

Treatment of a Cyst of the Canal of Nuck with an Inguinal Hernia by Laparoscopic Surgery

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ABSTRACT

A cyst of the canal of Nuck is a rare cystic structure along the inguinal canal extending to the labium majus, which forms due to non-obiterated processus vaginalis. In female patients presenting with painless swelling in the groin or labium, in addition to strangulated hernia, a cyst of the canal of Nuck should be considered. This paper presents a case of a 38-year woman with a right-sided cyst of the canal of Nuck and right inguinal hernia and its clinical and diagnostic features, differential diagnosis, and treatment. Laparoscopic diagnosis and total extraperitoneal hernioplasty (TEP) offer a useful alternative in patients with a superimposed inguinal hernia on top of the cyst of the canal of Nuck.

Key Words: *Cyst, Laparoscopic surgery, Inguinal hernia, Canal of Nuck.*

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INTRODUCTION

The canal of Nuck is the analogue of the patent processus vaginalis in males. Usually, in the first year after birth, it is disconnected from the peritoneal cavity and regresses.¹ Insufficient closure of this canal usually results in an indirect inguinal hernia, and infrequently it forms a cyst of the canal of Nuck, which is a fluid-filled cyst lined by the vaginal parietal peritoneum. This condition, normally encountered in the paediatric population, is rarely seen in adult women.² Here, we present a patient with a cyst of the canal of Nuck accompanied by an inguinal hernia, which we diagnosed with laparoscopy and treated with laparoscopic total extraperitoneal hernioplasty (TEP) in addition to minimally invasive incision.

CASE REPORT

A 38-year woman presented to our surgery clinic with complaints of swelling and pain in the right groin. On physical examination, a soft immobile mass approximately 3 cm in size was detected. It was observed that the size of this non-reducible mass did not change with cough and strain. On ultrasonographic (USG) examination, an anechoic cystic lesion, approximately 31×17 mm with a smooth, oval configuration, was observed in the subcutaneous fatty tissue in the right inguinal region.

The tubular structure extending from the cystic mass superolaterally and reaching 4 mm in its widest part was evaluated as the inguinal hernia sac associated with the anterior abdominal wall (Figure 1).

Surgery was planned with the diagnosis of a cyst of the canal of Nuck and accompanying inguinal hernia. During the operation, the rectus muscle was lateralised with a 15-mm transverse incision made through the umbilicus. Using the open technique, a 10-mm trocar was entered into the abdomen and pneumoperitoneum was provided. Upon intraabdominal exploration, the inguinal hernia sac associated with the cyst of the canal of Nuck was identified and the diagnosis was confirmed. After deflation, the posterior rectus sheath and trocar defect in the peritoneum were closed. Using the same incision, the extraperitoneal area was opened bluntly using a balloon trocar. Two additional 5-mm trocars were entered on both sides of the midline. The hernia sac was prepared along the round ligament using a TEP approach. However, even strong retraction of the round ligament did not result in the cyst of the canal of Nuck reaching the extraperitoneal area. At this stage, in order not to injure the cyst wall, the hernial sac was separated from the round ligament and the distal part was ligated and reduced into the abdomen. The inguinal ring was repaired with the help of three-dimensional polypropylene mesh (Bard® 3DMax Light Mesh).

The mass in the right groin was explored with the minimal skin incision. The cyst, approximately 3×2 cm, was dissected and excised along with the remaining canal of Nuck proximally (Figure 2). The postoperative course was uneventful. Histopathological examination confirmed the intraoperative diagnosis and was compatible with a cyst of the canal of Nuck.

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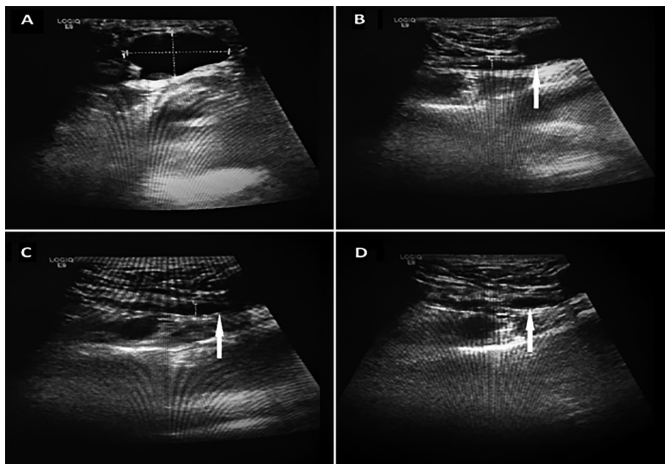


Figure 1: Ultrasonography image of the right inguinal region showing an anechoic cystic lesion of approximately 31×17mm in size (A). The pathognomic feature of the cyst of the canal of Nuck, a comma-shaped tail (arrow) directed to the inguinal canal is shown (B, C, D).

