

Incarcerated femoral hernia containing ovary, unusual presentation of uncommon groin hernia

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Of all groin hernias, femoral hernias account for around 2–8%. They occur four to five times more commonly in females than males and have a peak incidence in those between 30 and 60 years old [1,2]. In adult population, femoral hernias are more commonly found in patients with previous inguinal hernia repair [3]. We present an unusual case of a 28-year-old woman who presented to our institution with an incarcerated femoral hernia containing the right ovary & fallopian tube occurring after inguinal hernia repair. The point of care ultrasound that was done in the emergency department had helped in prompt diagnosis of the condition, hence sending the patient to operation theatre for urgent surgical intervention.

Case Presentation: A 28-year-old female presented to the emergency department with a sudden onset of abdominal pain in the right iliac fossa and suprapubic area. The pain was dull, mild to moderate in severity with no radiation. Patient gave history of chronic right groin swelling that was reducible for the last 2 months. Prior to presentation to accident & emergency department, she developed an irreducible swelling. There was no associated vomiting or constipation. Of note in her surgical history was significant for Left inguinal hernia repair ten years ago. She was normotensive and afebrile at presentation. Examination revealed a scar in the left inguinal region. Her abdomen was soft. There was an irreducible firm tender lump palpated below the level of the right inguinal ligament and lateral to the pubic tubercle.

Investigations: All her laboratory tests were within normal limits. The patient was reviewed by the surgical oncall doctor who made the provisional diagnosis of irreducible right femoral hernia based on the clinical

examination. Initially a point of care ultrasound (POCUS) was done by the attending surgical doctor, who was able to appreciate a localized cystic swelling within the hernia sac. A departmental Ultrasonography of the right groin area was obtained to confirm the findings of POCUS. It revealed a well-defined rounded soft tissue echogenicity lesion with a well defined cystic component containing no internal septations or mural nodules. The lesion was located subcutaneously anterior & medial to the femoral vein & reaching medially up to the level of pubic symphysis with no obvious intra-abdominal extension (Figure 1A). The lesion was not reducible and did not change in the size on Valsalva maneuver or cough impulse. No evidence of any peristalsis or free fluid noted within contents of the swelling. Color Doppler imaging revealed central branching pattern of vascularity consistent with ovarian vasculature pattern (Figure 1B). The ultrasound findings were in keeping with right femoral hernia with the ovary within the hernia sac.

Treatment: The patient was admitted under the care of the general surgery team with provisional diagnosis of an incarcerated right femoral hernia with a plan for urgent laparoscopic repair of the right femoral hernia. Intra-operatively, exploration revealed no fluid in the abdomen and no signs of bowel obstruction. A hernia sac was present protruding down towards the femoral canal. The contents were reduced & found to be the ovary and fallopian tube (online Figure S1). Both structures were looking viable. The anatomy of the area was clarified and dissected reaching to the pubic tubercle medially and the inguinal ligament superiorly and laterally. A prolene mesh was applied and fixed using endoscopic clips (takar). The peritoneum was closed and the abdomen deflated.

Outcome and Follow-Up: Patient was doing well post-operatively and responded well to the planned management. She had an uneventful recovery and was discharged home on the next day. Follow up after 6 weeks revealed no complication.

Discussion: The anatomical location of the ovaries and fallopian tube at a level below femoral ring makes herniation of these structures through it unusual, particularly in adults [4]. According to the most acceptable theory, the primary cause for the formation of femoral hernia is a congenitally narrow posterior inguinal wall attachment onto Cooper's ligament with a resultant enlarged femoral ring, while the secondary aetiology is a state of prolonged and increased intra-abdominal pressure, which forces preperitoneal fat into the congenitally large femoral ring [1,5,6]. However, it should be noted that in younger ages with femoral hernias, processes responsible for elevated intra-abdominal pressure are rarely encountered. Due to the rigid ligamentous borders & relatively narrow lumen, incarceration occurs more frequently in femoral hernias than other abdominal hernias [7,8]. The incidence of recurrent femoral hernia occurring after inguinal herniorrhaphy has been reported to be up to 35% [8]. The increased incidence of femoral hernia after inguinal herniorrhaphy may be due to an overlooked hernia or a new spontaneous hernia due to weakening of the femoral region caused by inguinal herniorrhaphy [8,9]

