Right inguinal hernia repair reveals Canal of Nuck cyst: A rare case in a 37-year-old female

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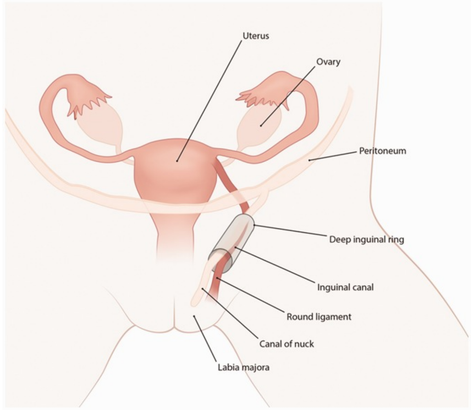
Introduction

The Canal of Nuck is a portion of the processus vaginalis that lies within the inguinal canal alongside the round ligament and is an extension of the parietal peritoneum[1] (Figure 1). While it closes in almost all females within the first year of life, persistence of the canal predisposes to inguinal abnormalities that may continue into adulthood such as inguinal hernia and hydrocele. Failure of this structure to obliterate is much more common in males. Hydrocele formation is quite rare in adults. Differentiating a Canal of Nuck cyst from an inguinal hernia can be clinically challenging. If suspected, sonography is the diagnostic modality of choice followed by MRI. Treatment is simple excision as well as ligation of the processus vaginalis to prevent recurrence. Additionally, repair of any associated hernia defect is undertaken. Here, we discuss the diagnosis and management of a patient who presented with groin swelling initially thought to be a femoral hernia but instead was found to have a Canal of Nuck cyst.

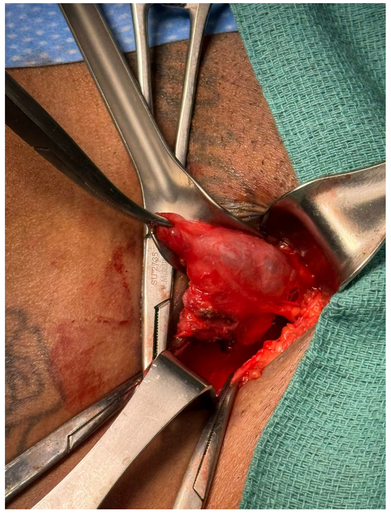
Case Presentation

A 37-year-old female with no significant past medical history presented for evaluation of a reducible right-sided groin bulge for eight years that would enlarge with straining or coughing. In the months leading up to evaluation, the swelling had increased in size and became irreducible. On exam, a nontender, irreducible bulge was palpated over the inguinal ligament without any skin changes or ulceration. Preoperative CT performed at an outside facility revealed an ovoid mass that appeared to be medial in the Canal of Nuck versus femoral hernia. With an equivocal imaging result, ultrasound was chosen to further delineate the abnormal finding on CT. Ultrasound revealed a complex ovoid cystic mass in the right inguinal canal measuring 3.7 x 1.5 x 3.1 cm (Figures 2a and 2b). Due to suspicion of femoral hernia on CT, the patient was deemed a candidate for more timely surgical exploration. Intraoperatively, a cyst-like structure was seen bulging through the external oblique aponeurosis at the lateral aspect of the pubic tubercle. Once through this layer, the round ligament was identified and encircled with a penrose drain. A small defect was noted at the internal inguinal ring, but no direct or femoral space defects were found. A small canal of Nuck cyst was appreciated, which was excised with the round ligament and sent to pathology (Figure 3). The proximal end of the round ligament was suture ligated, reduced, and passed through the internal inguinal ring which was closed and covered with mesh in tension-free fashion over the inguinal floor. Pathology confirmed a benign fibroadipose cyst partially covered by mesothelium consistent with a Canal of Nuck cyst. Post-operatively, the patient healed well with no recurrence to date.

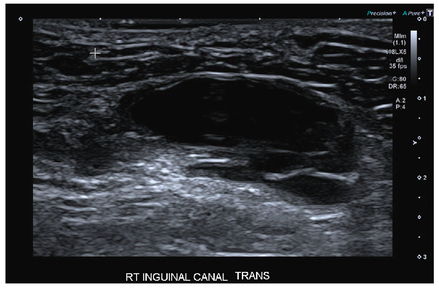
Figures

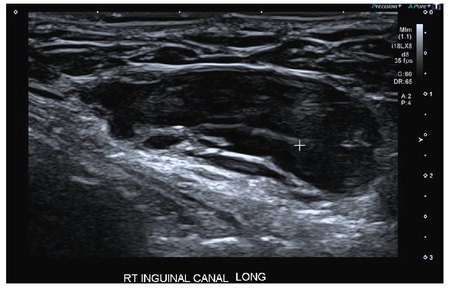


1. Schematic illustration of the Canal of Nuck and its anatomic relation to other groin structures



3. Cyst of the Canal of Nuck seen intraoperatively during surgical excision





2. Ultrasonography of the Canal of Nuck revealing an anechoic, complex fluid-filled structure with internal septations in (a)transverse and (b)longitudinal views

Discussion

Canal of Nuck first described by Anton Nuck van Leiden in 1691: female embryologic equivalent of male processus vaginalis that accompanies round ligament in inguinal canal[2]

Typically obliterates within first year of life. Incomplete closure predisposes to inguinal hernia, hydrocele, or a combination of both[3]

Three types: encysted (most common), communicating, and bilocular[2]

Rare in children, but even more uncommon in adults[4]

Irreducible painful or painless swelling of groin that can be misdiagnosed as an inguinal hernia[5]

Preferred imaging is US followed by MRI - sensitive in defining cystic structures[6]

US: hypoechoic mass lesion without vascular flow and internal septations[5]

MRI: when ultrasound findings are equivocal or to characterize the type of cyst, such as communication to the peritoneal cavity or association with other organs[4]

The location of the groin mass in our patient was not clear based on CT imaging, which suggested the possibility of a femoral hernia. By nature of that disease process, surgical intervention was recommended sooner due to risk of strangulation[7]

On US, Canal of Nuck cyst more obvious; question of femoral hernia remained.

Complete excision of cyst, ligation of the processus vaginalis, and repair of any associated hernia defect is standard of care for treating symptomatic Canal of Nuck cysts. Can be done open or laparoscopic[8]

No communication of the hydrocele with the peritoneal cavity: simple excision without mesh is sufficient.[9]

If cyst is associated with a hernia, use of mesh suggested is suggested to prevent hernia and cyst recurrence[10]

Type 1 cysts = open

Type 2 cysts = laparoscopic due to communication with peritoneal cavity[9]

Intraoperatively, a type 1 cyst was identified in our patient and was associated with a small indirect inguinal hernia successfully managed with an open excision and tension-free mesh repair. No evidence of femoral space hernia.

Path: benign Canal of Nuck cyst.

Conclusion

A Canal of Nuck cyst is an unusual but important consideration in the differential diagnosis of groin swelling in female patients. A keen awareness of this disease process can lead to the appropriate selection of imaging to ultimately counsel patients and choose the approach that will effectively treat the condition as well as prevent recurrence. Management of a symptomatic cyst is surgical. This case demonstrates this rare diagnosis in adult females and emphasizes the effectiveness of surgical excision and associated hernia repair.

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