



E-ISSN: 2616-3470

P-ISSN: 2616-3462

© Surgery Science

[www.surgeryscience.com](http://www.surgeryscience.com)

2021; 5(4): 97-99

Received: 06-07-2021

Accepted: 14-09-2021

**Dr. Vinod Kumar Nigam**

Principal Consultant, General and  
Minimal Access Surgery, Max  
Hospital, Gurugram, Haryana,  
India

**Dr. Siddharth Nigam**

Senior Consultant, General and  
Minimal Access Surgery, Max  
Hospital, Gurugram, Haryana,  
India

## Hydrocele of canal of the Nuck: A case report

**Dr. Vinod Kumar Nigam and Dr. Siddharth Nigam**

**DOI:** <https://doi.org/10.33545/surgery.2021.v5.i4b.768>

### Abstract

Hydrocele of canal of Nuck is a rare disease of females. Canal of Nuck is a patent processus vaginalis in women. It usually gets obstructed but sometimes it can remain patent and forms a hydrocele or hernia in inguinal region. Hydrocele of the Canal of Nuck is usually a slow growing painless swelling which is in inguinal region but it can extend from inguinal region to labia majora. Imaging investigations such as ultrasound, CT scan, and MRI help in reaching the diagnosis if not, then it is confirmed on operation and histopathology of the sac wall. Treatment is the excision of the hydrocele. We report a case of right sided hydrocele of canal of Nuck due to its rarity and abnormal size.

**Keywords:** Canal of Nuck, hernia, hydrocele, inguino-labial region, processus vaginalis, round ligament

### Introduction

Hydrocele of canal of Nuck is a rare entity in a girl or women. The canal of Nuck is a tunnel made of abnormal peritoneal extension downwards from peritoneal cavity to labia majora <sup>[1]</sup>. Non or incomplete obliteration of this peritoneal canal which is patent processus vaginalis can result in inguinal hernia or hydrocele of canal of Nuck <sup>[2]</sup>. Canal of Nuck was first described by a Dutch doctor, Anton Nuck (de), professor of anatomy at Leiden, the Netherlands in 1691 <sup>[3]</sup>. Canal of Nuck is analogous to the patent processus vaginalis in males. Canal of Nuck usually travels along and anterior to the round ligament of uterus.

Incidence of the hydrocele canal of Nuck is more common in girls than women and decreases with age, from approximately 80 percent in young girls to 30 percent in women. Hydrocele of canal of Nuck presents as painless cystic swelling in inguinolabial region. If the canal has only fluid it is called as hydrocele of canal of Nuck if peritoneal organs specially loops of small intestine are the content it is called inguinal hernia. In hydrocele of canal of Nuck the communication with peritoneal cavity is closed <sup>[4]</sup>. Usually the canal of Nuck is present at birth and disappears in first year of life.

In girls the hydrocele of canal of Nuck can be differentiated from other similar conditions such as inguinal hernia, lipoma, cyst, cold abscess, endometriosis, leiomyoma, and lymphadenopathy etc. Ultrasound of the inguinal region is an excellent investigation to exclude other causes and diagnose the hydrocele of canal of Nuck.

### Case report: 1

A 35 years old female attended our OPD with complaints of a swelling in right groin for last one year. The lump was painless and started appearing only on standing or coughing and used to get disappeared on lying. It gradually increased in size and started growing down towards perineum. There was no relevant history of trauma, infection, pain, fever or other symptom. On examination it was found a cystic swelling extending from right inguinal region to the right supra labial region. Ultrasound and CT scan showed a cystic lesion in right inguinolabial region without any septa inside. The cyst was 20 cm x 12 cm in size. There was no associated inguinal hernia. Omental and intestinal presence was not noticed. Cystic mass was going down along the round ligament of uterus (Fig 1). There was no expansile impulse on coughing and the cystic swelling was not reducible.

**Corresponding Author:**

**Dr. Vinod Kumar Nigam**

Principal Consultant, General and  
Minimal Access Surgery, Max  
Hospital, Gurugram, Haryana,  
India



**Fig 1:** Right sided hydrocele of canal of Nuck

Considering the examination finding and imaging results it was thought that this lesion may be hydrocele of canal of Nuck. Operation was performed after doing all necessary investigations. The hydrocele was completely excised with ligation and excision at the upper and lower end of the lesion. The histopathology of the specimen showed the wall of cyst, a peritoneal lining with peritoneal fluid as content. The wall of cyst was thickened. Post-operative period was uneventful. Patient was discharged next day of operation.

### Discussion

Hydrocele of the canal of Nuck is a rare entity in females. It accompanies round ligament of uterus and may remain in inguinal region only or may extend up to labia majora of that side. Ultrasound, CT scan and MRI are the main investigations to help reach the diagnosis preoperatively. The Dutch anatomist Anton Nuck described the processus vaginalis peritonei in the inguinal canal of a female and named it canal of Nuck [5]. Normally the canal of Nuck obliterates within the first year of life but failure of the canal to close during that period in female infants can result in Nuck hydrocele or herniation of intra-abdominal structure through the patent canal of Nuck [6]. When the secretion and absorption of fluid become unbalanced in the secretory membrane of the inner wall, hydrocele of canal Nuck occurs due to swelling of the pouch. The hypersecretion and malabsorption of the secretory membrane can be caused by infection, injury, or inappropriate lymphatic drainage, the latter of which is usually multiple [17]. In our case no factor could be detected as the reason behind the hydrocele.

