Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Oncology-Radiotherapy

Nuck Canal Cyst (Hydrocele in Women)

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DOI: https://doi.org/10.36347/sjmcr.2025.v13i06.009 | **Received:** 25.04.2025 | **Accepted:** 30.05.2025 | **Published:** 04.06.2025

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Abstract | **Case Report**

We report here the case of a 25-year-old woman admitted with a tender and painful right inguinal swelling. The CT scan showed a fluid image in the right iliac fossa (RIF), in contact with the external iliac vessels, the sigmoid colon and some small intestines, extending downwards from a dehiscence of the right inguinal canal. The diagnosis of Nuck's duct cyst (female hydrocele) was accepted and surgically confirmed. The cyst of the canal of Nuck is due to incomplete closure of the canal, resulting in a vestigial fibrous structure of the peritoneovaginal canal which connects the peritoneal cavity to the greater lip. This cyst generally closes at birth or during the first month of life, resulting in the formation of a cystic lesion lined with mesothelium, mainly flattened and sometimes hyperplastic, located in the anterosuperior part of the labia majora and/or inguinal canal. Nuck's duct cysts are treated surgically in the same way as hernias.

Keywords: Imaging, hydrocele, Nuck canal, case report.

INTRODUCTION

Hydrocoele is caused by the persistent opening of Nuck's duct during the first year of life. It is a rare congenital female condition. It is often discovered in infancy by inguinal swelling. Its prevalence cannot be accurately estimated due to the limited number of cases and series reported [1]. The discovery of this pathology is rare in adulthood and often fortuitous. Hence the presentation of our case of hydrocele of the canal of Nuck in an adult woman who consulted for a sensitive and painful right inguinal swelling. In this work, we focus on hydrocele of the canal of Nuck. We present the imaging results leading to its positive diagnosis and characterisation.

PATIENT AND METHOD

A 25-year-old woman was admitted with a painful, soft right inguinal swelling. Ultrasound was consistent with a cystic lymphangioma. Computed tomography (CT) revealed a fluid formation in the right iliac fossa (RIF), which came into contact with the external iliac vessels, sigmoid and some bowel loops, and extended through a dehiscence of the inguinal canal towards the labia majora (Figure 1-3). The diagnosis of Nuck's duct cyst (female hydrocele) was accepted and confirmed surgically. The cyst of the canal of Nuck is due to a defect in the closure of the canal of Nuck, which corresponds to a vestigial fibrous structure of the peritoneo-vaginal canal, which communicates the peritoneal cavity with the labia majora, which normally closes at birth or during the first month of life, with the formation of a cystic lesion bordered by mesothelium which is often flattened and sometimes hyperplastic, located in the antero-superior part of the labia majora and/or the inguinal canal. It is treated by the surgeon as a hernia.

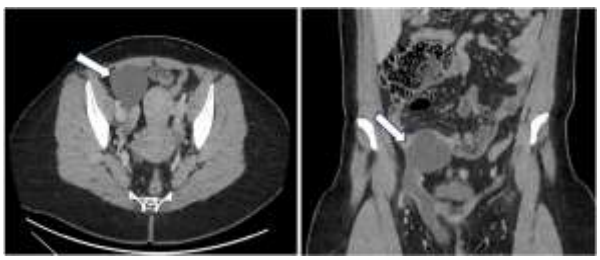

Figure 1: CT scan after injection of contrast medium in axial and coronal section showing a fluid formation in the IDF

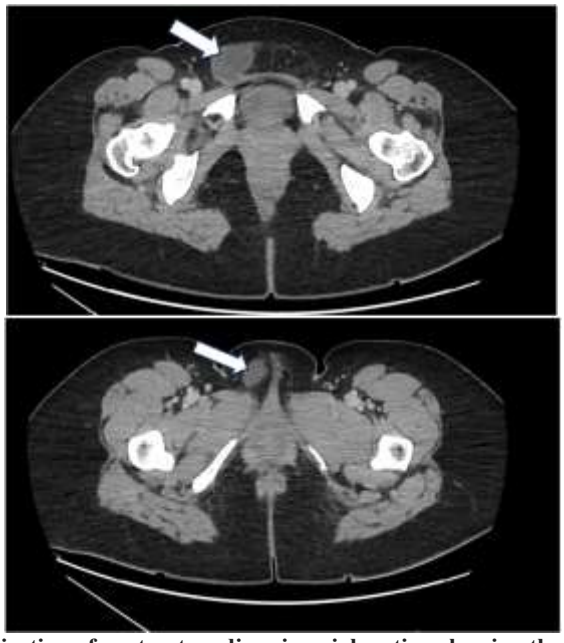

Figure 2: CT scan after injection of contrast medium in axial section showing the hydrocele of Nuck's canal

