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Canal of Nuck Hernia in an Elderly Patient- A Case Report

Garritano C^{1*}, Godoy F², Fonseca J², Cruz LM², Oliveira M², Carvalho TA², Aguiar FC³

¹General Surgery, Department of General Surgery, Federal University, State of Rio de Janeiro, Brazil

²General Surgery Resident, Gaffrée and Guinle University Hospital, Federal University, State of Rio de Janeiro, Brazil

³Medical Student, Federal University, State of Rio de Janeiro, Brazil

*Corresponding Author: Celia Garritano, General Surgery, Department of General Surgery, Federal University, State of Rio de Janeiro, Brazil; Email: cgarritano@gmail.com

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Abstract

The hernia of the canal of Nuck is a female exclusivity and appears as the result of failure to close the vaginalis process. It is found more frequently in children and rarely in elderly women. This type of hernia usually contains parts of the uterus, ovary and fallopian tube and rarely intestinal loops are observed. The diagnosis is made through Ultrasound (US), which allows the identification of herniated structures and the treatment is always surgical.

Keywords

Canal of Nuck; Inguinal Hernia; Labia Majora Protusion

Introduction

The canal of Nuck originated from the non-closure of the vaginalis process, which begins to be formed between the 8th and 12th week of fetal development and usually completely disappears until the 1st year of life [1-3]. However, in up to 80% of males and 60% of females, the process vaginalis is still present at birth [2].

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This non-obliteration of the vaginalis process in women leads to a protrusion of the parietal peritoneum that passes through the inguinal canal and reaches the labia majora, as described by the anatomist Anton Nuck in 1691 [1,4-6].

An indirect inguinal hernia is formed, which may contain the omentum, intestinal loops, ovary, uterus, uterine tube, or bladder and can reach up to the labia majora. If the content of the hernia is peritoneal liquid, a hydrocele will be formed if the failure in the closing process is complete and a cyst if it is incomplete [1-3,6-8].

Although much still needs to be discussed, the probable reasons cited for the non-closure of the vaginalis process are the failure to differentiate smooth muscles, inadequate parasympathetic innervation and alteration in hormonal function [2].

We present a case of a hernia of the Nuck canal in an elderly patient, containing small bowel loops compromising the labia majora.

Case Report

An 83-year-old female patient reported that about 20 years ago she noticed the emergence of a protrusion in the left inguinal region, to which she did not pay attention. The protrusion evolved gradually, increasing and extending to the left labia majora. The patient noticed that the mass increased when she was standing and caused discomfort when she was sitting, besides mentioning a movement inside the mass.

In 2020, a cystocele was diagnosed and she underwent surgery. As there was no reduction in the inguinolabial bulging, the patient was informed that it was an inguinal hernia and was referred to the General Surgery outpatient clinic.

Due to the COVID-19 pandemic, the patient only came to our department in December 2021 and at this time we observed a voluminous herniation in the inguinal region extending to the left labia majora, containing a firm solid mass, which was irreducible with manual maneuvers, painful and with visible and audible peristalsis (Fig. 1).



Figure 1: Voluminous herniation in the inguinal region extending to the large left labia majora.

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An ultrasound examination was performed, demonstrating the presence of small bowel loops from the inguinal region to the labia majora, which were enlarged. During the exam, intestinal motility was observed throughout the path (Fig. 2).

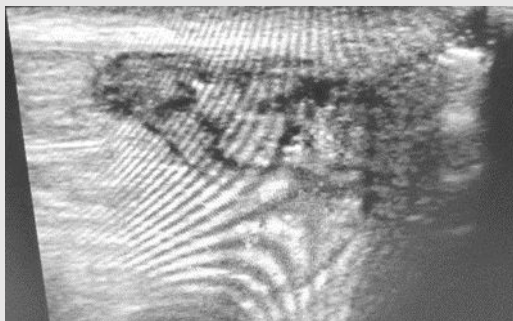


Figure 2: Herniation of small bowel loops (red arrow).

On the patient's examination, she was lucid and oriented, afebrile, eupneic in room air and cardiac and pulmonary auscultation were without alterations, as well as the abdomen. The patient was referred for surgical treatment after the laboratory tests and chest X-ray, which showed no alterations.

An oblique incision was made in the inguinal region from the iliac crest to the external inguinal ring. After opening the aponeurosis of the external oblique muscle, we observed:

1. The internal oblique muscle was narrow, thin and did not protect the internal inguinal ring or the Hesselbach Triangle
2. Presence of an elastic, thin and saccular tissue covering a structure from the abdominal cavity through the internal inguinal ring, extending to the labia majori and adhered firmly to the inguinal floor

This elastic tissue was incised and gave way out to a large number of small bowel loops (Fig. 3).



