

A case series of adult abdominoscrotal hydrocele: A rare condition



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ABSTRACT

Abdominoscrotal hydrocele (ASH) is a relatively rare variant of hydrocele in both adult and pediatric populations. The incidence among adults is <1% of other types of hydroceles, which are different from most cases related to persistent processus vaginalis. It presents as a dumbbell-shaped cystic collection with cross-fluctuation in the abdominoscrotal region and the inguinal canal acting as the rod connecting two masses. The abdominal swelling could be retroperitoneal or intraperitoneal. Clinical examination can lead to a suspected diagnosis of ASH, but confirmation relies on ultrasonography and computed tomography. Spontaneous resolution of ASH has been unlikely, and hence surgical intervention is recommended. In this study, we present three cases with ASH who underwent surgical repair using different methods.

Key words: Abdominoscrotal; Hydrocele; Congenital

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INTRODUCTION

Abdominoscrotal hydrocele (ASH) is a developmental anomaly that starts since birth as an inguinoscrotal hydrocele which extends to the abdomen.¹ Eventually, it leads to the formation of two sacs connected by an isthmus resulting in an hourglass or dumbbell-shaped appearance.² Sizes of both the sacs vary independently but the abdominal sac is usually larger than the scrotal sac.³⁻⁵ It is a two-compartment cystic lesion that may or may not communicate with each other. The abdominal sac is located extra-peritoneal with variable relations to the anterior abdominal wall and peritoneum as retroperitoneal or preperitoneal. The latter form is more frequent. Furthermore, the coverings are formed mainly of the transversalis fascia.^{3,6} It is pyriform in shape and almost always unilocular including the testicle at its posterior aspect,⁷ but bilocular sacs have been reported.⁸

CASE 1

A 37-year-old male patient complained of left-side progressive scrotal swelling for 10 years when he came to the MYH General Surgery outpatient department. In addition, the patient reported left groin heaviness and dragging pain along with a developing left-sided abdominal mass that ached and was only temporarily eased by medicine. The pain did not radiate to any other site.

At clinical examination as shown in Figure 1, a soft, cystic, and fluctuant scrotal swelling was present with no variation in size (10*12 cm), with positive transillumination and negative cross-fluctuation. There was no tenderness and a normal surface temperature over the lump. On palpation of the scrotal region, the left testis was not palpable, but the right testis was normal. The cough impulse was negative, implying no association with the inguinal hernia. A fluid thrill was appreciated at the neck of the scrotum,

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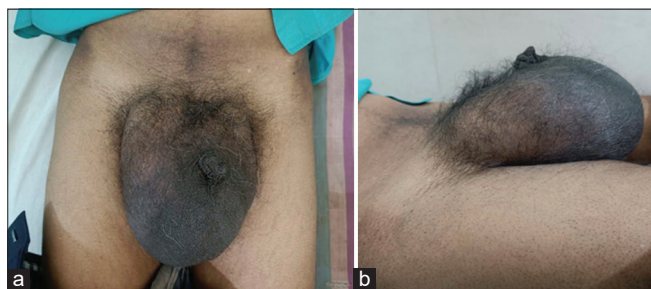


Figure 1: (a and b) Clinical photograph of patient with hydrocele in standing supine position

suggestive of abdominoscrotal swelling, for which further investigations were done.

An urgent ultrasonography (USG) of the abdomen and inguinoscrotal region suspected a case of ASH. Computed tomography (CT) scan of abdomen revealed a large hourglass-shaped cystic formation involving the left testicle and extending into the abdominal cavity through the ipsilateral inguinal canal as shown in Figure 2. This indicated that this ASH is the rarest type of non-intercommunicating ASH.

Excision of ASH was done through inguinal approach and scrotal incision for drain placement. The cyst was decompressed, and the abdominal component was dissected free from the retroperitoneum through the widened deep inguinal ring. The inguinoscrotal component was also completely excised. The spermatic cord and testis were normal. The tension-free anterior inguinal repair was performed with a polypropylene mesh, taking into account the slack fascia transversalis and the weakened deep inguinal ring.

An uneventful post-operative period was present, and the patient was followed up for 2 years, during which there were no abdominal or scrotal collections.

