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## Laparoscopic diagnosis and treatment of a hydrocele of the canal of Nuck extending in the retroperitoneal space: A case report



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## ABSTRACT

**INTRODUCTION:** Hydrocele of the canal of Nuck is a rarely encountered entity. We report a case underwent laparoscopic totally extraperitoneal (TEP) treatment for a hydrocele of the canal of Nuck extending in the extraperitoneal space mainly.

**PRESENTATION OF CASE:** A 37-year-old woman complained of painless and reducible swelling in her left groin, and referred to our hospital for surgical management against left inguinal hernia with the incarcerated ovary. Ultrasonography and MR images revealed a cystic mass in the retroperitoneal space, and we diagnosed as an unusual type of hydrocele of the canal of Nuck. The patient was scheduled for laparoscopic treatment. Laparoscopic findings on pneumoperitoneum showed an extraperitoneal cystic tumor with no contact with the left ovary. The fascia and peritoneum of the port site were closed, and then an extraperitoneal space was created. The cystic tumor with the round ligament of the uterus was dissected and resected by the TEP technique. The extended deep inguinal ring was repaired with polypropylene mesh. Postoperative course was uneventful.

**DISCUSSION:** Hydrocele of the canal of Nuck in the adult female is a rare condition. The accurate diagnosis of an inguinal hydrocele in a female is seldom made. Laparoscopic examination provides surgeons with information of inguinal swelling accompanied with retroperitoneal cyst, and consecutive treatment by laparoscopic technique, especially TEP, is useful in regard to minimal damage of the peritoneum.

**CONCLUSION:** Laparoscopic diagnosis and TEP treatment offers a useful alternative in selected patients with hydrocele of the canal of Nuck.

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## 1. Introduction

In females, a peritoneal fold usually accompanies the round ligament of the uterus as it descends into the labium majus through the inguinal canal. This extension of the peritoneum obliterates into a fibrous cord by the first year of life.<sup>1</sup> This is named the canal of Nuck, which is analogous to a patent processus vaginalis in the male. Failure of obliteration results in a communication with the peritoneal cavity through the canal of Nuck that manifests as an indirect hernia or a hydrocele. A hydrocele of the canal of Nuck is often misjudged as an incarcerated inguinal hernia followed by emergent surgery.<sup>2</sup> Almost patients with hydrocele of the canal of Nuck have been treated by surgical excision using an anterior inguinal approach. We report a patient with hydrocele of the canal of Nuck who we

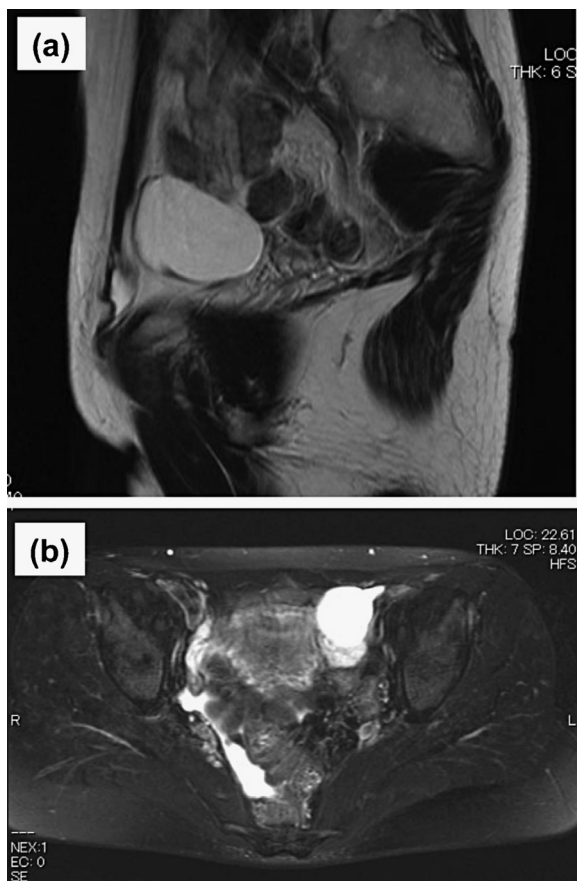
diagnosed by laparoscopy and treated using a laparoscopic totally extraperitoneal (TEP) technique.

