

Hydrocele of the Canal of Nuck Presenting as Inguinal Swelling in an Adult Female: A Case Report.

Surendra Pathak¹, Yogesh Kumar², Vishal Verma³, Sahil Yadav⁴, Vaibhav Mani Pandey⁵

- ¹ Professor, Department of General Surgery
² Junior Resident, Department of General Surgery
³ Junior Resident, Department of General Surgery
⁴ Senior Resident, Department of General Surgery
⁵ Junior Resident, Department of General Surgery

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ABSTRACT

INTRODUCTION: Foreign body aspiration is a significant cause of morbidity and mortality in children and presents distinct Hydrocele of the canal of Nuck is a rare condition in adult females and is often misdiagnosed as an inguinal hernia or other groin pathology (1,2). We report the case of a 31-year-old female who presented with a six-month history of right-sided inguinal swelling. Ultrasonography revealed a lobulated tubular cystic lesion extending from the intrapelvic region into the right inguinal canal and labia majora without evidence of bowel or omental herniation, suggestive of an encysted hydrocele of the canal of Nuck (3,6). The patient underwent surgical excision of the cystic sac with ligation of the proximal patent processus vaginalis under spinal anesthesia. The postoperative course was uneventful. This case highlights the need to consider canal of Nuck hydrocele as a differential diagnosis in females presenting with inguinal swelling and emphasizes the role of ultrasonography as a reliable first-line diagnostic modality (5,8).

Keywords: Canal of Nuck, Hydrocele, Female inguinal swelling, Processus vaginalis, Case report

INTRODUCTION

Hydrocele of the canal of Nuck results from incomplete obliteration of the processus vaginalis in females and is considered the female counterpart of male hydrocele (2,4). During embryological development, the processus vaginalis accompanies the round ligament through the inguinal canal and normally undergoes obliteration within the first year of life (Fig 1). Failure of this process can result in persistence of the canal of Nuck, which may subsequently lead to hydrocele formation or inguinal hernia (2,4)

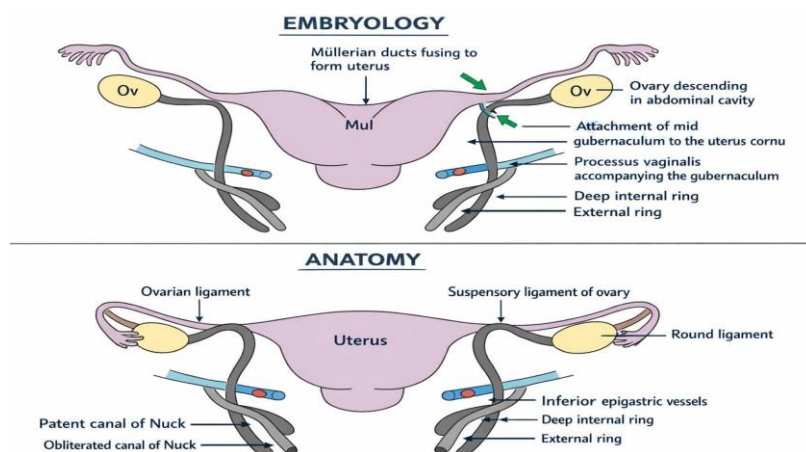


Figure 1. Schematic representation of the embryological development and adult anatomy of the female inguinal canal. It illustrates ovarian descent, attachment of the gubernaculum to the uterine cornu, formation of the ovarian ligament and round ligament of the uterus, and the persistence of the processus vaginalis forming the canal of Nuck

Although most cases are reported in the pediatric population, occurrence in adults is uncommon and often leads to diagnostic confusion (9,10). Clinically, patients usually present with painless inguinal or inguino-labial swelling, which may mimic more common conditions such as inguinal hernia, lymphadenopathy, Bartholin cyst, abscess, or soft-tissue tumors (11,18). Ultrasonography is considered the imaging modality of choice for evaluating superficial groin masses. It typically demonstrates a well-defined anechoic or hypoechoic cystic lesion with posterior acoustic enhancement and absence of bowel content or internal vascularity (3,5,19). In cases where the diagnosis remains uncertain, magnetic resonance imaging may provide additional anatomical detail and help confirm the diagnosis (6,8).

