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A silent menace: Urethral trauma and ravages of Fournier's gangrene

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Abstract
Fournier's gangrene is a life-threatening necrotising fasciitis of the perineum, often resulting from a urogenital or anorectal infection. Urethral trauma, although less common, can act as a precipitating factor. This case highlights an unusual presentation of Fournier's gangrene secondary to urethral stricture following trauma. A middle-aged male, with no prior co-morbidities, presented with painful scrotal swelling six weeks after sustaining trauma to the scrotum. The patient reported poor urine flow and straining to void. On examination, the scrotal wall was edematous, and there was urine leakage. Immediate management involved a suprapubic cystostomy and emergency debridement. Further intervention included cystoscopy and internal urethrotomy to address the urethral stricture. Testicular replantation into the scrotum was performed after defect closure, following daily dressings and debridements. This case exemplifies Fournier's gangrene arising from a rare pathological process: post-traumatic urethral stricture leading to periurethral gland infection. The rupture of an abscess in this region resulted in urinary extravasation into the scrotum, ultimately causing gangrene. Timely intervention with a multidisciplinary approach, including surgical debridement, urinary diversion, and stricture management, was crucial for a successful outcome. Multidisciplinary management is key to reducing morbidity and mortality in such complex presentations.

Keywords: Fournier's gangrene, cystoscopy, internal urethrotomy, urethral stricture, testicular

Introduction

Fournier's gangrene is a disease characterised by necrotising fasciitis of the perineal and genital region, resulting from synergistic polymicrobial infection [1]. The aggressive disease process is associated with a high mortality rate of 20-30%. In addition, the increasing age and prevalence of diabetes in the population, begs the need for increased clinical awareness of Fournier's gangrene with emphasis on early diagnosis and management [2]. Risk factors include immunosuppression, trauma, alcohol, etc. The most common foci include the gastrointestinal tract (30–50%), followed by the genitourinary tract (20–40%), and cutaneous injuries (20%) [3].

Diagnosis starts with history, clinical presentation, laboratory and imaging tests, confirmed with exploratory surgery. Management requires prompt treatment with surgical removal of dead tissues, antibiotics, adequate nutrition & reconstructive surgery, if needed.

Case Summary

A middle aged moderately nourished male presented with painful scrotal swelling & urine leakage through scrotal wall since 3 days. He reported poor stream of urine associated with straining since 3 weeks. Patient also complained of fever & burning micturition 3 weeks back, which resolved after taking medication in 5 days. On further history taking, patient revealed history of sustaining trauma to scrotum 6 weeks ago. Patient had no co-morbidities.

Fig 1: Fournier s gangrene

On physical examination, a significant scrotal swelling measuring 22 × 20 cm, extending up to the root of scrotum was noted and scrotal wall appeared markedly edematous [Figure 1]. A notable finding was leakage of urine through the scrotal wall, suggesting a possible urinary fistula or underlying urinary tract pathology. Interestingly, penis was normal in appearance, with no abnormality. Initial laboratory work-up revealed marked leucocytosis and urinalysis showed a heavy presence of pus cells, suggestive of urinary tract infection, and subsequent urine culture isolated Escherichia coli (E. coli), a common uropathogen. Attempts at urethral catheterization were unsuccessful, necessitating alternative methods of urinary drainage. As an immediate measure, supra-pubic cystostomy was performed to divert urine and relieve pressure.

This was accompanied by emergency surgical debridement to remove devitalised tissue from the scrotal area, addressing ongoing infection and tissue damage [Figure 2]. Next, diagnostic cystoscopy was undertaken, which revealed urethral stricture associated with fistula, likely contributing to urinary leakage through the scrotal wall [Figure 3]. In view of this, a urethrotomy was performed to manage stricture, followed by successful placement of perurethral catheter to ensure continued drainage and healing. Postoperatively, patient was managed with daily dressing changes and regular wound debridement to promote granulation and control local infection [Figure 4]. Over time, once the wound bed was deemed healthy and free of infection, definitive closure was achieved through secondary suturing [Figure 5].

