

Spectrum of Scrotal Diseases and Its Management in a Rural Medical College

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Abstract:

Background: Scrotal issues represent prevalent surgical concerns among male patients. Unfortunately, due to delayed seeking of medical attention, these conditions are often identified at an advanced stage, leading to elevated levels of morbidity and mortality. This study aimed to ascertain the accurate incidence of scrotal pathologies in India, detailing their presentation, diagnosis, and subsequent management.

Methods: A cross-sectional study at an Indian tertiary care hospital included 89 patients with acute scrotal diseases. Purposive sampling was applied, involving consenting individuals of all ages, encompassing skin-origin swellings. Exclusion criteria comprised unwilling participants, inguinal scrotal swellings, and systemic scrotal diseases. Patients meeting the criteria underwent scrotal examination, thorough clinical assessments, and relevant investigations. Experienced surgeons followed a standardized protocol for operations, with outcomes analysed based on patient recovery through conservative or operative management.

Results: The findings revealed that 30% of the cases were attributed to Testicular torsion, followed by 24% diagnosed with Acute Epididymo-orchitis. A smaller percentage, 4%, was associated with acute scrotum resulting from trauma. Conservative management proved most successful in cases of epididymo-orchitis. Contrastingly, emergency exploration of the scrotum emerged as the optimal approach for pyocele, haematocele, torsion testis, testicular abscess, and Fournier's gangrene.

Conclusion: Our research highlights the efficacy of conservative management as the preferred strategy for cases of epididymo-orchitis. Conversely, for conditions such as pyocele, haematocele, torsion testis, testicular abscess, and Fournier's gangrene, emergency scrotal exploration demonstrated superior outcomes. Tailoring the approach based on the specific pathology is crucial for optimizing patient outcomes in scrotal condition.

Keywords: Scrotum, Hydrocele, Orchitis, Torsion of Testis.

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Introduction

Scrotal disorders represent prevalent surgical issues encountered in the male population. The scrotum's anatomical location allows for convenient self-examination, yet various factors contribute to prolonged patient suffering before seeking surgical intervention. These factors encompass socio-economic constraints, lack of awareness, hesitancy, and cultural taboos. Consequently, delayed presentations result in advanced-stage diagnoses characterized by heightened morbidity and mortality [1-3].

Acute scrotum (AS) manifests as a medical and surgical emergency, presenting with clinical symptoms such as sudden-onset acute pain, swelling, and tenderness of the scrotum. The diverse etiologies contributing to AS include testicular

torsion (TT), epididymo-orchitis (EO), torsion of the appendix testis (TAT), infected hydroceles, and strangulated inguinal hernias. The incidence and prevalence of these etiologies vary across different age groups [4-6]. Cystic scrotal swellings encompass a spectrum of conditions, including hydrocele (the most common), epididymal cysts, Spermatocele, haematocele, pyocele, chylocele, parasitic cysts, and sebaceous cysts. Chronic testicular pain can arise from diverse causes such as infection, tumor, hernia, torsion, hydrocele, spermatocele, varicocele, referred pain, trauma, and prior surgeries [7-8].

Testicular torsion (TT) represents a surgical emergency, constituting approximately 10% to 15% of all acute scrotal disease cases. Given the critical

nature of tissue perfusion compromise in TT, a narrow window of four to eight hours exists before significant ischemic damage occurs. Timely management within the initial six hours yields testicular salvage rates ranging from 90% to 100%. Hence, prompt differentiation of TT from other causes of acute scrotal pain is imperative to prevent adverse outcomes, including the possibility of requiring orchiectomy. Definitive treatment for TT involves surgical exploration, often followed by orchiopexy to mitigate the risk of recurrent torsion [9, 10]. This study aimed to ascertain the incidence of scrotal pathologies in the India, detailing their presentation, diagnosis, and subsequent management.

Material and Methods

A cross-sectional investigation was conducted at a tertiary care hospital in India, encompassing all patients admitted with acute scrotal diseases. Purposive sampling was employed, involving patients who expressed willingness to provide informed consent for participation, across various age groups. The study also encompassed swellings originating from the skin. Exclusion criteria comprised patients unwilling to provide informed consent, those with inguinal scrotal swellings, and individuals with systemic diseases involving the scrotum.

All eligible patients underwent scrotal examination, coupled with a comprehensive history-taking and thorough clinical examination. Diagnostic investigations, including complete blood count (CBC), renal function tests (RFT), C-reactive protein (CRP), human immunodeficiency virus (HIV) screening, hepatitis C virus (HCV) screening, hepatitis B surface antigen (HbsAg) testing, liver function tests (LFT), prothrombin time/international normalized ratio (PT/INR), and inguinoscrotal ultrasonography (USG), were conducted according to the inclusion criteria. Surgical procedures were

carried out by experienced surgeons, all adhering to the same surgical protocol. In instances where biopsy was performed, the specimens were collected and duly documented. The outcomes were analyzed based on the extent of patient recovery from scrotal diseases through either conservative or operative management.

Results

In this study, the majority of participants were in the 21-30 years age group, followed by the 31-40 years age group (Table 1). Most participants were from rural areas.

A significant portion had a short hospital stay of less than 5 days, while only about 10% had stays exceeding 10 days. Patient complaints included heaviness, fever, scrotal discharge, scrotal swelling, and testicular pain (Table 2). Micturition difficulty was reported by 34%, and 9 participants showed absence of testis on examination.

Co-morbidities included hypertension, diabetes mellitus, and tuberculosis. Personal history revealed constipation, burning sensation, and redness in urine. Addictive habits included alcohol consumption, and tobacco chewing.

