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Case Report

Hydrocele of Canal of Nuck - A Rare Entity

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Abstract

The canal of Nuck is a small evagination of the parietal peritoneum, which is attached to the uterus by the round ligament through the internal inguinal ring into the inguinal canal. It is analogous/homologous to the PPV as seen in males. Incomplete obliteration of the PPV causes indirect inguinal hernia or hydrocele of the canal of Nuck, a very rare condition in females. It is analogous to hydrocele of spermatic cord in males. This entity is a differential diagnosis in females with inguinal swelling. We present a case in a 32-year-old female along with detail approach to such cases along with review of literature. To our knowledge, till date only three case reports of laparoscopic repair of hydrocele of canal of nuck are published, ours being the fourth. Hydrocele of the canal of Nuck is a rare entity and commonly mistaken for inguinal hernia as one-third of the cases present concomitantly [1]. Round ligament is attached to the uterus and a small invagination of the parietal peritoneum accompanies the round ligament through the inguinal ring into the inguinal canal in all females [2]. This small invagination of the parietal peritoneum is the canal of Nuck in the female, which is homologous to the PPV in males. It is normally obliterated in the first year of life. Failure to achieve complete obliteration results in an indirect inguinal hernia or if fluid is retained, it forms a hydrocele of the Canal of Nuck [2,3]. First described by the Dutch anatomist Anton Nuck in 1691[4].

Case Report

32-year-old multipara lady (mother of 2 children) presented to our OPD with discomfort and reducible swelling in the right inguinolabial region which persisted for six months. Clinically, on right inguinal side there was an irreducible buldge with absent cough impulse. Swelling was transillumination positive. There were no superadded signs of inflammation. We examined the patient in standing and supine position but did not notice any change. Pelvic sonography revealed cystic mass in the retroperitoneal region with non-visibility of the same side ovary (Figure 1).

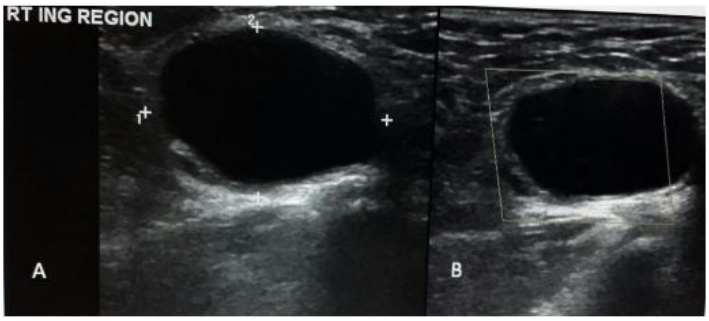
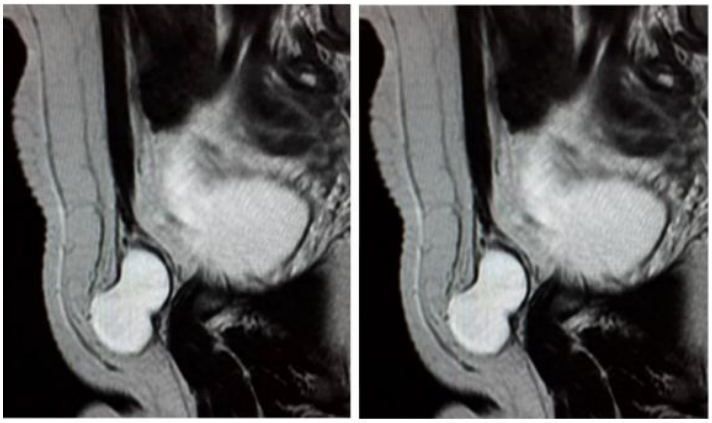


Figure 1: (A &B) well defined anechoic cystic lesion in right inguinal

region without obvious communication with peritoneal cavity. There was no flow at periphery on Doppler interrogation (in B).

On Valsalva manoeuvre, no appreciable changes were noted. Owing to difficulty in diagnosis, we performed CT-scan pelvis which was inconclusive. MRI pelvis depicted a cystic swelling in the retroperitoneal region with no peritoneal communication. However, confusion about the same side ovary persisted (Figure 2,3).

Figure 2: Sagittal T2W images of same patient showing lobulated contour.



3a 3b

Figure 3: Sagittal T2W image of same patient showing lobulated contour.

With a differential diagnosis of sliding inguinal hernia with ovary as a content and hydrocele of canal of nuck we performed diagnostic laparoscopy which revealed normal ovary on both the sides. Entire sac containing the cystic swelling i.e. Hydrocele of canal of Nuck was dissected (Figure 4).

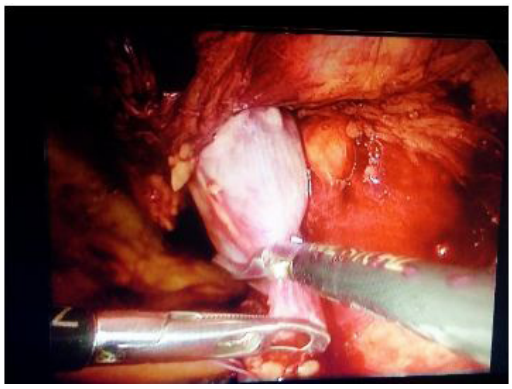


Figure 4: Intraoperative presence of hydrocele of canal of nuck.

