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Case Report

Cholesterol calculi in hydrocele: a rare and unusual finding: a case report

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ABSTRACT

Cholesterol lithiasis of hydrocele is a very rare urological disorder where cholesterol stones are produced within the sac of hydrocele, frequently due to chronic inflammation, protracted stasis of fluid, and degeneration of adjacent paratesticular tissues. These intrahydrocele stones or scrotal pearls are usually asymptomatic and are found incidentally on imaging or during operation. With fewer documented cases worldwide, the disorder represents an opportunity for diagnostic and therapeutic dilemma. The case is presented here of a 35-year-old man with a 10-year history of painless slowly progressive swelling of the left scrotum. High-resolution ultrasonography was characterized by an anechoic collection and two hyperechoic mobile masses with posterior acoustic shadowing, indicative of cholesterol calculi. A Jaboulay's procedure for surgical exploration was done. Intraoperatively, about 300 mL of serosanguinous fluid and three cholesterol stones were evacuated from a thickened hydrocele sac. The left testis and opposite scrotum were normal. Histopathology was proven to be cholesterol crystal deposition with chronic inflammatory changes. This case highlights the importance of keeping cholesterol lithiasis in the differential diagnosis of chronic hydroceles, particularly when unusual sonographic imaging is encountered. It also supports the preoperative diagnosis with ultrasonography and reiterates the effectiveness of Jaboulay's procedure as a safe, effective, and simpler surgery to be considered. Increased awareness of this uncommon condition could lead to earlier diagnosis, proper surgical planning, and improved patient outcomes.

Keywords: Hydrocele, Cholesterol lithiasis, Jaboulay’s procedure, Chronic scrotal swelling, Intrahydrocele stone

INTRODUCTION

Hydrocele is a benign scrotal condition characterized by the accumulation of serous fluid between the parietal and visceral layers of the tunica vaginalis. It accounts for the majority of painless scrotal swellings in adult males and may be either unilateral or bilateral in presentation. The prevalence of hydrocele increases with age, affecting up to 1% of adult men.[1,2] Most hydroceles are idiopathic and are thought to result from an imbalance between fluid secretion and absorption within the tunica vaginalis. However, secondary hydroceles can arise due to infections, trauma, neoplasms, or lymphatic obstruction and therefore have identifiable underlying causes.[3,4] Although typically uncomplicated, long-standing hydroceles may undergo secondary pathological changes, including hemorrhage, infection, calcification, and cholesterol lithiasis. Cholesterol lithiasis, also referred to as scrotal pearls or scrotal calculi, is a rare manifestation wherein cholesterol- or fibrin-based stones form within the hydrocele sac.

These stones are usually mobile, small, and asymptomatic but can occasionally cause discomfort or be mistaken for more serious pathology.[5,6] Lithiasis in a hydrocele is a rare entity, with only a few cases reported in the literature. It is thought to occur due to the presence of a stagnant fluid collection within the tunica vaginalis, which provides an ideal environment for the formation of cholesterol crystals.[7] The pathogenesis is not entirely

clear, but chronic inflammation, microtrauma, and degenerative changes in embryological remnants such as the appendix testis or epididymis are considered contributing factors.[8,9] Ultrasonography is the preferred imaging modality for scrotal evaluation, offering excellent sensitivity in differentiating benign from malignant lesions.

Scrotal calculi are typically visualized as hyperechoic mobile bodies within a fluid-filled cavity and often display posterior acoustic shadowing, a key diagnostic clue for cholesterol lithiasis in patients with chronic hydrocele.[10] Regardless of its rarity, surgical excision of the hydrocele sac and associated calculi remains the standard treatment. Jaboulay's procedure, which involves eversion of the tunica vaginalis, is widely used due to its simplicity and low recurrence rate.[11]

This case report highlights a rare occurrence of hydrocele cholesterol lithiasis in a 35-year-old male patient diagnosed via ultrasonography and successfully managed with Jaboulay's procedure, followed by histopathological confirmation.

CASE REPORT

Patient history

A 35-year-old male presented with moderate swelling over the left side of the scrotum, gradually progressing over the last 10 years. The swelling was painless, with no history of trauma, fever, urinary symptoms, or systemic illness.