Femoral hernias typically present as a painless or painful groin lump, although may present simply as groin pain or with features of their complications such as obstruction. The differential diagnoses include inguinal hernia, lipoma, saphena varix, enlarged lymph nodes, femoral artery

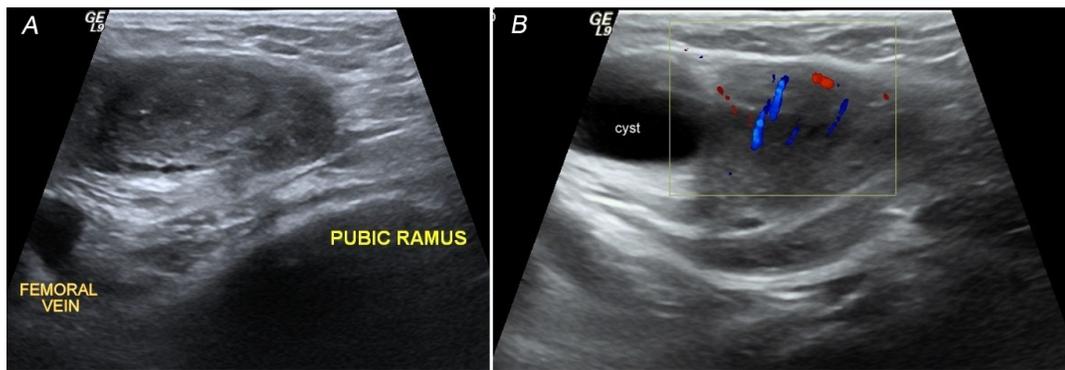


Figure 1. Transverse view of the ultrasound scan of the groin swelling revealed ovary lying anterior & medial to the femoral vein

aneurysm, sarcoma, obturator hernia, psoas abscess, psoas bursa, and in males, ectopic testis [4,10]. Different contents in femoral hernias have been reported in the literature, such as small intestine, omentum, bladder, cecum, colon, appendix (what is known as De Garengeot's hernia), Meckel's diverticulum (Littre hernia), testis, ovary, and even stomach or kidney [11,12].

The preoperative diagnosis of femoral hernia is a challenging issue. In previous reports, the clinical diagnostic accuracy ranged from 25% to 40% [13]. The ovary is quite sensitive to ischemia [14,15]. Should it tort or become incarcerated in a femoral hernia sac, a delay in diagnosis may necessitate its resection [16]. Imaging studies could prove to be a valuable preoperative investigation in women of childbearing age presenting with femoral hernia. Nowadays POCUS is a valuable tool in the initial assessment of irreducible hernia cases, whether performed by the emergency physician or the attending surgeon. The most important points to keep in mind while performing POCUS are:

- Femoral hernia is visualized as a subcutaneous swelling in contact with the femoral vein.
- Assess the contents of hernia sac, whether loop of bowel within or a cystic swelling (e.g ovary like in our case).
- In cases where bowel loops are within a hernia sac, observe for signs of strangulation, such as oedematous bowel wall or absent peristalsis.

Doppler ultrasound may identify reduced blood flow in ovaries suggestive of torsion. Cross-sectional

imaging with CT may be similarly beneficial in identifying a groin hernia containing an ovary provided it causes no delay in the timing of surgery [17].

Operative management of an incarcerated femoral hernia containing an ovary follows the same surgical principles for femoral hernia repair. Intraoperative Reduction of the sac content should be attempted in reproductive young woman and children without any ovarian and tubal abnormalities [18], provided that any life-threatening complication such as acute salpingitis does not exist [19]. If the ovary can't be preserved due to inviability, a salpingo-oophorectomy is to be undertaken. Hernia repair could be done via mesh plug repair, which is considered to have the lowest recurrence rate [1].

Conclusion: Incarcerated femoral hernia containing ovary, is an unusual presentation of uncommon groin hernia. The point of care ultrasound that was done in the emergency department had helped in prompt bedside clinical diagnosis of the condition, hence early urgent surgical intervention & better outcome.

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