It was type 1-hydrocele of canal of nuck. 2 loops of catgut were placed on it and the specimen was extracted through 10 mm trocar and sent for histopathology followed by mesh repair (TAPP). Histopathology confirmed our diagnosis of hydrocele of canal of nuck.

Discussion

The common differentials are an indirect inguinal hernia, a cold abscess, hematoma, rarely cystic lymphangioma, neuroblastoma, metastasis to the groin and ganglion cyst [5]. In less than one-third of the patients, visceral structures may be prolapsed within the patent sac, urinary bladder being the commonest [6]. Ovary alone or along with fallopian tubes is the content in 15-20% cases [7]. It may undergo rapid torsion leading to infarction. Once diagnosed to have an ovary in the sac, surgery should be performed early. The developmental defect causing hernia of the ovary into the canal of Nuck is interesting as it mimics the normal descent of the testes in the male. The gubernaculum of the ovary, which is attached to the cornu of the uterus, prevents the descent of the ovary into the inguinal canal in normal development. When this mechanism is defective, the gubernaculum may pull the ovary down into the canal of Nuck and, in some cases, into the labium majus [8]. Dysfunction of the female gubernacula probably results in female genital tract malformations [7].

Hydrocele of canal of nuck is of 3 types [9]. Commonest type corresponds to encysted hydrocele of the cord in male i.e. one with no communication with the peritoneal cavity forming an encysted fluid collection. Second type corresponds to communicating hydrocele in male i.e. persistent communication with the peritoneal cavity. Third type is a combination of the two i.e. inguinal rings constricting the hydrocele like a belt so that a part is communicating, and part is enclosed - hour glass type. These cases are rare in adult females [8,10]. Clinical suspicion

is must preoperatively, however most of them are diagnosed intraoperatively. Clinical differentiation between hydrocele of canal of Nuck and inguinal hernia is difficult. However, cyst is prominent while standing and remains visible while lying supine, unlike an inguinal hernia. With Valsalva manoeuvre, the cyst may recede into the inguinal canal while inguinal hernias will not [11]. Cough impulse may be absent in a cyst [12]. Hydroceles are usually painless, nonreducible and demonstrate trans illumination, in contrast to inguinal hernias [13]. If bowel sounds are heard over the swelling, then the diagnosis would be hernia.

Imaging helps to clinch diagnosis. Ultrasound shows a thin walled, well defined, hypoechoic or echo free, cystic structure which may vary from an anechoic, tubular, sausage, dumbbell or comma-shaped, "Cyst within a cyst" appearance to a multicystic hydrocele [2,8,13]. Inguinal or Femoral hernias, mostly have a hyper echoic component protruding out of the hernial orifice into the sac (omentum or intestine) and vary with Valsalva manoeuvre. Colour Doppler does not show any vascularity in cases of hydrocoele of canal of Nuck. The graded compression technique, which can provide retrograde leakage, may help show the proximal canal as an indicator of the origin of the cyst. On MRI, the hydrocele appears as a simple cyst characterized as hypointense on T1-weighted images and hyperintense on T2-weighted images [14]. MRI can give more precise details regarding septation, communication between cystic lesion and peritoneal cavity and the anatomical relation with adjacent structures [14]. Therefore, MRI is a better investigation to diagnose patients with inguinal cystic mass.

Management is excision of the cyst and closure of the enlarged inguinal ring is usually performed through the inguinal canal by an anterior approach i.e. open surgery. In the present case, diagnostic laparoscopy confirmed the diagnosis and subsequent repair was done by Transabdominal Preperitoneal (TAPP) approach (Table 1).

STUDY	YEAR	AGE	PRESENTATION	SIGNS	MODE OF SURGERY
Yen CF [15]	2001	23	Detected during surgery for ovarian cyst		Closure of patent canal of nuck with 1-0 polypropylene sutures
Bunting D [16]	2013	42	Painless swelling in inguinal region	Reducible, cough impulse positive	Detected intraoperatively, surgery postponed, and later patient refused
Matsumoto [17]	2014	37	Painless swelling in inguinal region	Reducible	Excision of hydrocele of canal of nuck as sac and TEPP repair
Qureshi [18]	2014	28	Painful swelling in inguinal region	Cough impulse negative	Excision of hydrocele of canal of nuck as sac and TAPP repair
Present	2015	32	Dragging pain and swelling in inguinal region	Reducible, cough impulse negative	Excision of hydrocele of canal of nuck as sac and TAPP repair

Table 1: Summaries all cases of hydrocele of canal of nuck performed laparoscopically till date.

Post operatively, patient recovered well and was discharged on post-operative day 2. She has been on a follow up for 2 years and has neither developed recurrence nor a similar swelling on other side. Robotic surgery has promising results in urological surgery however there are no case reports related to hernia.

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