Evaluation and imaging

Physical examination revealed a moderately enlarged left hemiscrotum with no overlying skin changes. A transillumination test was equivocal. The right scrotum and testis appear normal. Scrotal ultrasonography demonstrated an anechoic fluid collection in the left scrotal sac with two freely mobile hyperechoic structures, accompanied by posterior acoustic shadowing. These findings were consistent with cholesterol calculi. There were no abnormalities in the testes or epididymis.

Management

Surgical approach

The patient was taken to the operating room and positioned supine. Under regional (spinal) anesthesia and aseptic precautions, a Jaboulay's procedure was planned and performed to address the chronic hydrocele. On surgical exploration, the left hemiscrotum was found to be moderately enlarged. Dissection through the scrotal layers exposed the tunica vaginalis, which appeared thickened and fibrotic. Upon incising the tunica vaginalis, approximately 300 mL of serosanguinous fluid was drained, revealing the characteristic straw-colored appearance often seen in chronic hydroceles. Three cholesterol crystals, each measuring approximately 8–10 mm in diameter, appearing as yellowish, hard, and irregularly shaped stones, were found freely floating within the hydrocele sac. These were carefully extracted and sent for histopathological examination. The left testis was visualized and appeared normal in size and consistency, with no evidence of atrophy, torsion, or neoplastic changes. The contralateral (right) testis and scrotum were clinically unremarkable.

Operative procedure

A vertical incision was made over the left scrotum and an incision was made and deepened through the dartos and other scrotal layers to expose the tunica vaginalis. After opening the tunica, the previously noted 300 mL of fluid was aspirated, followed by retrieval of three distinct cholesterol stones each measuring approximately 8–10 mm in size, from within the sac.

A Jaboulay's procedure was carried out by everting the tunica vaginalis and suturing it behind the testis using 2-0 absorbable Vicryl sutures, effectively preventing fluid reaccumulation. The left testis was gently repositioned within the scrotal sac in its anatomical orientation. The scrotal wall was closed meticulously in layers using 2-0 Vicryl for deeper tissues. A closed suction drain was placed to prevent postoperative hematoma or seroma formation. The skin was closed using 2-0 Nylon sutures with care to ensure minimal tension and promote optimal healing.

Surgical procedure

Jaboulay's procedure is a well-established surgical technique employed in the treatment of hydrocele, particularly of the tunica vaginalis. The procedure involves making a scrotal incision to access the hydrocele sac, evacuating the fluid, and then everting the tunica vaginalis-turning it inside out. The everted edges are sutured posterior to the testis using absorbable sutures. This technique eliminates the space where fluid may reaccumulate, thereby preventing recurrence. It is favored for its simplicity, effectiveness, and low rate of complications. Jaboulay's procedure continues to be a standard of care for idiopathic hydroceles and is described extensively in urological surgical literature.[11]

Postoperative course

The patient's recovery was uneventful. The drain output was minimal and was removed on postoperative day 2. Sutures were removed on postoperative day 10, with the wound showing clean healing and no complications.

Histopathological analysis of the retrieved stones confirmed cholesterol crystals, along with chronic inflammatory cell infiltrates and fibrosis of the tunica vaginalis.

Figure 1: Excised cholesterol stones from the hydrocele sac, measuring approximately 8–10 mm each. The stones appear brownish-yellow, firm, and irregularly shaped.