Scrotal examination findings included positive transillumination and fluctuation (Table 3). Blood investigations mostly showed normal values, with some cases having increased total leucocyte count and serum creatinine levels. Investigations revealed HbsAg and HIV positive findings, pus cells in urine, and elevated Beta-HCG. Complications included testicular torsion and acute epididymo-orchitis. Hydrocele was the most common diagnosis (Table 4). Treatment involved surgery in majority of cases, while 12% received conservative treatment. Mortality was 2%, with the rest discharged after proper treatment for acute scrotum and its complications.

Table 1: Age distribution of the study participants

Age Groups (in Years)	n	%
<20	7	7.87
21-30	34	38.20
31-40	23	25.84
41-50	14	15.73
>50	11	12.36
Total	89	100.00

Table 2: Duration of first presentation from onset of symptoms

Days till presentation	n	%
<5	34	38.20
5-7	25	28.09
8-10	21	23.60
>10	9	10.11

Table 3: Symptoms and Signs at presentation in study population

Symptom	n	%
Testicular Pain	36	40.45
Fever	32	35.96
Scrotal Enlargement	23	25.84
Scrotal Discharge	14	15.73
Heaviness	9	10.11
Clinical Examination		
Transillumination Positive	36	40.45
Fluctuation Positive	25	28.09

Table 4: Diagnosis of Scrotal swellings

Diagnosis	n	%
Hydrocele	29	32.58
Epididymitis	21	23.60
Spermatocele	15	16.85
Orchitis	10	11.24
Varicocele	4	4.49
Testicular trauma	2	2.25
Hematocele	2	2.25
Testicular torsion	1	1.12
Incarcerated scrotal hernia	1	1.12
Testicular tumor	1	1.12
Scrotal hernia	1	1.12

Discussion

Acute Scrotum represents a medical emergency characterized by a sudden and painful swelling of the scrotum or its contents, accompanied by both local and general symptoms. This condition encompasses a diverse range of potential diagnoses, including testicular torsion, appendiceal torsion, testicular infarction due to vascular insult, testicular rupture, intratesticular hematoma, testicular contusion, hematocele, and infectious conditions such as acute epididymitis, acute epididymo-orchitis, acute orchitis, insect bites, abscess, gangrenous infections (Fournier's gangrene), and inflammatory conditions like Henoch-Schonlein Purpura (HSP) vasculitis of the scrotal wall.

Additionally, incarcerated and strangulated inguinal hernias, with or without associated testicular ischemia, and acute on chronic events like spermatocele, hemorrhage, or infection, as well as testicular tumors with rupture, hemorrhage, and varicocele, are included. Among these, testicular torsion and epididymo-orchitis emerge as the most prevalent. Patients presenting with acute scrotal pain in the emergency department often pose a diagnostic challenge, as physical examination alone may not suffice to differentiate between several etiologies [11-14].

Critical and compromised tissue perfusion in testicular torsion establishes a four to eight-hour window before significant ischemic damage occurs. Consequently, prompt management within the first six hours yields testicular salvage rates ranging from 90% to 100%. It is imperative to promptly diagnose

and differentiate testicular torsion from other causes of acute scrotal pain, as delayed management may lead to adverse outcomes, including decreased testicular fertility and non-viability, necessitating orchiectomy [15-17].

Distinguishing testicular torsion from other causes of pain is crucial, as timely surgical exploration is indicated to preserve the affected testicle. Low salvage rates often result from misdiagnosis and delayed presentation, with late presentation being a primary cause of orchiectomy. Unfortunately, clinical signs of acute epididymitis, torsion of the appendix testis, and testicular torsion can overlap, making clinical differentiation challenging. High-Resolution Ultrasonography (HRUS) and Color Doppler Ultrasonography (CDUS) serve as excellent tools to differentiate between surgical and non-surgical emergencies of the scrotum [18-20].

In our study, which included an analysis of 89 patients admitted to a tertiary-level health center, testis torsion was identified as the most common cause of acute scrotum followed by acute epididymo-orchitis. The age distribution in our study revealed that the majority of participants belonged to the 21-30 age group, with the least number of participants below 20 years of age.

This contrasts with the findings of previous studies. Furthermore, our study observed duration of symptoms ranging from a few hours to more than a week, with the shortest duration of hospitalization being less than 5 days. This is in contrast to previous studies, where the shortest duration of symptoms was 3 hours and the longest was 21 days. The

average duration of pain from onset until presentation in cases of epididymo-orchitis in our study was 3.46 days, differing from the previous studies [18-21]. All patients in our study underwent ultrasonography, with 88% requiring surgical treatment and 12% managed conservatively. This contrasts with the previous research study where majority of patients with acute scrotum had epididymitis and/or orchitis. Syed MK [22] et al conducted a study involving scrotal exploration procedures, with left-side involvement being more common than the right side.

Most patients were older than five years of age, and a majority presented after 24 hours of symptom onset. Torsion of the appendix testes was found in 47.47% of participants and was appropriately managed. Testicular torsion occurred in 15 patients, with eight viable testes salvaged through orchidopexy, and seven non-viable testes necessitating orchiectomy. Other findings included epididymo-orchitis and infected hydrocele, while 19 testes appeared completely normal upon scrotal exploration.

Conclusion

Our study underscores the effectiveness of adopting a conservative approach as the primary strategy in managing cases of epididymo-orchitis. In contrast, for conditions like pyocele, haematocoele, torsion testis, testicular abscess, and Fournier's gangrene, superior outcomes were observed with emergency scrotal exploration. It is imperative to customize the intervention based on the particular pathology to optimize patient outcomes in scrotal conditions.

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