



BEYOND THE ORDINARY: GIANT EPIDIDYMAL CYST AS A RARE CAUSE OF MASSIVE SCROTAL ENLARGEMENT

General Surgery

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ABSTRACT

We report a case of 48-year-old male who presented with left sided scrotal swelling. Diagnosis was confirmed through Ultrasound Scrotum, revealing Left Giant Epididymal Cyst. The patient underwent Excision. The patient had an uneventful postoperative course & discharged in stable condition without any complications.

KEYWORDS

Epididymal cyst, Spermatocoele, Scrotal swelling, Scrotal mass, Extratesticular mass

INTRODUCTION:

Epididymal cysts, are benign, fluid-filled formations arising from the epididymis, typically developing as a consequence of obstruction or dilatation of the efferent epididymal tubules¹. These cysts may present as unilocular or multilocular structures and are predominantly encountered in adult males of middle age, though they may occur across all age groups². Epididymal cysts represent one of the most frequently encountered benign scrotal pathologies. Approximately 30% of men are diagnosed with small spermatocoeles during their lifetime, though larger and clinically significant cysts are considerably less common³. The reported incidence of epididymal or spermatocoele diagnosed in specialized healthcare settings is approximately 100 per 100,000 men, with the incidence tending to rise with advancing age⁴.

The aetiology of epididymal cysts is considered multifactorial. Environmental endocrine disruptors and obstructive pathology within the vasal or epididymal ducts have also been implicated, particularly in the paediatric population⁵. Furthermore, associations with systemic conditions such as testicular dysgenesis syndrome, cryptorchidism, cystic fibrosis, and von Hippel-Lindau disease have been reported in the literature⁶.

Clinically, epididymal cysts typically present as painless, smooth, fluctuant, extra testicular masses clearly distinguishable from the ipsilateral testis on examination, with positive transillumination.

On scrotal ultrasound, these cysts appear as thin-walled, anechoic, septate structures predominantly arising from the head of the epididymis the most common site of origin with the body and tail being less frequently involved⁷. Doppler imaging confirms the absence of internal vascularity, helping to exclude malignancy. Key differential diagnoses include spermatocoele, hydrocele, varicocele, epidermoid cyst of the testis, and adenomatoid tumour of the epididymis⁸.

The management of epididymal cysts is largely guided by cyst size, symptomatology, and trajectory over time. Conservative management with serial observation remains the standard of care for asymptomatic cysts measuring less than 10 mm, as many involute spontaneously⁹. Surgical excision is indicated when the cyst exceeds 1–2 cm in diameter and fails to regress, when acute symptoms such as intractable scrotal pain or significant swelling are present, or when the lesion causes cosmetic or psychological morbidity¹⁰.

Giant epididymal cysts conventionally defined as those exceeding 5 cm in greatest dimension are exceptionally rare, and relatively few cases of such magnitude have been documented in the urological literature to date¹¹. Their clinical significance lies in the potential to cause considerable functional impairment, cosmetic disfigurement, and compressive effects on adjacent testicular structures. Herein, we present a case of a giant epididymal cyst, discuss its clinical features, diagnostic workup, surgical management, and outcomes, and review the existing literature on this rare entity.

Case Presentation:

A 48 year old male patient presented to outpatient department with complaints of scrotal swelling since 1 year. He is a farmer by occupation. On admission, his vital signs were stable with pulse rate 76 bpm, Blood pressure 130/80 mm of hg, Respiratory rate of 16 cpm, temperature of 97.8°F and SpO₂ of 98% at room air. On Inspection in standing position, a left sided scrotal swelling measuring 10 x 6 cms, Oval in shape, Extending from base of scrotum to root of scrotum, Scrotal skin is stretched and shiny, Rugosities were lost, Cough impulse – Negative, Penis in midline. On palpation, A left sided swelling is seen over scrotum of size 12 x 6 cms, Not reducible, Able to get above the swelling, Fluctuation – Positive, Soft in consistency, Left side testis was palpable separately from swelling. The right side is normal. USG of Scrotum revealed A Large left epididymal cyst measuring 14.3x6.5cms noted in the left scrotal sac with low level internal echoes. Under spinal anaesthesia, with aseptic precautions a Vertical incision was made over the left hemiscrotum. Intraoperative findings revealed a giant epididymal cyst on left side. The surgical team performed Excision of Left Epididymal Cyst. The procedure lasted 2 hours with an estimated blood loss of 200 ml. Postoperatively, the patient was managed with nil by mouth, intravenous fluids, antibiotics, analgesics, and antiemetics. The postoperative course was uneventful, and the patient was discharged in stable condition without any complications.



FIGURE 1: Clinical image of the patient with left sided scrotal swelling

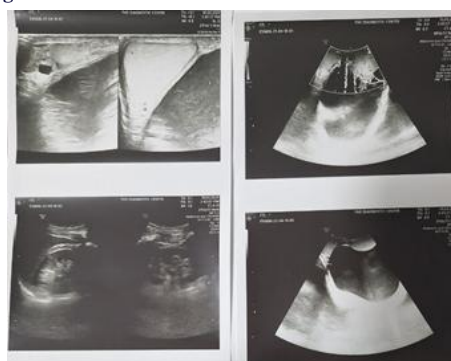




FIGURE 2: Scrotal ultrasonography images showing a large cystic swelling arising from left epididymal head of size measuring 14.3 X 6.5 cms with both testes normal in size, shape, and location.