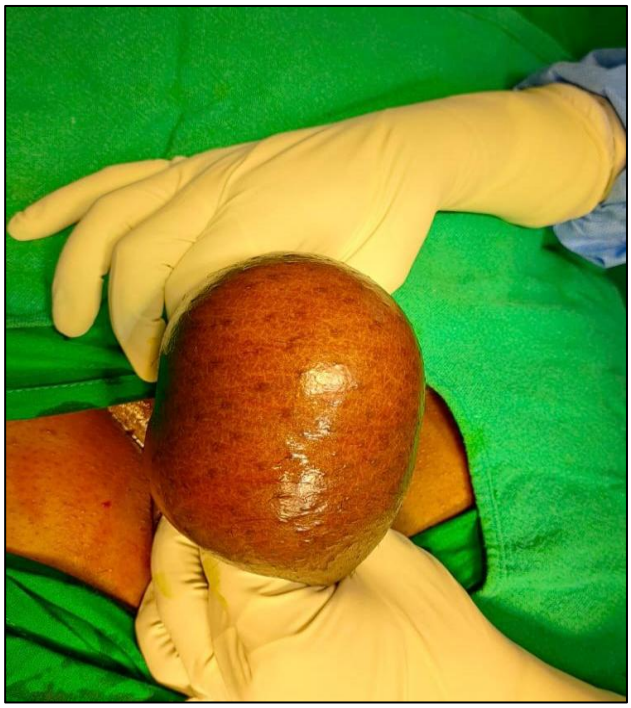

Figure 2: Intraoperative view showing a grossly enlarged left hemiscrotum prior to incision, consistent with a large hydrocele.

Figure 3: A metal kidney tray containing approximately 300 ml of serosanguinous fluid aspirated from the hydrocele sac during the procedure.

DISCUSSION

Cholesterol lithiasis of hydrocele is an uncommon but significant differential diagnosis in those with chronic hydroceles. Pathogenesis includes chronic inflammation, paratesticular degenerative changes, and the deposition of cholesterol-rich fluid, which subsequently precipitates to calculi. Prior, to operation, ultrasonography is the gold standard for diagnosis. Hyperechoic, mobile foci in an anechoic fluid-filled sac with posterior shadowing are very suggestive of cholesterol stones.[10] These results should lead to consideration of surgery, especially in chronic hydroceles. The Jaboulay's procedure is still the surgeon's choice of procedure in such situations owing to its ease and reliability in avoiding recurrence.[1] Histological examination after surgery is important to ensure the lesions' benignity and exclude malignancy. New studies have also pointed towards the possible role of chronic inflammation and scrotal calculi in affecting spermatogenesis but need more work.[12]

CONCLUSION

This report of a case describes the diagnostic and therapeutic management of an uncommon presentation of hydrocele cholesterol lithiasis. With the help of ultrasonography, early diagnosis and surgical planning with Jaboulay's technique resulted in a successful outcome. Greater awareness of this uncommon entity is necessary for early diagnosis, complication prevention, and better patient care. Future research must examine the long-term results and possible reproductive consequences of chronic intrahydrocele calculi.

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REFERENCES

1. Cimador M, Castagnetti M, De Grazia E. Management of hydrocele in adolescent patients. Nat Rev Urol, 2010;7(7):379–85.
2. Lundström KJ, Sigurdsson MI, Holmberg E. Epidemiology of hydrocele and spermatocele. Scand J Urol, 2019;53(2):129–33.
3. Huzaifa M, Moreno MA. Hydrocele. In: StatPearls. Treasure Island, FL: StatPearls Publishing. 2023.
4. Dogra VS, Gottlieb RH, Oka M, Rubens DJ. Sonography of the scrotum. Radiology. 2003;227(1):18–36.
5. Gooding GA, Leonhardt W, Stark HH. Cholesterol crystals in hydroceles: Sonographic detection and possible significance. AJR Am J Roentgenol. 1997;169(2):527–9.
6. Vijayananthan A, Kumar G, Rajendram NK. Intrascrotal calculi: A rare benign entity. Eur J Radiol Extra. 2008;66(3):105-7.
7. Youssef B, Abdelkrim N, Anas T. Hydrocele stone: A rare case report. J Surg Case Rep. 2024;2:98.

8. Rioja J, Galante J, Alcaraz A, Vicente J. Adult hydrocele and spermatocele. BJU Int. 2011;107(12):1852–64.
9. Török I, Müller F, Nyirády P. Hydrocele stones: Rare manifestation of chronic inflammation. Acta Chir Hung. 1981;22:45–7.
10. Kühn AL, Scortegagna E, Nowitzki KM, Kim YH. Ultrasonography of the scrotum in adults. Ultrasonography. 2016;35(3):180-97.
11. Garriga V, Serrano A, Marin A, Medrano S, Roson N, Pruna X. US of the tunica vaginalis testis: anatomic relationships and pathologic conditions. Radiographics. 2009;29(7):2017-32.
12. Liu H, Zhang Z, Lv W. Intrascrotal calculi: a retrospective analysis. Int J Gen Med. 2022;15:8755–66.

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