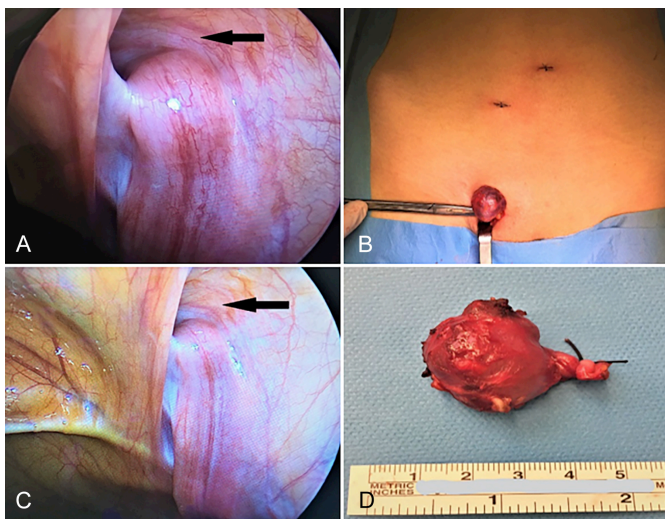


Figure 2: Laparoscopic findings showing the right inguinal hernia sac associated with a cyst of the canal of Nuck (A, C) Intraoperative exploration of the cystic mass in the right inguinal region with minimal skin incision (B). Macroscopic image of the cyst of the canal of Nuck (D).

DISCUSSION

A cyst of the canal of Nuck was first described as an inguinolabial cyst in 1691 by Dutch anatomist Anton Nuck van Leiden.² The round ligament, which does not actually support the uterus, passes through the inguinal canal and is divided into thinner fibres and disperses in the labium majus. In women, a peritoneal fold usually accompanies the round ligament when descending through the inguinal canal toward the labium majus. If the distal part of the parietal peritoneum extending from the abdomen to the inguinal canal is not obliterated, patent processus vaginalis develops. If this formation is small and only allows fluid passage, it can cause a rare cyst of the canal of Nuck. If the processus vaginalis is large and allows the passage of abdominal organs, this is considered an inguinal hernia.³

USG is an important modality for the diagnosis of a cyst of the canal of Nuck. The technique is simple, inexpensive, non-invasive, radiation-free, and provides valuable information.⁴ Upon

USG examination, the pathognomic appearance of the cyst of the canal of Nuck was defined as a comma-shaped tail directed to the inguinal canal.⁵ When the diagnosis is suspicious, magnetic resonance imaging (MRI) can be performed to explore the intraabdominal relationship of the mass.⁶ In this case, preoperative diagnosis was made using USG. For the differential diagnosis, tumoural formations such as lipoma and leiomyoma, lymphadenopathy, Bartholin's cyst and abscess, endometriosis, and non-reduced hernia should be considered.

A cyst of the canal of Nuck is accompanied with an inguinal hernia in approximately 30% of cases.⁷ If the diagnosis is not made correctly, the cyst is excised and the hernia is not treated. Open surgery with an anterior approach is generally preferred in children. Laparoscopic treatment is recommended for hernia repair with a cyst of the canal of Nuck, which is less common in adult women.^{8,9} This helps avoid a large incision scar and tissue trauma.

In a single session, treatment of a hernia with TEP hernioplasty should be considered, and if possible, excision of the cyst by retraction to the extraperitoneal area. However, avoiding damage to the cyst wall with gentle manipulation of the cyst is important to prevent dissemination.⁸ Endometriosis and angiofibromatosis in the canal of Nuck have been reported previously.¹⁰ With technical difficulties, excision of the cyst can be achieved with a separate minimal skin incision in addition to laparoscopic procedures, as in this case.

In conclusion, laparoscopic diagnosis and TEP treatment offer a useful alternative in adult women in cases where a cyst of the canal of Nuck is accompanied by an inguinal hernia.

PATIENT'S CONSENT:

Informed consent was obtained from the patient for the publication of data on this case.

COMPETING INTEREST:

The author declared no competing interest.

AUTHOR'S CONTRIBUTION:

VHY: Design, literature search, discussion, and drafting.

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