Case Presentation

A 31-year-old female presented to the surgery outpatient department of a tertiary care hospital with a six-month history of swelling in the right inguinal region. The swelling was insidious in onset and had gradually increased in size. There was no associated pain, fever, vomiting, bowel complaints, or history of trauma.

On local examination, a non-tender swelling was noted in the right inguinal region extending toward the labia majora. The swelling was irreducible and did not exhibit a cough impulse. The overlying skin appeared normal, and no signs of inflammation were present. Systemic examination was otherwise unremarkable.

Ultrasonography of the groin revealed a lobulated tubular cystic lesion measuring approximately 10.0×2.8 cm, with internal septations. The lesion extended from the intrapelvic region into the inguinal canal and further into the labia majora. No bowel loops or omental structures were visualized within the lesion, and Doppler study showed no vascularity (Fig 2).



Figure 2. Ultrasonography of the right inguinal region demonstrating an anechoic lobulated cystic lesion extending from the intrapelvic region into the inguinal canal and toward the labia majora, consistent with hydrocele of the canal of Nuck

Based on the clinical findings and imaging features, a diagnosis of hydrocele of the canal of Nuck was made. The patient underwent surgical exploration under spinal anesthesia. Intraoperatively, a cystic sac was identified along the course of the round ligament within the inguinal canal (fig 3). The sac was carefully dissected and excised completely, and the proximal patent processus vaginalis was ligated. No associated inguinal hernia was identified. The patient had an uneventful postoperative recovery and was discharged in stable condition (Fig 4).



Figure 3. Intraoperative photograph showing the cystic hydrocele sac of the canal of Nuck along the course of the round ligament with intrinsic septations.



Figure 4. Postoperative photograph on postoperative day 15 demonstrating a well-healed surgical scar in the right inguinal region following excision of the hydrocele sac

DISCUSSION

Hydrocele of the canal of Nuck is a rare entity and represents an uncommon cause of inguinal swelling in females (11,18). Because of its rarity and nonspecific clinical presentation, it is frequently mistaken for indirect inguinal hernia or other groin masses.

Embryologically, the canal of Nuck corresponds to the processus vaginalis in females and accompanies the round ligament through the inguinal canal. Failure of its obliteration can lead to accumulation of serous fluid, resulting in hydrocele formation (2,4).

Three main types of hydrocele of the canal of Nuck have been described: the communicating type, which is associated with a patent processus vaginalis; the encysted type, which does not communicate with the peritoneal cavity; and the hourglass type, where the hydrocele is constricted at the level of the deep inguinal ring (12,13). Rare complications such as hemorrhage, infection, or association with endometriosis have also been reported in the literature (14,15).

Ultrasonography remains the most useful initial investigation as it can reliably demonstrate a cystic lesion without bowel loops or vascular flow, thereby helping differentiate it from inguinal hernia (3,5,20). MRI may be helpful in selected cases where the anatomy is unclear or when other pathologies are suspected (6,8).

Surgical excision of the cystic sac with ligation of the proximal processus vaginalis remains the definitive treatment and is associated with excellent outcomes and minimal recurrence (7,16). In recent years, laparoscopic approaches have also been described and may offer the advantages of better visualization and faster recovery in selected patients (17).

CONCLUSION

Hydrocele of the canal of Nuck is a rare but important differential diagnosis in adult females presenting with inguinal swelling. Awareness of this entity and careful radiological evaluation can help establish an accurate diagnosis. Ultrasonography serves as a reliable first-line imaging modality, while complete surgical excision with ligation of the patent processus vaginalis provides definitive treatment with excellent outcomes (3,5,7).

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