Uterus-containing inguinal hernia caused by undue tension on round ligament

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Abstract:
The presence of uterus in inguinal hernia sac is a rare condition, the cause for this disease has not been clarified, and the contributions to this condition could be multiple. In this report, we described a case of a 78-year-old multiparous female with left recurrent inguinal hernia, during the transabdominal preperitoneal repair (TAPP); the well-formed uterus was found in the hernia sac, and the uterus could only be completely reduced after the division of the left round ligament. To the best of our knowledge, there have been no reports in the literature on adult recurrent hernias containing well-formed uterus in adult females. The aim of this case report is to call attention to the proper management of round ligament when performing inguinal hernia repair in female patients.

Keywords:
Inguinal hernia, recurrent, round ligament, transabdominal preperitoneal procedure, uterus

Background
Inguinal hernia can contain many intra-abdominal organs, including the omentum, small intestine, appendix, ovary, fallopian tubes, bladder, and benign or malignant tumors. Sliding hernia of the tube and ovaries occurs occasionally in newborn female infants, and the fallopian tube and ovary are found as a sliding component in about 15%–20% of inguinal hernias in infants and children; as age advances, the incidence decreases. However, the presence of uterus within the hernia sac is an extremely rare condition. In literature, only very few cases of uterus-containing inguinal hernias were reported in adults. Moreover, the mechanism of this condition is controversial. To the best of our knowledge, there has been no previous report of recurrent adult female hernia containing well-formed uterus. We herein report the intraoperative finding of this case during laparoscopic hernia repair. The uterus slid into the left indirect inguinal hernia sac caused by the undue tension of the round ligament; the hernia was repaired by the transabdominal preperitoneal repair (TAPP). The present case report highlights the importance of proper management of round ligament during inguinal hernia repair in female patients.

Case Report
A 78-year-old multiparous female presented with a swelling in the left groin and the mass gradually increased in size with dragging pain on and off; she had no history of nausea or omitting, and there was no abdominal pain. She had left inguinal hernia repair 15 years ago without the use of mesh, and the previous intraoperative findings and repair procedure were not clear. Her past history included hypertension which was under control. She had normal menstruation cycles and no known anomaly. On physical examination, a 5 cm × 5 cm oval, left inguinal swelling along with mild tenderness was present. After dissection of the hernia sac, the uterus was found to be completely incarcerated. The uterus was reduced by dividing the round ligament and performing a TAPP repair. The present case report highlights the importance of proper management of round ligament during inguinal hernia repair in female patients.

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palpable, the mass could be reduced manually, but it is prone to appear rapidly. The diagnosis was made as recurrent left inguinal hernia repair, no other diagnostic modalities were ordered, and an elective laparoscopic transabdominal preperitoneal approach (TAPP) was scheduled.

TAPP procedure was performed under general anesthesia. Patients were advised to empty their bladder before the operation, and the urinary catheter was not inserted. TAPP was performed using a standard approach with a 10-mm trocar placed above the umbilicus and two additional two trocars (5 mm and 10 mm) placed lateral to the umbilicus.

During TAPP, a left side indirect inguinal hernia was detected lateral to the epigastric artery. Surprisingly, the hernia content was the well-formed uterus [Figure 1]. The uterus could be reduced by pulling with the laparoscopic instruments, but it slid into the hernia defect again, due to the undue tension exerted from the left round ligament [Figure 2]. After the uterus was temporarily reduced into the abdominal cavity and held by instruments, no obvious fallopian tube and ovary were visible in the hernia sac [Figure 3]. The right adnexa was quite normal [Figure 4]. After peritoneum dissection, the uterus could not be completely reduced without the division of the round ligament; therefore, the round ligament was divided [Figure 5]. Then, the hernia sac was completely reduced [Figure 6], and a lightweight 3Dmax (Bard 3Dmax™, Light mesh, Davol Inc., USA) was placed [Figure 7]; the peritoneum was closed with suture. After hernia repair and peritoneum closure, the uterus was seen hung on the peritoneum [Figure 8].

**Discussion**

Inguinal hernia of the uterus is a rare condition, and the contribution is multiple, which usually present as a rare congenital anomaly hermaphrodites such as Persistent Müllerian duct syndrome (PMDS), which is a rare disease that occurs in men with a completely normal phenotype and is characterized by the presence of Müllerian duct structures. Pulido et al. reported a case of PMDS in a 47-year-old male patient with inguinal hernia, and during inguinal hernia repair, the intraoperative finding revealed a mass containing a small uterus, fallopian tube, and smaller ovarian/atrophic testis appearing structure.[5] Agrawal and Kataria also reported this anomaly in a 40-year-old male and a 10-month-old male infant on the same day; both patients had uterus with fallopian tubes and underwent subtotal hysterectomy with preservation of vas.[7] In children with a female phenotype, the uterus in a sliding hernia is a rare disorder, and only a few cases have been reported

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**Figure 1:** The uterus was found sliding into the left inguinal hernia sac

**Figure 2:** The uterus could only be reduced by pulling with tension

**Figure 3:** After the uterus was reduced, no fallopian tube and ovary were found in the hernia sac

**Figure 4:** The right adnexa were within the abdominal cavity and normal
in the literature. The presentation can include inguinal swelling, reducible, or incarcerated inguinal hernias as well as vaginal bleeding. Akillioglu reported seven cases of hernia uteri inguinale (HUI) in female children, and the incidence of HUI was 0.23% (7/3000). The author emphasized that surgeons should be aware of the possibility of the presence of the uterus or another organ in the hernia sac in phenotypic female children, and sliding components should be replaced carefully into the abdomen to prevent any damage. Although the embryologic cause for HUI was not clear, an anatomic abnormality with primary weakness of the uterine and ovarian suspensory ligaments could be a causative factor.

The presence of uterus in adult women is even rare than in young and newborns, and different mechanisms have been proposed. Turk described the presence of uterus within the hernia sac in a 47-year-old female, together with a giant intra-abdominal omental lipoma, and the patient had no Mullerian anomalies. Moreover, the presence of uterus in hernia sac may be caused by the increased intra-abdominal pressure due to the giant lipoma.

Our present patient is with the normal female phenotype, and there was no other anomaly, and the patient had a complete family. In addition, the uterus is not the rudimentary form; thus, it is unnecessary to determine the chromosomes. Of note, the patient had previous left side inguinal hernia repair 15 years ago. During our TAPP repair exploration and repair procedure, the uterus could not be easily and completely reduced due to the undue tension of the ipsilateral round ligament; therefore, the explanation of the herniated uterus into the inguinal canal was likely due to the gradually dragging effect of the round ligaments. Moreover, the high tension of round ligament in this case may be related to the previous inguinal hernia repair. This case reminds us that during open or laparoscopic female inguinal hernia repair, no matter, the round ligament was divided or preserved; undue tension on the round ligament should be avoided to prevent the undue tension and gradually pulling effect on the uterus. Furthermore, diagnostic procedure such as sonography should be performed in these kind of cases.
Conclusion

Inguinal hernia containing well-formed uterus in adult woman is an extremely rare condition; either intra-abdominal pressure or extra undue tension on the round ligament could be the causative factor. The aim of this case report is to call attention to the proper management of round ligament when performing inguinal hernia repair in female patients.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images, and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal the identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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