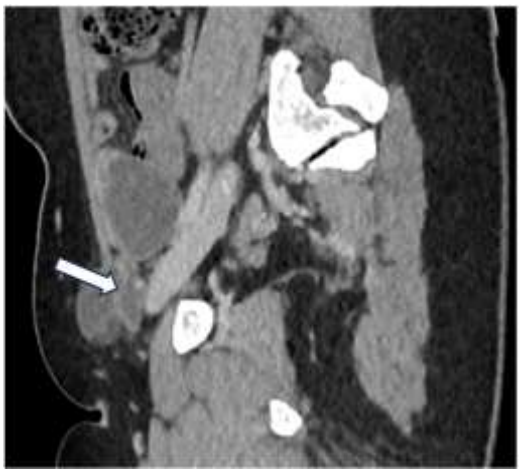

Figure 3: CT scan after injection of contrast medium in sagi5al section showing the hydrocele of Nuck's canal which appears partitioned

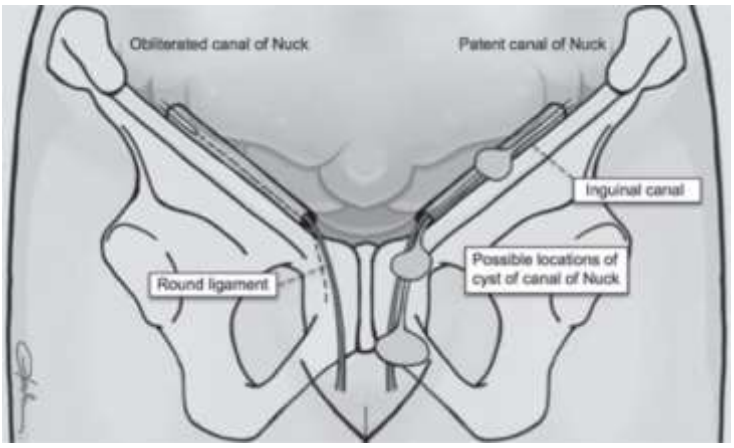

Figure 4: anatomy of the inguinal canal with a physiologically closed Nuck's

DISCUSSION

The canal of Nuck, named after the Dutch anatomist Anton Nuck in 1691 [2], is a small part of the parietal peritoneum which passes with the gubernaculum through the inguinal canal (Figure 4). The canal of Nuck normally disappears during the first year of life. Its obturation proceeds progressively from top to bottom [3,

4]. When the ductus Nuck remains permeable, this leads to the formation of a hydrocele. The diagnosis of this condition is rarely made incidentally in adult women, as in the case of our patient during her infertility assessment. Hydrocele of the duct of Nuck is classified into 3 types: the most common type is encysted hydrocele, followed by communicating hydrocele, and finally bilocular hydrocele [5, 6]. This condition can be found in various sites across the inguinal canal (Figure 4). The cyst of Nuck's canal presents a local symptomatology, described as a slightly painful irreducible or reducible mass in the inguinal region which generally extends to the labia majora and does not increase in volume with the Valsalva manoeuvre. There are several differential diagnoses for hydrocele: inguinal hernia, aneurysm, lymph nodes and soft tissue tumours. The main one is inguinal hernia, which is associated with a third of cases.Imaging plays a key diagnostic role. Ultrasound is the first examination to be carried out. It is innocuous, affordable and provides details of the location, contents and size of the cyst. In the literature, the sonographic appearance of the hydrocele of Nuck's duct is that of an anechogenic, thin-walled, well-defined cystic structure, tubular or "sausage" in shape, or even multi-cystic in appearance [7]. The Valsalva manoeuvre on ultrasound can differentiate between a hydrocele and an inguinal hernia, through the echogenic content (intestine, ovary or mesenteric) and the increase in volume of the hernia during this manoeuvre. On colour Doppler, the cyst of Nuck's canal shows no internal vascularisation [8].