Fig 2: Slough and urine leak from fistula (POD2)

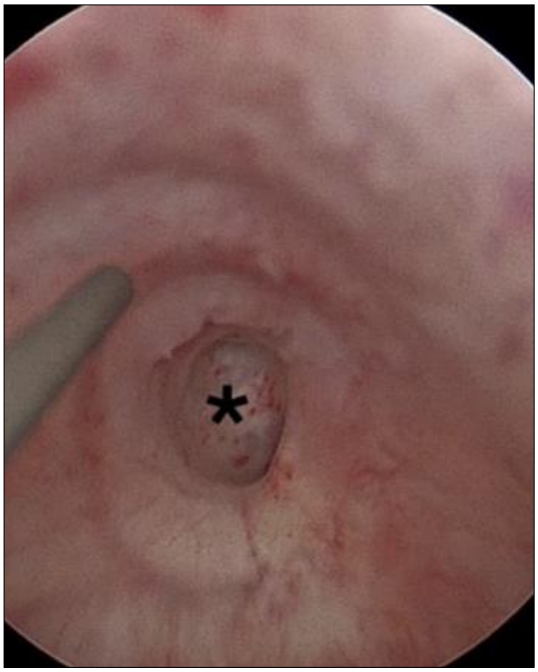

Fig 3: Cystoscopic image Asterisk showing urethral stricture (Day 14)

Fig 4: on daily dressing with local applicatio of metronidazole ontment (day

Fig 5: Repositioning of testes in scrotum with defect closure (Day 37)

Patient was asymptomatic on follow up and voiding normally.

Discussion

Fournier's gangrene is a rapidly progressive, life-threatening necrotising fasciitis of the perineal, genital, or perianal regions. While most common aetiologies involve perianal or genitourinary sources of infection, this particular case highlights an atypical and rare pathophysiological mechanism. In our patient, development of Fournier's gangrene was secondary to a unique sequence of events: an underlying urethral stricture led to obstruction of urinary flow, which in turn predisposed the patient to periurethral gland infection. As the infection progressed, it culminated in formation and subsequent rupture of periurethral abscess. The rupture resulted in urinary extravasation into surrounding soft tissues, particularly into the scrotum, creating a nidus for polymicrobial infection and ultimately leading to gangrene formation. This sequence is not commonly reported as a cause of Fournier's gangrene. It underscores the importance of considering obstructive uropathy and its downstream effects in patients presenting with spontaneous scrotal swelling and systemic signs of infection, especially when accompanied by difficulty in voiding.

Early recognition of this rare etiology is essential because it significantly alters the management pathway. In such cases, initial attempts at urethral catheterization may fail, and prompt establishment of urinary diversion—typically via suprapubic cystostomy—is crucial to prevent further extravasation and to aid in infection control. This should be immediately followed by aggressive surgical debridement of necrotic tissue, broad-spectrum antibiotic therapy, and supportive care.

Definitive management includes not only infection control but also correction of the underlying anatomical abnormality. In our patient, diagnostic cystoscopy confirmed urethral stricture associated with a fistulous tract. Urethrotomy was performed to restore urethral patency, and perurethral catheterization was successfully achieved.

Various reconstruction techniques after replacement of the testes back to the scrotum have been used, such as delayed primary closure of the scrotal skin, and the use of local scrotal advancement flap, split- thickness skin graft, superomedial thigh flap, pudendal thigh flap, medial circumflex artery perforator flap, and gracilis flap [4]. Due to the laxity of the scrotal skin, a delayed primary closure is possible in most cases after repositing the testes to the scrotum.

On follow-up, patient remained asymptomatic, with complete wound healing and normal voiding function, underscoring the importance of timely intervention and coordinated multidisciplinary care in complex presentations of Fournier's gangrene.

Conclusion

In conclusion, this case emphasises the need for clinicians to maintain a high index of suspicion for urinary tract obstruction and periurethral abscess in patients with Fournier's gangrene, particularly when spontaneous voiding is impaired. The presence of scrotal urine leak and failed urethral catheterization should prompt urgent imaging and early surgical intervention. This case also highlights successful management of Fournier's gangrene in an immunocompetent male with a background of post-traumatic urethral stricture using a multidisciplinary approach that integrated surgical, urological, and wound care expertise. Management involved meticulous wound debridement, urinary diversion via suprapubic cystostomy, definitive urethrotomy to relieve the stricture, and defect closure.

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