CASE 2

A 50-year-old presented to us with chief complaints of a slow-growing lump in the abdomen for 4–5 years associated with pulling up of the right testis since last year. In addition, he had other associated complaints of early satiety, fullness of stomach, and non-localized dull chronic pain in the abdomen. The swelling and pain were not associated with fever. The patient did not have any prior medical history.

During the physical examination, a substantial abdominal mass was observed in the central region of the abdomen, stretching from the pubic symphysis to a point 7 cm above the navel. The flanks were empty. The mass seemed to have a minor deviation towards the pubic symphysis's right side. Furthermore, fluid thrill was present, and cross-fluctuation between the scrotum and abdomen was evident.



Figure 2: Dumbbell shaped abdominoscrotal hydrocele in a sagittal section of CT scan

In addition, during the examination of the scrotum, it was observed that the swelling extended to the base of the scrotum and the right testis was not palpable.

Subsequently, USG and CT scan (Figure 3) revealed an anechoic cystic mass of 7*5*6 cm with a corresponding volume of 210 cc extending from the abdomen to the scrotal region through the right inguinal canal.

The patient underwent excision of the hydrocele sac through the abdominal approach. The hydrocele was accompanied by seroma formation which was also aspirated later.

CASE 3

A 52-year-old man was referred to the department of surgery with the right scrotal swelling for the past 6 months while undergoing a regular medical check-up. The patient also complained of heaviness in the lower abdominal region on the same side. The swelling was insidious in onset and gradually progressive in size.

Physical examination revealed soft, cystic, transilluminant, and right inguinoscrotal swelling extending into the lower abdomen. The right testis could not be palpated separately from the swelling. There was a tense, cystic hypogastric lump that had cross fluctuation with the inguinoscrotal hydrocele.

The clinical diagnosis of the ASH was made and confirmed by a CT scan. Contrast-enhanced CT of the abdomen and pelvis showed a well-defined lower abdominal cyst extending into the scrotum through the inguinal canal.

The excision of the sac was done through an inguinal approach, in which both the sacs abdominal and scrotal were excised from the same incision. The posterior abdominal wall was weak and the deep inguinal ring was widened, through which the abdominal part was drained



Figure 3: Abdominoscrotal hydrocele in coronal section on CT scan

and dissected. Further exploration of the scrotal part was done, which revealed healthy cord structures and testis. The scrotal part was drained and the sac was dissected, tension-free mesh repair was done.

DISCUSSION

History and definition

In 1834, Guillaume Dupuytren first reported and described the case of ASH and termed it “l’hydrocele en bisac.”⁹

Clinical presentation

The natural history of ASH varies in pediatrics and adults; in children, it is a rapidly evolving observable lesion with the possibility of spontaneous resolution, but in adults, it is a long-standing, non-resolving progressive cystic lesion.¹⁰ Clinically, ASH commences as a painless and progressively increasing scrotal or inguinoscrotal swelling followed by another abdominal finding later. Fluid thrill, springing back ball signs and cross fluctuation tests have been suggested as diagnostic.¹¹ Positive transillumination is also indicated and is a hallmark of the clinical diagnosis of ASH.¹² USG is first demonstrated but, CT and magnetic resonance imaging (MRI) are used for a confirmatory diagnosis.¹³

Pathogenesis

The primary source of the etiopathogenesis of ASH is intraoperative observations. The three most commonly proposed mechanisms are “(1) cephalad extension of a simple hydrocele,¹⁴ (2) high obliteration of processus vaginalis (PPV),¹⁵ and (3) PPV acting as a one-way valve with cephalad extension of hydrocele sac.”¹⁶

The theories of Dupuytren, Roller, and Jacobson propose an upward extension of the scrotal hydrocele.^{9,12,14} On the other hand, Maceben, Sasidharan et al., and Guibe postulate the intra-abdominal component’s downward extension^{15,17,18}

Saharia et al. and Khorasani et al. proposed the flap-valve mechanism as a possible explanation.^{16,19} Many other theories have been postulated but the most widely accepted theory is Dupuytren’s original theory of high intracystic pressure in the scrotal component that leads to cephalad extension through the musculofascial inguinal canal and formation of the abdominal sac.²⁰