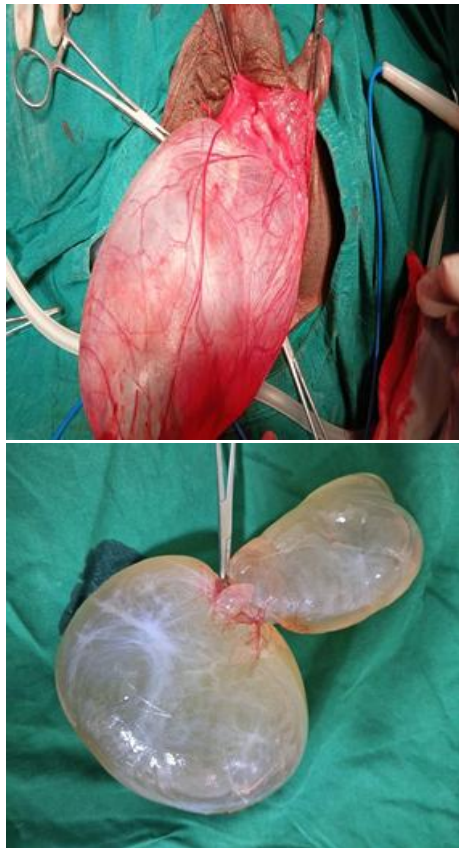


FIGURE 3: Intra-operative image of giant left epididymal cyst

DISCUSSION:

Pathophysiology

Epididymal cysts are benign, fluid-containing cystic structures of the epididymis that may be unilocular or multilocular in configuration. Their development is primarily attributed to obstruction and subsequent dilatation of the efferent epididymal tubules. The simultaneous occurrence of bilateral, multilocular, giant epididymal cysts constitutes an extraordinarily rare clinical entity, with only a handful of such cases documented in the global literature to date. The first formally recorded description of epididymal cysts dates to 1785, when Guerin identified them in the context of testicular inflammation; further characterisation followed in 1840, when Liston described adjacent cystic lesions containing spermatozoa and seminal fluid associated with testicular trauma findings that would eventually differentiate epididymal cysts from spermatoceles.

Aetiology

The precise aetiology of epididymal cysts has not been fully established, but a multifactorial basis is widely accepted. Congenital anomalies arising from aberrant mesonephric duct development and hormonal disruptions during embryogenesis are thought to contribute in a subset of cases. Prenatal exposure to endocrine-disrupting chemicals most notably diethylstilbestrol has been implicated as a predisposing factor, as has postnatal environmental exposure to similar substances.

Clinical Presentation

The clinical presentation of epididymal cysts spans a wide spectrum,

ranging from entirely asymptomatic scrotal swellings identified incidentally to lesions that cause considerable discomfort, heaviness, or psychological distress. On physical examination, these cysts are typically appreciated as smooth, non-tender, fluctuant, extra testicular masses with a positive transillumination test, situated adjacent to and clearly distinct from the ipsilateral testis. A notable and well-recognised mode of presentation is the patient's subjective perception of possessing a 'third testicle', which may prompt significant psychosexual concern and referral from psychiatry or general practice prior to urological evaluation. When cysts attain giant proportions, patients may additionally report progressive scrotal heaviness, ambulatory discomfort, and visible cosmetic disfigurement, all of which may substantially impair quality of life. Testicular tumour markers including alpha-fetoprotein, beta-human chorionic gonadotrophin, and lactate dehydrogenase are expected to remain within normal limits, serving as a useful adjunct to exclude malignant scrotal pathology.

Diagnosis

Scrotal ultrasonography remains the gold-standard diagnostic modality for epididymal cysts, providing comprehensive information regarding the location, site of origin, internal content, dimensions, echogenicity, and testicular vascularity. On ultrasound, epididymal cysts characteristically appear as thin-walled, anechoic lesions unilocular or multilocular situated most commonly at the head of the epididymis, which is the anatomically predominant site of origin; involvement of the body and tail is comparatively rare. In the majority of reported giant epididymal cyst cases including those presenting with bilateral involvement the underlying testes demonstrated preserved normal morphology, echogenicity, and blood flow on Doppler assessment, consistent with compressive rather than infiltrative pathology.

Differential Diagnosis

The differential diagnosis for a giant scrotal cystic mass is broad and demands systematic clinical and radiological evaluation to exclude potentially serious pathology. Clinically, giant epididymal cysts may mimic secondary hydrocele, hydrocele of the spermatic cord, or bilateral hydroceles, particularly when the cyst is tense and the epididymal origin is not immediately apparent on examination alone. Intrascrotal cystic lesions are broadly categorised as intratesticular encompassing testicular cysts, tunica albuginea cysts, and epidermoid cysts (monodermal teratomas) and extratesticular, including epididymal cystic lymphangioma, spermatocele, paratesticular abscess, adenomatoid tumour of the epididymis, and varicocele. The adenomatoid tumour of the epididymis, though benign, deserves particular consideration in the differential given its extratesticular location and potential to simulate a cystic lesion on imaging.

