

Case Report

Bulging ovaries and uterus – A rare case of the canal of Nuck hernia

Poonam Sherwani¹, Saurya Saurya¹, Garima Sharma¹

¹Department of Radiodiagnosis, AIIMS Rishikesh, Rishikesh, Uttarakhand, India.

*Corresponding author:

Poonam Sherwani,
Department of Radiodiagnosis,
AIIMS Rishikesh, Rishikesh,
Uttarakhand, India.

sherwanipoonam@gmail.com

Received: 15 February 2023
Accepted: 17 March 2023
Epub Ahead of Print: 05 April 2023
Published: 26 July 2023

DOI

10.25259/CRCR_20_2023

Quick Response Code:



ABSTRACT

Embryologically, patent processus vaginalis in females may present with a canal of Nuck hernia with herniation of the bowel, omentum, or rarely uterus and bilateral ovaries into the inguinal canal and labia. There may be complications like torsion of the herniated ovaries. Precise and early diagnosis of the entity on high-resolution ultrasonography will help in early diagnosis and prevention of complications. Here, we describe a rare case of the canal of Nuck hernia with herniation of the uterus and bilateral ovaries in a 5-month-old female.

Keywords: Hernia, Inguinal canal, Omentum

INTRODUCTION

Patent Processes Vaginalis in girls results in the continuation of the parietal peritoneum into the inguinal canal and labia majora. This continuation of the parietal peritoneum is called the canal of Nuck. Bowel, mesenteric fat and pelvic organs may herniate into this canal and extend into the inguinal region and further into labia majora.^[1]

CASE HISTORY

A 5-month-old female was brought to the pediatric outpatient department with complaints of swellings on and off in the left inguinal region for the past 3 months. There was a history of premature delivery at 28 weeks of gestation. On clinical examination, there was a reddish swelling in the left inguinal region, which was reducible. External genitalia were normal. The child was referred to the radiology department for an ultrasound. Ultrasound was done using a high-frequency probe which revealed that the uterus [Figure 1a and b] and bilateral ovaries were seen herniating into the left inguinal canal. On color Doppler, bilateral ovaries showed normal morphology and normal vascularity [Figure 2a and b]. The herniated uterus was normal in size and morphology. No bowel loops were noted within the herniating sac. Minimal free fluid was seen within the hernial sac. As there were no signs of strangulation or ischemia, elective surgery was planned, and a reduction of the pelvic organs with plexy to the side walls was done.

DISCUSSION

Embryologically, at the 12th week of gestation, there is an outpouching of the parietal peritoneum into the inguinal canal. This outpouching is called process vaginalis. Obliteration of the processes

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, transform, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

©2023 Published by Scientific Scholar on behalf of Case Reports in Clinical Radiology

vaginalis usually occurs by the 8th month of gestation. Failure of this obliteration results in patent processes vaginalis, through which the bowel and pelvic organ may herniate through the inguinal canal into the labia. This is called the canal of Nuck hernia.^[1]

Canal of Nuck hernias is associated with prematurity as the obliteration of processes vaginalis happens in late gestation. The more premature a neonate is born, the more the chances of this process being patent postnatally. They are also associated with lung disease and mechanical ventilation as these contribute to increased intra-abdominal pressure.^[2]

Canal of Nuck hernias may present with compressible or non-compressible localized labial/inguinal swelling, usually in the infantile age group. The hernia may be induced and is more conspicuous when the infant cries or increase intra-abdominal pressure.^[3] Hernia may contain either bowel or peritoneal fat, and the herniation occurs lateral to the inferior epigastric artery. Hernia containing gonads like ovary is also seen, which is recognized on ultrasound with the follicles. Rarely, the fallopian tube and uterus are also herniated through the defect, as seen in our case.

Ultrasound is the imaging method of choice to diagnose these pathologies due to its real-time and non-ionizing nature. Provocative maneuvers like valsalva can also help in the confirmation of diagnosis. The site, size, contents,

and vascularity can be easily detected on ultrasound. Due to the superficial location, high-frequency ultrasonography is used to diagnose and delineate the canal's contents of a Nuck hernia. Due to more risk of strangulation and ischemia, assessing the vascularity using the color Doppler is essential.^[4] Magnetic resonance imaging is used only in adults and in problematic cases in children where ultrasound is inconclusive.

Incarceration of hernia, which refers to the content of the hernia being trapped in the inguinal canal, is more common when there is herniation of ovaries, as edematous ovaries are less compressible than bowel loops. Strangulation refers to compromised blood flow into the herniated contents. Incarceration and strangulation can be distinguished using the color Doppler.^[3] Strangulation warrants urgent surgery and resection. It is essential for the radiologist and the clinician to be familiar with this entity to avoid unnecessary biopsies and interventions.

CONCLUSION

The canal of the Nuck hernia is a rare entity, and herniation of the uterus and both the ovaries is even rarer. Complications such as ovarian torsion, strangulation, and necrosis of hernial content may occur. Due to these potential complications, knowledge of canal of Nuck disorders and prompt diagnosis is critical.

Very few cases are reported of herniation of the uterus and ovaries into the canal of the Nuck. Only three cases have been reported with herniation of bilateral ovaries and uterus into the left inguinal canal.^[5-7] Ours is a rare case of herniation of the uterus with bilateral ovaries into the left inguinal canal extending into the left labia majora.

