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Case Report

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Hydrocoele of the canal of Nuck: US and MRI diagnosis-Case report

(An Uncommon Condition to Keep in Mind During Sonography for Groin Swelling in Female Patient)

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Abstract

Hydrocele of the Nuck canal is an uncommon cause of inguinal pain and swelling in women, caused by a failure of complete obliteration of the canal of Nuck. Here, we report the case of a woman who was referred for a left fluctuating mass inguinal, and for whom, based on the radiological findings, hydrocele of the Nuck canal was suggested and surgically confirmed.

Keyword: *Cyst; Ultrasound; MRI; Canal of nuck*

Introduction

Hydrocele of the Nuck canal is an uncommon cause of inguinal swelling in women compared to the most common conditions, including groin hernia, lymph nodes, varices, or tumors [1]. Cross sectional imaging is helpful for the diagnosis work-up, with sonography (US) as the first choice. Here, we report the case of a woman who was referred for a left fluctuating mass inguinal, and for whom, based on the radiological findings, hydrocele of the Nuck canal was suggested and surgically confirmed.

Clinical case report

A 34 year old woman was referred for a left fluctuating mass inguinal, felt since 5 years, without pain but a discomfort during effort. This mass is growing up every year. The mass was not reported in infancy or adolescence. On physical examination, an irreducible, fluctuant tubular mass was found without local sign of inflammation fever. There was no loss of appetite or intestinal disorder. An inguinal hernia was suspected, and US was required for confirmation.

On US examination, an anechoic tubular structure with thin internal septae was noted in the inguinal channel, without any omental or bowel components (fig 1). The mass was not compressible and did not show vascularisation with color Doppler.

Illustrations

Figure 1: (a) US with high frequency probe: sagittal view of the inguinal area, showing a tubular cystic mass well defined, with thin septations (yellow arrowheads) and free of color Doppler signal.

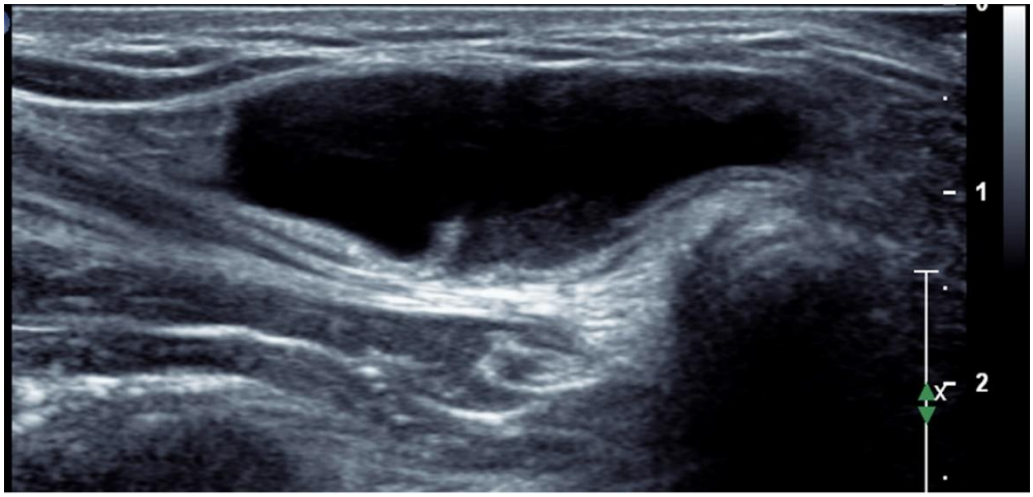

Figure 1: (a) US with high frequency probe: sagittal view of the inguinal area, showing a tubular cystic mass well defined, with thin septations (yellow arrowheads) and free of color Doppler signal.

Magnetic resonance imaging (MRI) was required to exclude any underlying condition, and prior to surgery. MRI demonstrated a well-defined tubular lesion, hypo intense on T1-weighted images and hyperintense on T2-weighted images, within the left inguinal region (figure 2 A & B).

