



# Cyst of the Canal of Nuck: A Very Rare Diagnosis

## Nuck Kanalı Kisti: Çok Nadir Bir Tanı

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### ABSTRACT

Nuck canal hydrocele, also known as Nuck canal cyst or female hydrocele, is a very rare condition and is frequently misdiagnosed in the clinic. The association with inguinal hernia makes the diagnosis even more difficult. A 45-year-old patient who described swelling and pain in the right groin had no history of previous abdominal or pelvic surgery, or trauma. A reducible mass was detected in the right groin area during physical examination. An anechoic lesion measuring 60x17 mm was observed on superficial groin ultrasonography. A cystic lesion measuring 23x19x46 mm was observed on magnetic resonance imaging. The patient underwent cyst excision and hernia repair with laparoscopic total extraperitoneal (TEP) surgery. In histopathology, the cyst had a multilocular surface with a mesothelial structure containing single-row, sometimes several-row proliferation. A cystic lesion containing lining cells was detected. There is no standard treatment method for Nuck duct cysts. Although conservative treatment options such as aspiration or sclerotherapy have been reported for female hydroceles, hydrocelectomy with or without cyst ligation is recommended.

**Keywords:** Hernia; laparoscopy; Nuck cyst.

### ÖZET

Nuck kanal hidroseli, Nuck kanal kisti ya da kadın hidroseli olarak adlandırılmaktadır. Klinikte çok nadir görülen ve sıkça yanlış tanı konulan bir durumdur. Kasık fıtığı birlikteliği tanıyı daha da zorlaştırır. 45 yaşında, sağ kasıkta şişlik ve ağrı tarifleyen hastanın geçirilmiş karın, pelvik cerrahi ve travma öyküsü yoktu. Fizik muayenesinde sağ kasık bölgesinde redükte edilebilen bir kitle tespit edildi. Yüzeysel kasık ultrasonografisinde 60x17 mm boyutunda anekoik bir lezyon izlendi. Manyetik rezonans görüntülemesinde ise 23x19x46 mm ölçülerinde kistik bir lezyon izlendi. Hastaya laparoskopik total ekstraparitoneal (TEP) ameliyat ile kist eksizyonu ve fıtık onarımı uygulandı. Kistin histopatolojisinde, multiloküle yüzeyi, tek sıralı ve yer yer birkaç sıralı proliferasyon içeren mezotelyal yapıda döşeyici hücreler içeren kistik lezyon saptandı. Nuck kanalı kistlerinin standart bir tedavi yöntemi yoktur. Kadın hidrosellerinde aspirasyon veya skleroterapi gibi konservatif tedavi seçenekleri bildirilse de, kist ligasyonu ile veya kist ligasyonu olmadan hidroselektomi önerilmektedir.

**Anahtar sözcükler:** Fıtık; laparoskopi; Nuck kisti.

A female hydrocele, namely cyst of the canal of Nuck, is an extremely rare entity that is not commonly encountered, especially in adults.<sup>[1,2]</sup> The origin of this disease is a pathology during embryogenesis.<sup>[3]</sup> This structure, which is the counterpart of the processus vagi-

nalis in men, is called Nuck diverticulum. It is an entity that is rarely encountered in clinical practice and is often misdiagnosed. The fact that 40% of patients with Nuck duct cysts are reported to have an inguinal hernia makes the diagnosis even more difficult.

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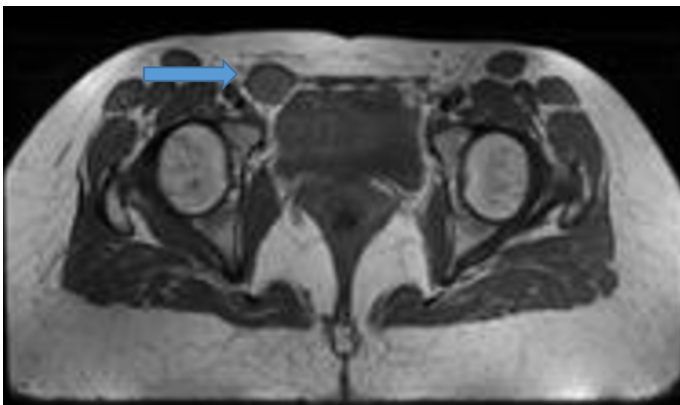