DIFFERENTIAL DIAGNOSIS

Differentials of inguinal swelling include lymph node, collection, abscess, cyst, and hernia.^[1]

Cyst is the rare pathology seen in the canal of the Nuck which occurs due to the obliteration of the proximal and patent distal parts. It is a true cyst and occurs due to the imbalance between the secretion and absorption of fluid. The node will be hypoechoic on ultrasound, and the abscess will be a thick-walled collection and will show features of inflammation.

Hydrocele of the canal of Nuck, also known as female hydrocele, in which there is herniation of fluid/cystic lesion in the inguinal canal, which is in continuity with the peritoneal cavity.

Neoplasms can arise from fat, muscle, or connective tissue. Benign lesions such as lipoma, leiomyoma, or neurofibroma are a few benign lesions.

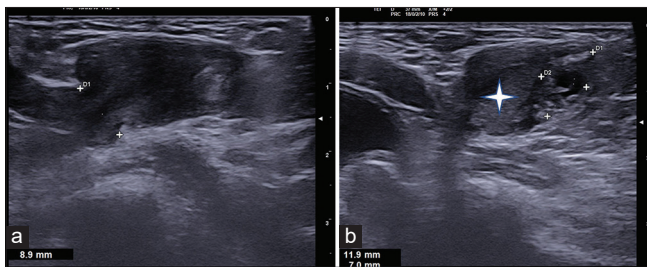


Figure 1: (a and b) Transverse ultrasound using a high-frequency probe through the left inguinal region shows a defect of size 8.9 mm (arrow in a) with herniation of the uterus (♦) and left ovary (small white arrow in b) through the canal of Nuck.

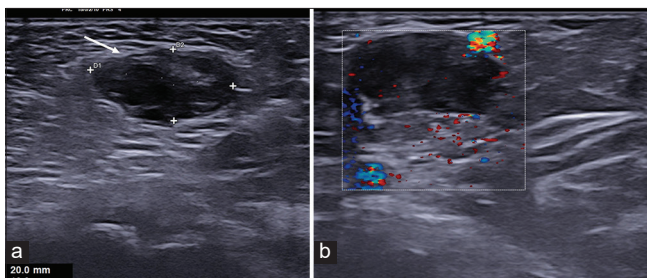


Figure 2: (a and b) Transverse ultrasound using a high-frequency probe at the level of the left inguinal region shows the right ovary (white arrow in a) within the left inguinal region and shows normal vascularity.

TEACHING POINTS

1. Canal of Nuck hernia is less common in females than males.
2. Herniation of ovaries is very rare, and complications such as ovarian torsion and strangulation or incarceration can occur; therefore, early diagnosis facilitates prompt management and prevents serious complications.
3. Ultrasound is the modality of choice for the diagnosis due to its real-time and various maneuvers that maneuvers diagnosis.

MCQs

1. Herniation of which organ is the rarest in the canal of the Nuck hernia?
 - a. Bowel
 - b. Omentum
 - c. Urinary bladder
 - d. Uterus and ovaries

Answer Key: c

2. Modality of choice for diagnosing canal if Nuck hernia is
 - a. MRI of pelvis
 - b. CT scan
 - c. Radiograph
 - d. High-resolution ultrasound

Answer Key: d

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Nasser H, King M, Rosenberg HK, Rosen A, Wilck E, Simpson WL. Anatomy and pathology of the canal of Nuck. *Clin Imaging* 2018;51:83-92.
2. Burd AJ, Burd RS. Inguinal hernia in the premature infant: management of a common problem. *Neonatal Netw* 2002;21:39-44.
3. Sameshima YT, Yamanari MG, Silva MA, Neto MJ, Funari MB. The challenging sonographic inguinal canal evaluation in neonates and children: An update of differential diagnoses. *Pediatr Radiol* 2017;47:461-72.
4. Revzin MV, Ersahin D, Israel GM, Kirsch JD, Mathur M, Bokhari J, *et al.* US of the inguinal canal: A comprehensive review of pathologic processes with CT and MR imaging correlation. *Radiographics* 2016;36:2028-48.
5. Muthiyal S, Kini V, Kounsai A, Ibrahim AA. Rarity in conspicuity-ultrasound diagnosis of sliding left inguinal hernia through the canal of Nuck with uterus, fallopian tubes, and ovaries. *Eur J Radiol Open* 2016;3:35-7.
6. Derinkuyu BE, Affrancheh MR, Sönmez D, Koloğlu MB, Fitoz S. Canal of nuck hernia in a female infant containing uterus, bilateral adnexa and bowel. *Balkan Med J* 2016;33:566-8.
7. Cascini V, Lisi G, di Renzo D, Pappalepore N, Chiesa PL. Irreducible indirect inguinal hernia containing uterus and bilateral adnexa in a premature female infant: Report of an exceptional case and review of the literature. *J Pediatr Surg* 2013;48:e17-9.

How to cite this article: Sherwani P, Saurya S, Sharma G. Bulging ovaries and uterus – A rare case of the canal of Nuck hernia. *Case Rep Clin Radiol* 2023;1:131-3.