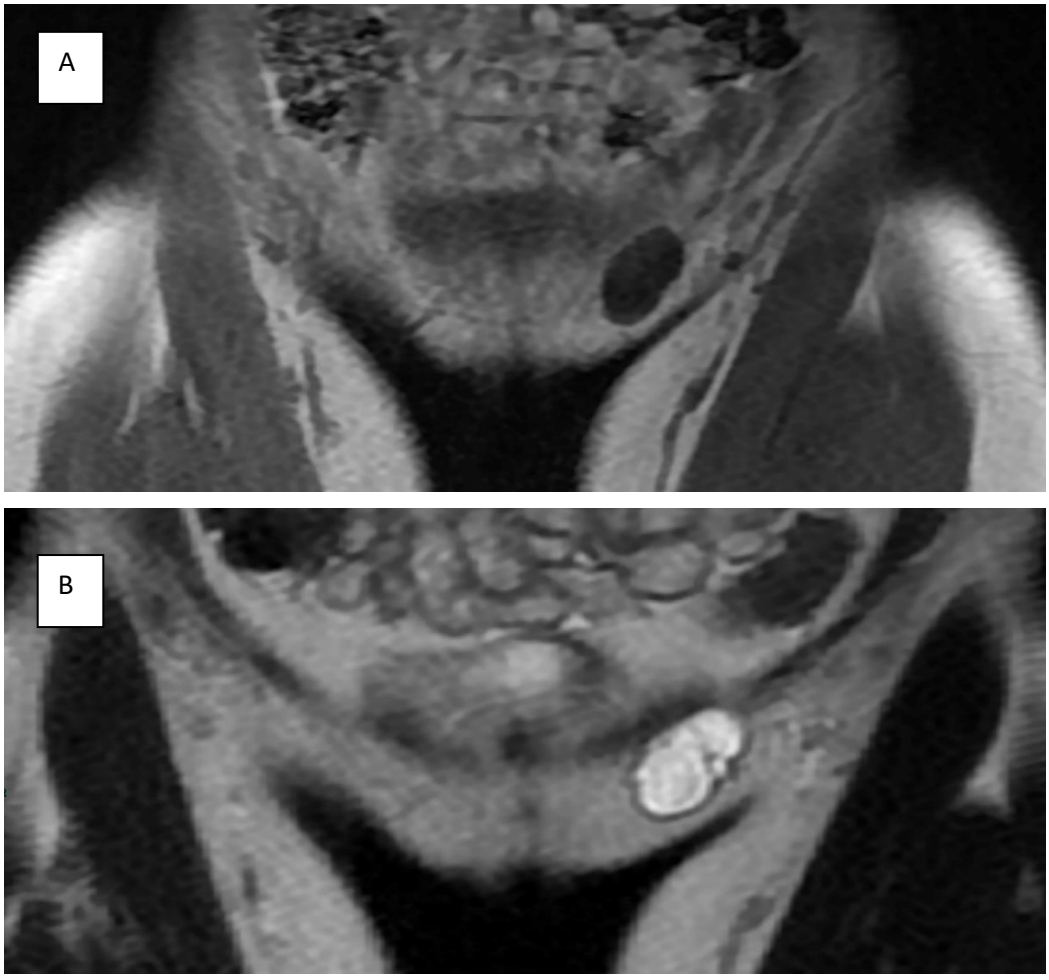

Figure 2: MRI with coronal views:

- (a) T1 weighted coronal acquisition, without contrast: the mass has a low signal intensity (arrowheads).
- (b) T2 weighted coronal acquisition: the mass has a high signal intensity and some internal septations are visible (arrowheads).

The internal septation were noted as thin, hypointense on T2-weighted images (figure 3 A & B).

