

# Hydrocele of the canal of Nuck: ultrasound and MRI findings

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**Abstract:** Hydrocele (or cyst) of the canal of Nuck is rare and usually presents as a nontender groin mass. Imaging is useful in evaluation, and the diagnosis is suggested if a cystic lesion is found within the inguinal canal. We report the ultrasound and magnetic resonance imaging (MRI) findings of a hydrocele of the canal of Nuck, with MRI demonstrating a multiseptated cystic structure.

**Keywords:** inguinal region, hydroceles, ultrasound diagnosis

## Introduction

The canal of Nuck is a small pouch of parietal peritoneum that accompanies the round ligament into the inguinal canal during female development. The entire canal normally becomes obliterated during the first year of life. A hydrocele (or cyst) of the canal of Nuck occurs from incomplete obliteration of the canal resulting in fluid becoming encysted within a remnant of the peritoneum.<sup>1,2</sup> Such hydroceles have been described in the literature rarely. In particular, to our knowledge the limited magnetic resonance imaging (MRI) reports have described the lesion as a simple cyst.

## Case report

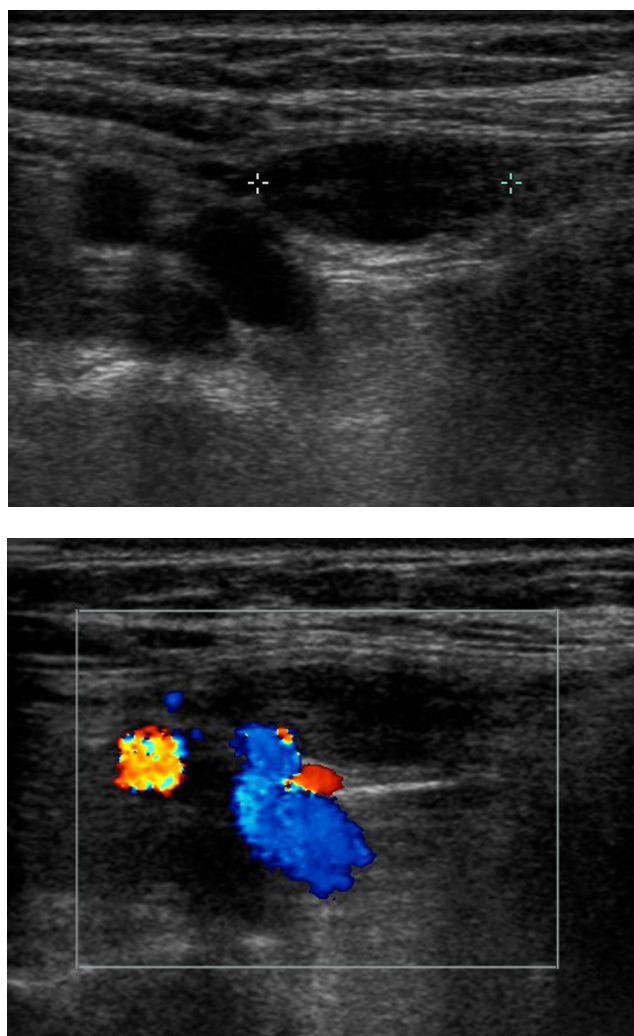
A 39-year-old woman presented with a 1-month history of intermittent swelling in the right inguinal region. The patient was otherwise well. Physical examination was unremarkable with no convincing mass identified.

Ultrasound examination of the right inguinal region was performed using a Sequoia 12.0 system with an 8–15 MHz linear array transducer (Siemens, Mountain View, CA). This revealed a 4 × 2 × 1 cm, tubular, anechoic lesion within the right inguinal canal medial to the right common femoral vessels. There was posterior acoustic enhancement with edge shadowing in keeping with a cystic lesion. No convincing septation could be identified at the time of the ultrasound examination. No internal or peripheral vascularity was demonstrated on color Doppler or power Doppler imaging (Figure 1). There was no change in lesion size or position with Valsalva maneuvers. No intraperitoneal communication was identified. The ultrasound diagnosis was a hydrocele of the canal of Nuck.

MRI was requested by the referring clinician to confirm the ultrasound findings. MRI demonstrated the lesion as a multiseptated cystic structure with rim enhancement and enhancement of the septae after intravenous contrast medium (Figure 2).

At surgery, the mass was excised. Pathological examination revealed a hydrocele of the canal of Nuck which was multiloculated and contained hemorrhagic fluid.

