 2003; 17: 1376-9.
5. Okcu G, Erkan S,Yercan HS, Ozic U. The incidence and location of corona mortis: a study on 75 cadavers. Acta Orthop Scand 2004; 75: 53-5.

โครงงานวิจัย เรื่อง อุบัติการณ์ของเส้นเลือด corona mortis: มุมมองทางกายวิภาคที่สำคัญสำหรับการผ่าตัดแก้ไขไส้เลื่อนขาหนีบด้วยวิธีส่องกล้อง

ศุภอัฐ พึ่งพาพงศ์, สธน ธรรมอำนวยสุข

จากการศึกษาบริเวณอุ้งเชิงกรานจำนวน 66 ข้าง ของศพผู้บริจาคร่างกาย เพื่อดูเส้นเลือดที่เชื่อมต่อระหว่าง internal iliac system และ external iliac system (corona mortis) พบว่าอุบัติการณ์ของ corona mortis เท่ากับ 77.27% และอุบัติการณ์ของเส้นเลือดแดง aberrant obturator เท่ากับ 13.6% ระยะห่างระหว่าง symphysis pubis และบริเวณที่เส้นเลือดทอดผ่าน superior pubic rami เท่ากับ 5.28 เซนติเมตร และระยะห่างที่เส้นเลือดทอดสูงขึ้นไปจาก superior pubic rami เท่ากับ 1.37 เซนติเมตร