It is difficult to make the diagnosis of hydrocele of canal of Nuck on only physical examination. The cyst of the canal of Nuck is frequently misdiagnosed as inguinal hernia in females and is only diagnosed intra-operatively therefore preoperative imaging is crucial for diagnosis and further guiding the therapeutic opinion [7].

In approximately one third of patients an associated inguinal hernia is present. Differential diagnosis includes inguinal hernia, enlarged lymphnodes and soft tissue tumors such as lipomas, leiomyomas and endometriosis of the round ligament [8]. The most frequent region of Nuck hydrocele is inguinolabial region rendering it clinically indistinguishable from inguinal hernia [9, 10].

The treatment of choice is surgical excision. The hydrocele is excised through groin incision [11]. Surgical exploration permits excision of the hydrocele and repair of any coexisting fascial defect [12]. Female hydrocele of canal of Nuck is uncommon. A literature search revealed that little has been published on this condition [4]. Although rare, a hydrocele of the canal of Nuck has

to be included in the differential diagnosis of a groin lump in female patients [13].

Canal of Nuck abnormalities are underrecognized causes of labial masses with potential adverse outcomes. The 2 main categories of canal of Nuck abnormalities are hernias and hydrocele [14].

In adults, a hydrocele of the canal of Nuck, should be first treated by surgical excision of the mass without puncturing it. Aspiration of a hydrocele of the canal of Nuck is inadequate and results in high recurrence rates. When the hydrocele is complicated by endometriosis, excision of round ligament is necessary [15].

Indeed, Matsumoto *et al.* coined the term “Inguinal hernia mimic” for hydrocele of canal of Nuck because of its changeable mass [16]. Due to rarity of the hydrocele of the canal of Nuck, long term study on series not done and so the recurrence of this hydrocele after operation could not be established. Despite the fact that after operation hydrocele of the canal of Nuck occurs in adolescence...hydrocele of the canal of Nuck should be included in the differential diagnosis of masses occurring in the inguinal area in adult females [17]. In our case the tentative diagnosis was made by physical examination and imaging investigations, the operation and histopathology confirmed the diagnosis.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patient understands that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

### Acknowledgements

We thank Dr. Charvi Chawla for her efforts to search references and other information required for this research work. We are also thankful to Mr. Manish Kumar for preparation of the manuscript.

**Financial support and sponsorship:** Nil.

**Conflicts of interest:** There are no conflicts of interest.

### References

1. Tulob RS, Loukas M, Shoja MM *et al.* Indirect inguinal hernia of the urinary bladder through a persistent canal of Nuck: case report. *Hernia* 2007;11(3):287-8.
2. Park SJ, Hong HS *et al.* Hydrocele of canal of Nuck in a girl: ultrasound and MR appearance. *Br J Radiol* 2004;77(915):243-4.
3. Nuck, Anton. *De Peritoneal Diverticulitis Novis (The new peritoneal Diverticulitis). Adenographia curiosa et uleri foeminei anatome nova (Curious and of the womb of the female anatomy a new adenographia (is Latin). Leiden 1691, P130-8.*
4. De Meulder F, Wojeiechowski M, Hubens G *et al.* Female hydrocele of the canal of Nuck: A case report. *Eur. J Pediatr* 2006;165(3):193-4.
5. Anderson CC, Broadie TA, Mackey JE, Kopecky KK. Hydrocele of the canal of Nuck: Ultrasound appearance. *Am Surg* 1995;61:559-61.
6. Rees MA, Squires JE, Tadros S, Squires JH. Canal of Nuck hernia: A multimodality imaging review. *Pediatr Radiol* 2017;47:893.
7. Anastasia Prodromidou, Anna Paspala, Dimitrios Schizas,

- Elththerios Spartalis, Constantinos Nastos, Nikolaos Machiaras. Biomedical Reports, Spandidos Publications 2020, 333-338.
8. Stickel WH, Manner M. Female hydrocele (cyst of the canal of Nuck): Sonographic appearance of a rare and little-known disorder. J Ultrasound Med 2004;77:243-244.
9. Benali F, Gooszen A, Wetzels C *et al.* Cyst of Nuck: The importance of histopathological evaluation. Obstet Gynaecol Int 2020;5.
10. Kono R, Terasake H, Murakami N *et al.* Hydrocele of the canal of Nuck: A case report with magnetic resonance hydrography finding. Surg case report 2015;1:86.
11. Schneider CA, Festa S, Spillert CR, Bruce CJ, Lazaro EJ. Hydrocele of canal of Nuck. N.J. Med 1994;91(1):37-38.
12. Kucera PR, Glazer J. Hydrocele of the canal of Nuck. A report of four cases. J Reprod Med 1985;30(5):439-42.
13. Caviezel A, Montet X, Schwartz J, Egger JF, Isetin CE. Female hydrocele: The cyst of Nuck. Urol Int 2009;82(2):242-5.
14. Thomas AK, Thomas RL, Thomas B. Canal of Nuck abnormalities. J ultrasound Med 2020;39(2):385-395.
15. Block RE. Hydrocele of the canal of Nuck: A report of five cases. Obstet. Gynecol 1975;45:464-6.
16. Matsumoto T, Hara T, Herashita T *et al.* Laparoscope diagnosis and treatment of a hydrocele of the canal of Nuck extending in the retroperitoneal space: a case report. Int J Surg Case Rep 2014;5:861-4.
17. Kwang SK, Jun HC, Hing MK, Kyung PK, Yu JK, Jac HH *et al.* Hydrocele of the canal of Nuck in a females Adult. Arch Plast Surg 2016;43(5):476-478.