## 2. Presentation of case

A 37-year-old woman was referred to our department for a suspicious sliding inguinal hernia with left para-ovarian cyst. She had complained of reducible swelling in her left groin for 2 years. She noticed a slight increase in the size of the swelling after childbirth. There was no history of abdominal pain or bowel dysfunction. The palpable mass could be repositioned manually. Ultrasonographic examination revealed the mass to be hypoechoic and homogeneous without solid components. MRI showed a simple cystic lesion measuring 45 mm in its largest axis, which appeared to be in contact with the left ovary connected at its base with the parietal peritoneum (Fig. 1a and b). We diagnosed the mass as a hydrocele of the canal of Nuck and to treat the mass, we performed laparoscopic TEP excision of the hydrocele and repair of the inguinal hernia.

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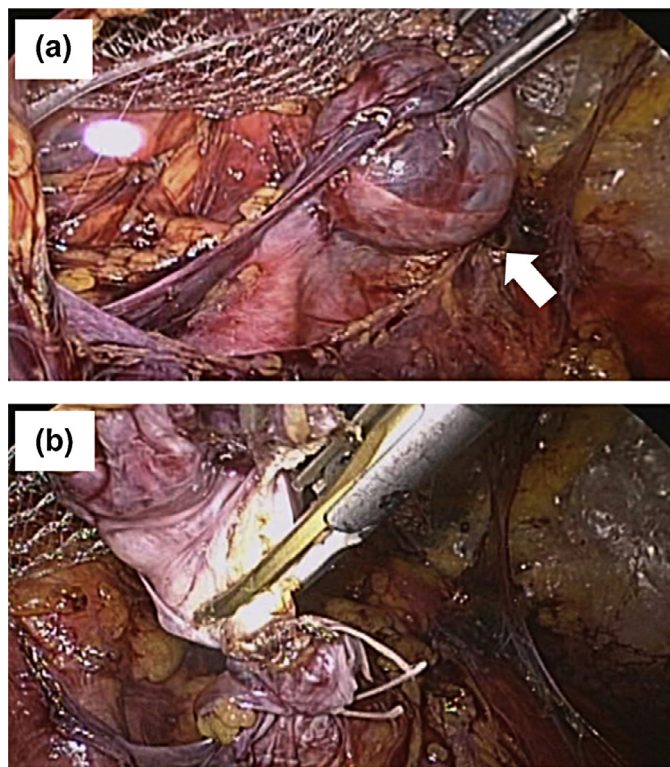


**Fig. 1.** (a) Sagittal T2-weighted MR image showed that a fluid-intensity tumor led to the inguinal canal. (b) Enhanced T2-weighted MRI revealed no solid component within the cystic tumor in contact with the ovary.

An open-access method was performed to place a laparoscopic trocar into the umbilicus for carbon dioxide (CO<sub>2</sub>) pneumoperitoneum. Laparoscopic findings with the support of forceps from an accessory trocar into the right upper region showed an extraperitoneal cystic mass with no connection to the left ovary (Fig. 2). The uterus and adnexa were normal. After deflation, the posterior rectus sheath and peritoneum were closed, and then an extraperitoneal space was created through the same incision using a blunt balloon tip cannula and CO<sub>2</sub> insufflation to maintain the operative field. Two additional trocars were placed through each lower midline region. The cystic mass was found to be present in the extraperitoneal space with communication to the left inguinal



**Fig. 2.** Laparoscopic findings showed an extraperitoneal cystic tumor (arrow) with no connection to the left ovary (arrowhead).



**Fig. 3.** (a) Encysted tumor (arrow) was carefully dissected from the retroperitoneal space. (b) The aspirated hydrocele was ligated and resected with the round ligament completely.

canal and was adhered to the round ligament of the uterus. All components of the wall of the cystic mass were pulled back from the deep inguinal ring into the extraperitoneal space. The distal side of the hydrocele was ligated with the round ligament and dissected. The extended deep inguinal ring was repaired with polypropylene three-dimensional mesh and a ProTack™ fixation device (Covidien, Mansfield, MA) to fix the mesh by the laparoscopic TEP approach. A dark-red serous fluid was aspirated from the cystic mass. The shrunken mass was dissected carefully and resected completely with the round ligament (Fig. 3a and b). Finally, inguinal repair was confirmed laparoscopically on pneumoperitoneum by insufflation of CO<sub>2</sub> through an accessory intraabdominal trocar (Fig. 4). Pathological findings revealed that the resected wall of the hydrocele was lined with a single layer of mesothelial cells and consisted of fibrous components without solid components. The patient was discharged uneventfully on the 3rd postoperative day.



**Fig. 4.** Inguinal repair was confirmed laparoscopically on pneumoperitoneum.

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