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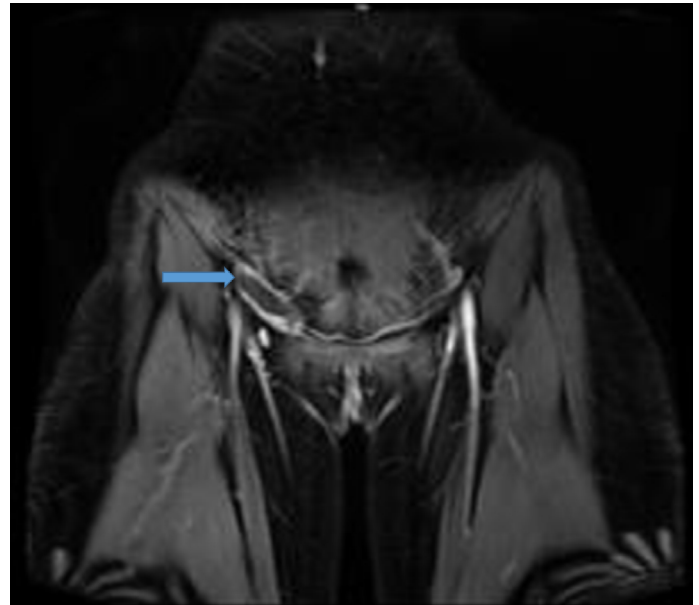
## Case Report

A 45-year-old female patient, who presented with a complaint of a painful swelling in the right groin area, observed this swelling two months ago and described constant pain in the affected area. The patient had a caesarean section surgery 7 years ago. Apart from this, she had no history of abdominal or pelvic surgery, or trauma. On physical examination, she had a right groin swelling. A mass, approximately 15x10 mm in size, without pressure pain, reducible, and deeply located, was detected in the area. The remaining abdominal examination was unremarkable; the abdominal wall was soft, and there were regular peristaltic sounds. In the USG performed for the right inguinal region, a 60x17 mm anechoic lesion containing echogenic septa and nodularities was observed (fluid collection?). Magnetic resonance imaging (MRI) was requested to better define the size and nature of the lesion. The MRI showed that it was located in the right inguinal canal and had a right external vascular artery in the proximal part. A cystic lesion measuring 23x19x46 mm was observed lying medial to the structures and also leaning on the inferior wall of the cecum. The cystic lesion wall was slightly thick, and there was a contrasting component measuring 5x8 mm inside. Excision of the lesion was recommended (Figs 1, 2).

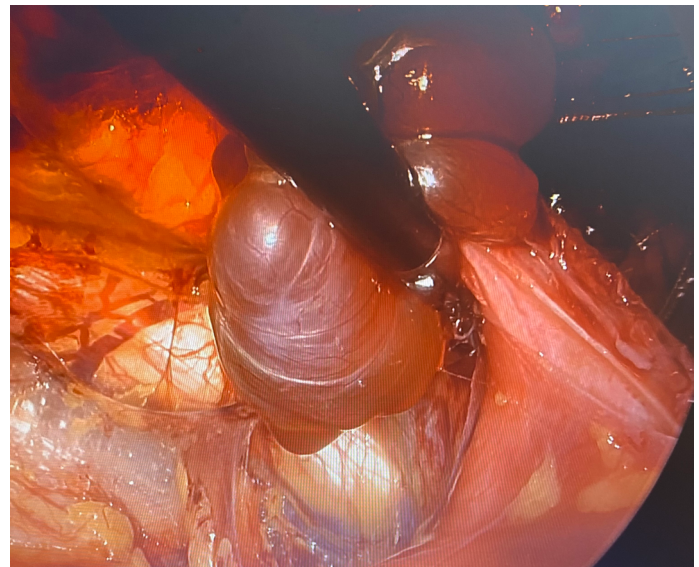
The surgery to be performed was explained to the patient in detail, and an informed consent form was obtained. Following the preparations for the surgery, it was decided to perform laparoscopic total extraperitoneal (TEP) surgery under general anesthesia. During the exploration, it was found to originate from the round ligament in the right inguinal area. A 2x3 cm fluid-filled cystic structure and a hernia sac were detected immediately distal to it (Fig. 3). The peritoneum