Management

The therapeutic approach to epididymal cysts is tailored to the individual patient's clinical profile, encompassing cyst size, symptom burden, rate of growth, and the degree of functional or psychosocial impairment. Conservative management with active surveillance is the preferred initial strategy for asymptomatic cysts measuring less than 10 mm, given that a significant proportion reported at approximately 50% undergo spontaneous regression within 3 to 35 months. When the cyst exceeds 1–2 cm in diameter and fails to involute over a period of 12 months of observation, or when it produces persistent symptoms such as scrotal pain, swelling, or redness, surgical excision becomes the treatment of choice. Alternative interventional strategies, including percutaneous aspiration and sclerotherapy using agents such as polidocanol, have been described and may be appropriate in selected adult patients who are unfit for or decline surgery. These modalities carry a higher recurrence risk and are not routinely advocated in the paediatric population. Surgical excision typically performed via a scrotal or inguinal approach under regional or general anaesthesia remains the definitive treatment, affording durable symptom resolution, excellent cosmetic outcomes, and critically, histopathological confirmation of the diagnosis to exclude malignancy. The surgical technique emphasises meticulous preservation of the ipsilateral testis, epididymis, and vas deferens in order to safeguard future fertility potential, a consideration that is particularly paramount in younger patients. Microscopic-assisted excision has been advocated as a refinement that minimises the risk of inadvertent epididymal tubular injury, though open scrotal excision via a transverse incision or raphe incision remains the standard approach in most centres.

Postoperative Outcomes and Surveillance

Surgical excision of giant epididymal cysts is associated with highly favourable postoperative outcomes. In reported series and case reports, patients have consistently been discharged within 48 hours of surgery and have demonstrated complete resolution of scrotal heaviness, pain, and cosmetic deformity on follow-up. Histopathological examination of the excised specimen invariably confirms the benign nature of the lesion, with microscopy typically revealing a cystic wall lined by cuboidal or columnar epithelium without evidence of atypia or malignancy findings that are essential to provide definitive reassurance to both the patient and the clinical team. While surgical excision carries the theoretical risk of inadvertent injury to the adjacent efferent epididymal tubules with the potential downstream consequence of subfertility available clinical evidence does not support a significant association between epididymal cysts per se and male infertility. Periodic follow-up inclusive of semen analysis at an appropriate interval post-operatively is prudent, particularly in younger patients and those undergoing excision of bilateral lesions. No evidence of cyst recurrence or significant surgical complications including haematoma formation, wound infection, testicular atrophy has been documented in the majority of reported cases at medium-term follow-up.

Rarity and Context in Published Literature

The present case contributes to a relatively sparse body of literature documenting giant epididymal cysts. Among the most instructive published reports, Gupta et al.¹² described a 45-year-old male with asymptomatic bilateral multilocular giant epididymal cysts, with intraoperative measurements of $10 \times 7 \times 2.5$ cm on the left and $4.5 \times 3 \times 2$ cm on the right amongst the largest bilaterally reported to date. Similarly, Varghese et al.¹³ presented a comparable bilateral case in a 40-year-old patient, with right-sided cysts measuring $10 \times 7 \times 2.5$ cm, further underscoring the potential for these lesions to attain remarkable dimensions before prompting clinical presentation. In the paediatric context, Patoulas et al.¹⁴ reported an intraparenchymal epididymal cyst of 4 cm diameter in a 15-year-old — notable given that comparable dimensions had not previously been documented in an adolescent patient. Arora et al.¹⁵ provided a unique perspective on the psychosocial dimensions of this condition, reporting a case in which the cyst's resemblance to a third testicle precipitated significant psychological and sexual distress, necessitating a structured multidisciplinary pathway involving urology, psychiatry, and radiology prior to surgical resolution. Collectively, these reports reinforce that giant epididymal cysts, irrespective of their benign nature, warrant prompt diagnosis, comprehensive evaluation, and timely surgical management to prevent progressive morbidity and to address the broader functional and psychosocial impact on the patient.

CONCLUSION:

The present case, viewed in the context of the published literature, reaffirms that scrotal ultrasonography is the cornerstone of diagnosis, that surgical excision is safe & histopathological examination remains mandatory to exclude malignancy. Heightened clinical awareness of this uncommon entity particularly in patients presenting with asymptomatic or minimally symptomatic progressive scrotal enlargement is essential to ensure prompt diagnosis, reduce patient anxiety, and facilitate timely surgical intervention before complications or significant morbidity ensue. Further prospective studies and systematic documentation of such rare cases will be invaluable in refining the evidence base surrounding the optimal management thresholds and long-term outcomes of giant epididymal cysts.

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