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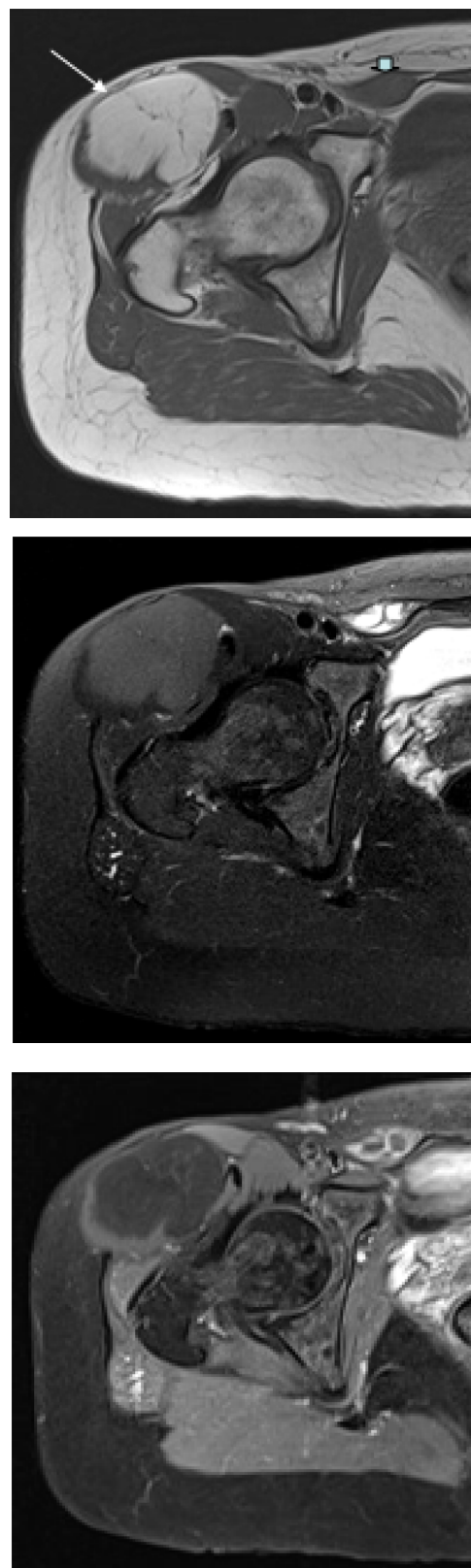


**Figure 1** Ultrasound of the right inguinal region, grayscale **A**) and with color Doppler **B**) demonstrating a cystic lesion (between cursors) in the right inguinal canal, medial to the right femoral vessels.

## Discussion

The canal of Nuck is a small protrusion of peritoneum that corresponds to the processus vaginalis in the male. A hydrocele of the canal of Nuck is a rare condition resulting from incomplete obliteration of the canal and entrapment of fluid. Clinically, it usually presents as a nontender mass or swelling in the inguinal region.<sup>3</sup>

The diagnosis of a hydrocele of the canal of Nuck is suggested by the finding of a cystic lesion in the inguinal canal. The cystic appearances have been described with ultrasound and MRI, the ultrasound appearances ranging from a “comma-shaped lesion with its tail directed toward the inguinal canal”<sup>4</sup> to a “cyst-in-cyst” appearance<sup>2</sup> to a multiseptated lesion.<sup>5</sup> The limited reports of the MRI findings of hydroceles of the canal of Nuck, however, to our knowledge have not described septations, even when seen on ultrasound.<sup>6</sup>



**Figure 2** Axial MRI of the right inguinal region. The hydrocele of the canal of Nuck (short, blue arrow) is predominantly of low signal intensity on  $T_1W$  and of high signal intensity on  $T_2W$ . The wall and septae enhance after intravenous gadolinium. Incidental finding of a lipoma (long, white arrow) within the right tensor fasciae latae muscle. **A**)  $T_1$ -weighted image; **B**)  $T_2$ -weighted image; **C**) Fat-suppressed  $T_1$ -weighted image after intravenous gadolinium.

We describe septations which are clearly depicted on MRI and which enhance after intravenous contrast medium. These septations are in keeping with underlying inflammation and/or hemorrhage.

The most common differential of hydroceles of the canal of Nuck is the inguinal hernia, and both can coexist in about one-third of patients. The cystic nature of the lesion points towards a hydrocele of the canal of Nuck.<sup>7-9</sup> Valsalva maneuvers with ultrasound visualization can also be used to help differentiation from hernias.<sup>6</sup> Graded compression of the hydrocele has also been reported to open and distend a patent canal of Nuck.<sup>10</sup> Other differentials include incarcerated hernias, abscesses, vascular abnormalities, and cystic-appearing tumors. Ultrasound usually resolves most of these with careful technique and application of color/power Doppler, and of course, correlation with the clinical presentation.

The authors would suggest that ultrasound is the first imaging modality of choice in the assessment of groin lesions. Ultrasound is cheap, readily available, and allows dynamic assessment. MRI is suggested as a problem-solving tool.

In conclusion, a cystic lesion in the female inguinal canal is suggestive of a hydrocele of the canal of Nuck. Valsalva maneuvers can be used to help confirm the diagnosis. We describe MRI findings of internal septations which were not demonstrated on initial ultrasound.

## Disclosure

The authors report no conflicts of interest in this work.

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