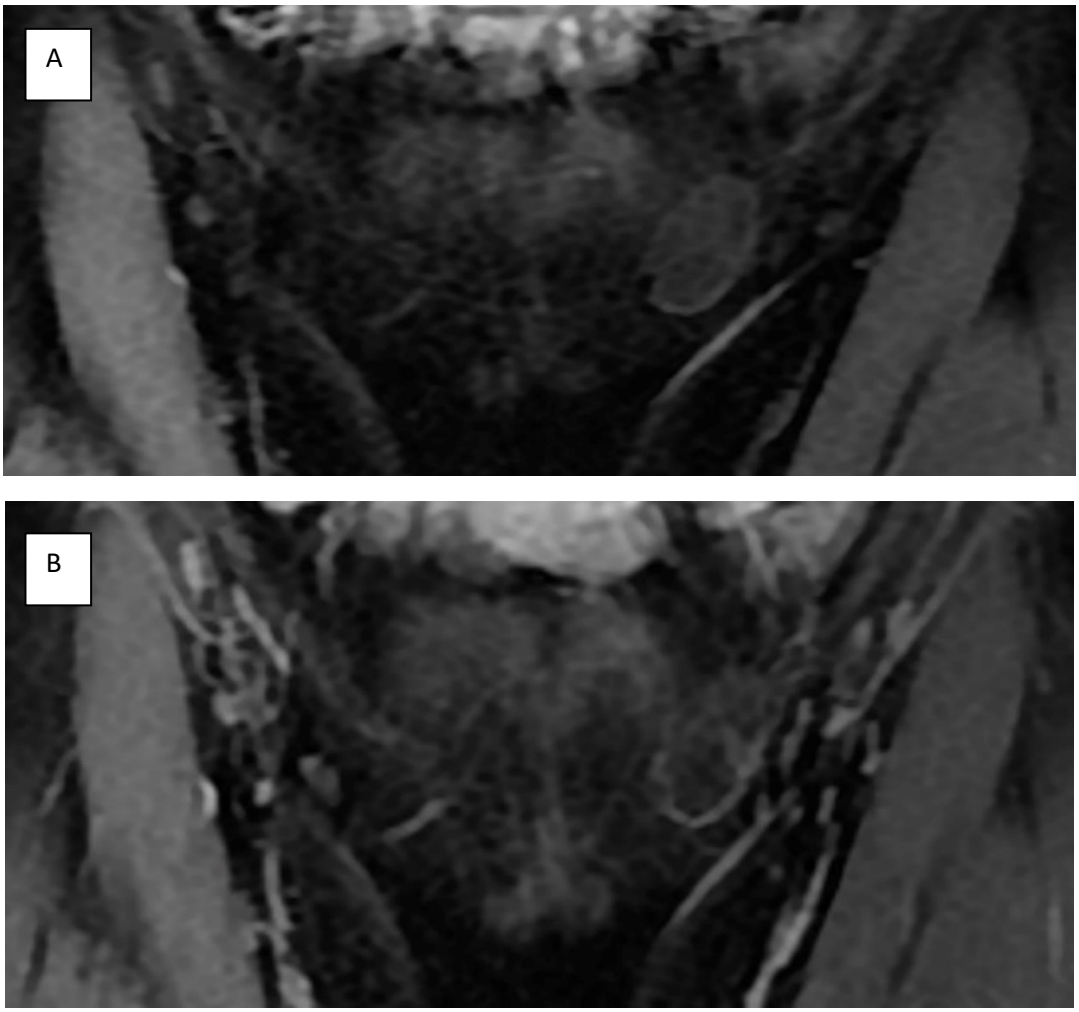

Figure 3: MRI with coronal views, T1 weighted, without and with contrast intravenous injection (Gadolinium Chelates).

- (a) T1 weighted sequence, Fat Sat, without IV injection.
- (b) T1 weighted sequence, Fat Sat, with IV injection.

Based on the radiological findings, hydrocele of the Nuck canal was suggested. The mass was resected due to discomfort and histopathologic findings confirmed the proposed diagnosis (figure 4).