**Figure 1.** Cystic structure with solid component in the wall in the right inguinal area on MRI.

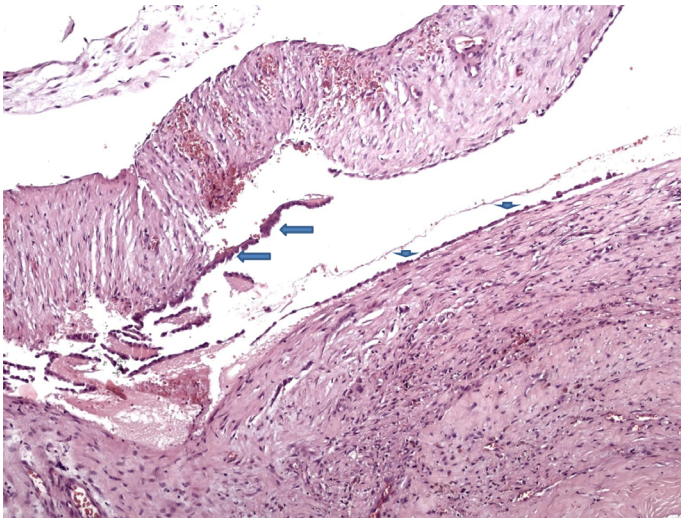


**Figure 2.** Cystic lesion in the right inguinal area in MRI sagittal section.



**Figure 3.** Complete excision of Nuck duct cyst with laparoscopic TEP surgery.

was opened, and the cyst was completely excised. The opened peritoneal defect was closed. The hernia sac was reduced to the distal end. The round ligament was preserved. The myopectineal area was closed with a 3D mesh of appropriate size. In histopathological evaluation, irregular tissue pieces, the largest of which was 3x1.5x0.5 cm in size and collectively 4 cc in volume, had a partially walled structure. Microscopic examination revealed a cystic lesion containing lining cells in a mesothelial structure, with a multiloculated surface and a single-row, sometimes several-row, proliferation (Fig. 4).



**Figure 4.** Partially single-row flattened (short arrow) and partially columnar (long arrow) mesothelial cells lining the cystic lesion. H&E $\times$ 100.

## Discussion

Nuck duct cyst, which was first described by Dutch anatomist Anton Nuck Van Leiden in 1691, is called a hydrocele if it herniates into the labium majus.<sup>[4]</sup> During the fetal development process in women, the peritoneal extension of the round ligament of the uterus is called the Nuck canal, and if it remains open, a hydrocele or hernia may occur.<sup>[5]</sup> The canal of Nuck is the female equivalent of the processus vaginalis in males, which usually disappears within the first year of life.<sup>[6]</sup> Female hydrocele usually manifests as a painless mass in the inguinal area. What is important at this point is to make a differential diagnosis from a hernia.<sup>[7]</sup> Interdisciplinary cooperation between different fields such as radiology and surgery is necessary in diagnosis to prevent misdiagnoses and errors in treatment. The treatment of choice is surgical excision of the cyst. Hernia repairs accompanying Nuck cysts can be performed using either open or laparoscopic repair techniques. There is no difference in long-term outcomes between open and laparoscopic elective inguinal hernia surgery.<sup>[8]</sup> Definitive diagnosis is made during surgery and by postoperative histopathological examination.<sup>[9,10]</sup>

## Conclusion

Since Nuck duct cysts are extremely rare, there is no standard treatment method yet. Although conservative treat-

ment options such as aspiration or sclerotherapy are reported in the literature for female hydroceles, hydrocelectomy with or without cyst ligation is recommended as a treatment option.

## Disclosures

**Informed consent:** Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** None declared.

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