A distinctive diagnostic feature known as the “springing back ball sign,” first proposed by Wlochynski et al., involves compressing the scrotum, which accentuates the prominence of the abdominal component. On releasing the pressure, the scrotum returns to its original size. This sign is considered more characteristic of ASH than the cross-fluctuation test.²¹

Differential diagnosis

The differential diagnosis for ASH most commonly involves inguinal hernia²² Other less commonly leading conditions could be cord lymphangioma, abdominoscrotal spermatocoele, hydronephrosis, urinoma, ascites, and cystic tumors.²³⁻²⁵

Complications

The complications associated with ASH are mostly due to compression of the structures involved and around the hydrocele mass. These include testicular dysmorphism which may progress to the atrophied testis (unilateral or bilateral),²⁶ hydronephrosis (mostly unilateral) due to compression of ureters at the pelvic rim,²⁷ lymphedema or collection of blood in dependent parts of the body due to vascular compression,²⁸ Furthermore, some rarer complications which could occur are due to infections, torsion of the sac, hemocele, or co-existing inguinal hernia.²⁹⁻³¹ Paratesticular and testicular malignancy have also been reported in some cases but direct evidence of its relation with ASH is still under exploration.^{32,33}

Investigation

Initial investigation is through clinical examination followed by USG. USG is usually reliable for confirming the diagnosis of ASH, however, for intercommunication and other related complications such as hemocele, and lymphedema and for suspicion of malignancy, MRI is indicated.

Treatment

Conventionally, the puncture and aspiration technique was used to treat ASH. Now, better approaches involve excision of the hydrocele sac by either of the methods:

- Inguinal approach (Figure 4)
- Extended inguinal/inguinoscrotal incision
- Abdominal approach (can be combined with inguinal approach to excise larger sacs)
- Scrotal approach
- Laparoscopic method (Marsupialization).

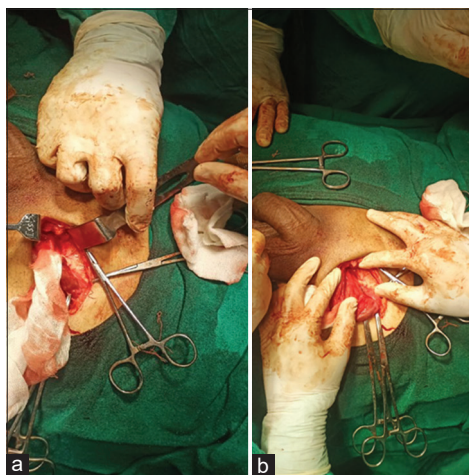


Figure 4: (a and b) Clinical photograph showing excision of sac of abdominoscrotal hydrocele through inguinal approach

Excision of the abdominal sac and partial removal of the scrotal portion are a common procedure, similar to tunical eversion seen in vaginal hydrocele.

The cyst was depressurized and the abdominal component was separated from the retroperitoneum through an enlarged deep inguinal ring through an inguinoscrotal incision. The inguinoscrotal component was entirely excised. Subsequently, a tension-free anterior inguinal repair was conducted using a polypropylene mesh, taking into consideration the relaxed fascia transversalis.

In our series of cases, we performed surgery on three patients using different approaches, including abdominal, extended inguinal, and inguinal methods. Among these approaches, the inguinal method is the most favored as it allows for the removal of both sacs through a single excision, and it is associated with minimal complications.

CONCLUSION

ASH is a rare lesion. It mainly affects the pediatric age group but can also be present in adult population. It has different etiopathogenesis theories and multiple clinicopathological presentations. Physical examination and USG are diagnostic, but CT/MRI scans are useful for confirming the diagnosis. Surgical excision is the definitive treatment in such cases and can be performed by an open or laparoscopic approach, still surgical excision through the inguinal incision is the standard approach.

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AA- Concept and design of the study, Interpreted the results, reviewed the literature and manuscript preparation; **MA**- Prepared first draft of manuscript, Statistical analysis and interpretation, reviewed the literature; **SS**- Concept of the study, statistical analysis, coordination, reviewed the literature, manuscript preparation, manuscript revision; **SA**- Manuscript preparation, statistical analysis and interpretation.

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