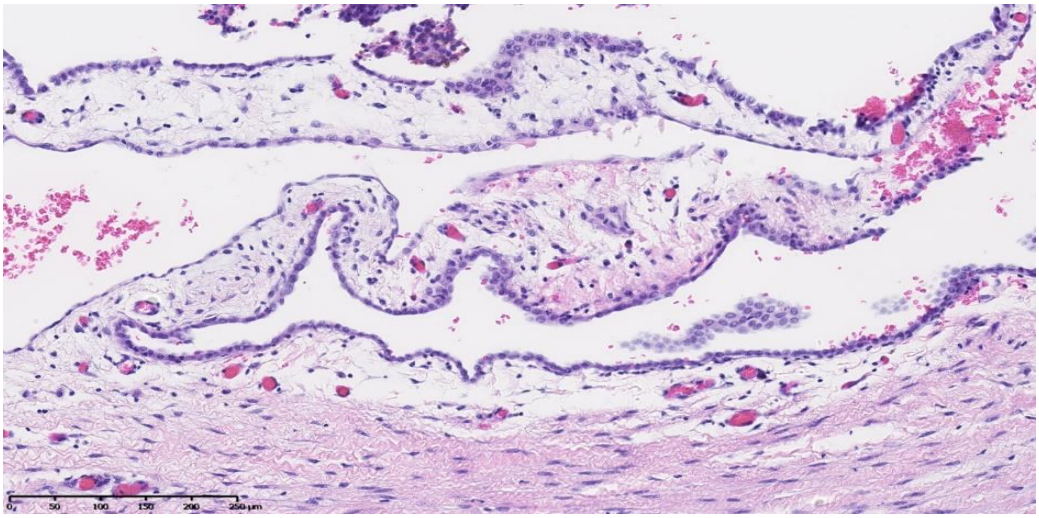

Figure 4: Histological specimen : this picture illustrated a mesothelial-lined space based on a fibroadipose tissue associated with some smooth muscles.

Discussion

The canal of Nuck, first described by Anton Nuck in 1691 is an abnormal pouch of peritoneum extending into the labia majora of women [1]. During embryological development of a female fetus, round ligament of the uterus descends to the ipsilateral labia major through the inguinal canal. An evagination of the parietal peritoneum descends along with the round ligament. It usually gets obliterated at the birth or during the first year of life but when the canal stays partially or completely open, it is a predisposing cause of an indirect inguinal hernia or a hydrocele. A thin canal can lead to a cyst formation and a large canal is favoriting indirect hernia [2]. The hypothesis of the cyst formation is unclear; some authors suggest the role of physiological seepage of intraperitoneal fluid or imbalance between hypersecretion and underabsorption (due to change in lymphatic drainage related to traumatism or infection) [1]. Clinically, the patient complains of a painless swelling in the inguinolabial region; the mass is fluctuant, translucent and irreducible mass. There is no fever, no urinary or digestive complaints. The cyst can be painful in case of infection or when on tension. The histopathological examination shows a mesothelial-lined space based on a fibroadipose tissue associated with some smooth muscles. The most frequent differential diagnosis for an inguinal swelling in the female is an inguinal hernia in which omentum and/or bowel loops can protrudes within the canal. In one third of patients, inguinal hernia is associated with a hydrocele of the Nuck canal. Valsalva maneuver can help to exclude or confirm its coexistence during the ultrasound examination. Other differential diagnoses include enlarged lymph nodes and soft tissue tumors (lipomas, leiomyomas or endometriosis of the round ligament) which are easily diagnosed by the pathologist. Vascular abnormalities are uncommon and encompass ligament varicosities, ganglion cysts, pseudoaneurysms and large iliopsoas abscesses [3-5].

US is often used for the initial imaging of inguinal swelling. Its contributive diagnostic role for groin disorders is well reported [6]. Hydrocele of the Nuck canal is suspected based on the following findings: detection of a hypoechoic or an anechoic tubular structure, sausage or comma-shaped lesion with its tail directed to the inguinal canal, a "cyst within a cyst" appearance, and a multicystic hydrocele, with no color Doppler signal [3].

On MRI, the hydrocele appears as a simple cyst hypointense on T1-weighted images and hyperintense on T2-weighted images [1, 3]. The wall of the hydrocele may show contrast enhancement, when inflamed.

Conclusion: hydrocele of the Nuck canal is a pathologic benign condition, usually based on ultrasound which shows typical aspect. It should be considered for the differential diagnosis for women presenting with long standing inguinal swelling. Clinical data, medical history, US and MRI are useful tools for an optimal diagnosis before surgical resection if necessary.

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