Figure 3: Small bowel loops in the canal of Nuck.

Initially, the content in the labia majori was reduced, being identified the sac bottom of the Nuck canal. The intestinal loops were reintroduced into the abdomen through the inner inguinal ring and it was necessary to make an incision for the enlargement of the ring. The path of the Nuck canal was fully identified and removed after the nonabsorbable wire ligation at its base. No other structure was identified at the local (Fig. 4).



Figure 4: a: Canal of Nuck identified during surgery; b: Canal of Nuck removed.

Due to the high insertion of the internal oblique muscle and the enlargement incision of the inner inguinal ring, the inguinal region was unprotected and it was necessary to place a polypropylene mesh to reinforce the posterior wall of the inguinal canal.

The postoperative period was satisfactory, with the left labia majora of normal appearance and the patient was discharged from the hospital 24 hours after surgery (Fig. 5).



Figure 5: Aspect of labia majora 24 hrs after surgery.

Discussion

Inguinal hernia commonly occurs in childhood, with an incidence ranging from 0.8% to 4.4% and may reach 30% in premature infants [2,9-14]. This type of hernia is more commonly presented in boys than in girls, with a ratio of 6:1 [2,12,14,15].

The hernia of the canal of Nuck, a female exclusivity, appears as the result of failure to close the vaginalis process. This hernia has a higher frequency in girls under 5 years of age, although it has already been reported in a child up to 11 years of age [7] and most commonly affects the right side [2,7,8,12,16].

In this study, we presented an elderly female patient with an inguinal hernia on the left side, extending to the labia majora, irreducible, hardened and without phlogistic signs, which diverges from the literature references. On physical examination, it was possible to listen to peristalsis in the labia majora and the inguinal region, which led us to think about the hernia of the Nuck canal.

The differential diagnosis is important when we face a large mass from the inguinal region to the labia majora, being non-compressible, without erythema or induration. The possibility of lymphadenopathy, hydrocele, lipoma, Bartholin gland cyst, hemangiomas, epidermal cysts, endometriosis and benign and malignant neoplasm should be investigated in those cases [1,2,12-15].

According to the literature, the most common contents in the canal of Nuck hernias are the omentum, ovaries, uterus, fallopian tubes, mesenteric fat and urinary bladder, while the bowel loop herniation is a rare presentation [2,9,10,14,17].

Many authors refer that the US is the method of choice for the inguinal mass diagnosis because it is a safe technique and it is not necessary to use contrast [1,2,7-9,12-15,17,18].

In addition, the US can identify the size, shape, presence of vascularization or fluid, bowel movements and the differences between echogenic tissue from rounded structures with possible peristalsis, thus characterizing the hernial content [1,2,8,9,12,15,17]. The Doppler US evaluates the vascularization of the hernia, providing information on the presence of suffering herniated structures [7,13].

In our case, for diagnosis confirmation we used images, enabling us to observe the presence of intestinal loop movements, air bubbles in the inguinal region and labia majora.

Magnetic resonance imaging is indicated when the diagnosis is inconclusive by the ultrasonographic image [1,7].

The diagnosis must be made early, as complications such as incarceration, strangulation and ovarian torsion are cited, which often require emergency surgery [7,10,11,14].

In our case, the patient presented long-standing incarceration that did not evolve with vascular involvement, which could have led to strangulation of the intestinal loops.

Another important aspect to be considered is the aesthetics, especially being women, whether children, young, or adults. The patient can become antisocial, withdrawn and even with emotional problems if left untreated. In children, the attention of parents is essential to avoid this damage.

Our patient is elderly and lived for a long time with a hernia of the Nuck canal, perhaps out of shame, or fear and only seek medical attention when she began to have symptoms.

Surgery is the treatment of choice and it can be performed through conventional hernia repair or laparoscopic techniques.

The laparoscopic approach is preferred by some surgeons because it provides a better aesthetic result, less postoperative pain, faster recovery of the patient and ease in the approach of the contralateral inguinal region [19-21]. However, recurrence has been reported in several cases, as the hernial sac was not removed and absorbable material was used to repair the inner inguinal ring [22].

We used the conventional herniorrhaphy technique, removing completely the vaginalis process and reinforcing the inner inguinal ring with a polypropylene mesh. The patient's recovery was rapid and well satisfactory.

Conclusion

The hernia of the Nuck canal is the result of non-closure of the vaginalis process, rarely found in adults and characterized by a protrusion that reaches the labia majora. The US is the method of choice for diagnosis and treatment is surgical and can be performed by conventional or laparoscopic techniques.

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Free and Informed Consent Term

The patient authorized the publication of the text.

Conflict of Interest

Author declares no conflicts of interest.

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