A CT scan is used for diagnostic purposes when the ultrasound results are inconclusive. However, MRI is the examination of choice for preoperative assessment [9], as its high spatial resolution provides better analysis and visibility of the relationship of the ductal cyst with intraperitoneal structures.

The treatment of choice for all hydroceles of the duct of Nuck is surgical excision to avoid any infectious or haemorrhagic complications [6-10]. However, our patient did not wish to undergo surgery, as the hydrocele of the duct of Nuck was asymptomatic and not the cause of her infertility.

Conclusion

Hydrocele of the duct of Nuck is a rare female condition. Any inguinal swelling should be investigated for a cyst of the canal of Nuck. regardless of the patient's age. Imaging plays a key role in diagnostic and pretreatment management. Ultrasound is the examination of choice for making a positive diagnosis. MRI remains the complementary examination in the event of diagnostic difficulty and for a detailed pre-surgical anatomical assessment canal on the left; on the right: presentations of the different potential locations of the cyst through the canal when it remains permeable.

References

1. Anastasia Prodromidou, Anna Paspala, Dimitrios Schizas, Eleftherios Spartalis, Constantinos Nastos, Nikolaos Machairas. Cyst of the Canal of Nuck in adult females: a case report and systematic review. Biomed Rep. 2020 Jun;12(6): 333-338. PubMed| Google Scholar
2. Tubbs RS, Loukas M, Shoja MM, Oakes WJ. Indirect inguinal hernia of the urinary bladder through a persistent canal of Nuck: case report. Hernia. 2007 Jun;11(3): 287-8. PubMed| Google Scholar
3. Betül Emine Derinkuyu, Mohammad Reza Affrancheh, Didem Sönmez, Meltem Bingöl Kologlu, Suat Fitoz. Canal of Nuck in a female infant containing uterus, bilateral adnexa and bowel. Balkan Med J. 2016 Sep;33(5): 566-568. PubMed| Google Scholar
4. Clair Shadbolt L, Stefan Heinze BJ, Rosalind Dietrich B. Imaging of groin masses: inguinal anatomy and pathologic conditions revisited. Radiographics. 2001 Oct;21 Spec No: S261-71. PubMed| Google Scholar
5. Virgil Counseller, Marden Black B. Hydrocele of the canal of Nuck: report of seventeen cases. Ann Surg. 1941 Apr;113(4): 625-30. PubMed| Google Scholar
6. Erkoc S. A rare cause of inguinal mass in a female child: hydrocele or cyst of canal of Nuck. Pediatr Urol Case Rep. 2014;5(11): 861-4. Google Scholar
7. Ozel A, Kirdar O, Halefoglu AM, Erturk SM, Karpat Z, Lo Russo G *et al*. Cysts of the canal of Nuck: ultrasound and magnetic resonance imaging findings. J Ultrasound. 2009 Sep;12(3):125-7 Epub 2009 Jun 21. PubMed| GoogleScholar
8. Walter Stickel H, Martin Manner. Female hydrocele (cyst of the canal of Nuck): sonographic appearance of a rare and little-known disorder. J Ultrasound Med. 2004 Mar;23(3): 429-32. PubMed| Google Scholar
9. Hussein Nasser, Michael King, Henrietta Kotlus Rosenberg, Ally Rosen, Eric Wilck, William Simpson L. Anatomy and pathology of the canal of Nuck. Clin Imaging (Elseiver). Sep-Oct 2018;51: 83-92 Epub 2018 Feb 7. PubMed|Google
10. Scholar
11. Ibrahim Akkoyun, Ilknur Kucukosmanoglu, Ertugrul Yalinkilinc. Cyst of the canal of Nuck in pediatric patients. N Am J Med Sci. 2013 Jun;5(6): 353-6. PubMed| Google Scholar