Case Report

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Surgery Section

Managing Fournier's Gangrene with Bilateral Orchidectomy While Preserving the Scrotum: A Case Report

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ABSTRACT

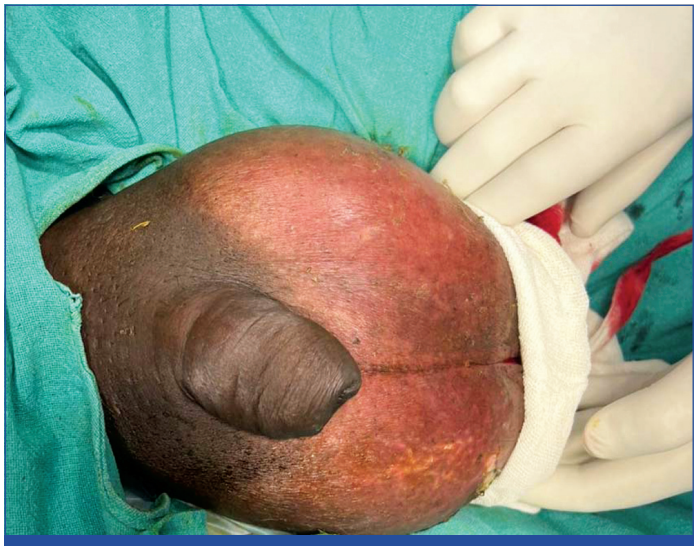
Fournier's Gangrene (FG) is a fast-progressing, life-threatening necrotising fasciitis of the perineal and genital areas, which is common in individuals who have uncontrolled diabetes or other immunocompromised state. The present case is about a 45-year-old diabetic male, who presented with rapidly progressive bilateral swelling of scrotal region, foul discharge, and septic shock. Aggressive resuscitation, intravenous antibiotics, vasopressor support and urgent surgical exploration were all part of emergency management. Intraoperatively, extensive necrosis of scrotal fascia along with non-viable testes was found, thus requiring bilateral orchidectomy with wide excision of necrotic tissue. Surgical, chemical and enzymatic debridement was done to the patient postoperatively, and daily dressings were meticulously done. Interestingly, the scrotectomy was not done, and the wound healed by secondary intention, giving a good contour thus eliminating the need for grafting or flap reconstruction. The present case highlights the need of timely diagnosis, multidisciplinary and aggressive management, and customised wound care in achieving positive results in such cases, even in bilateral testicular involvement.

Keywords: Debridement, Diabetes mellitus, Necrotising fasciitis, Scrotal preservation, Septic shock

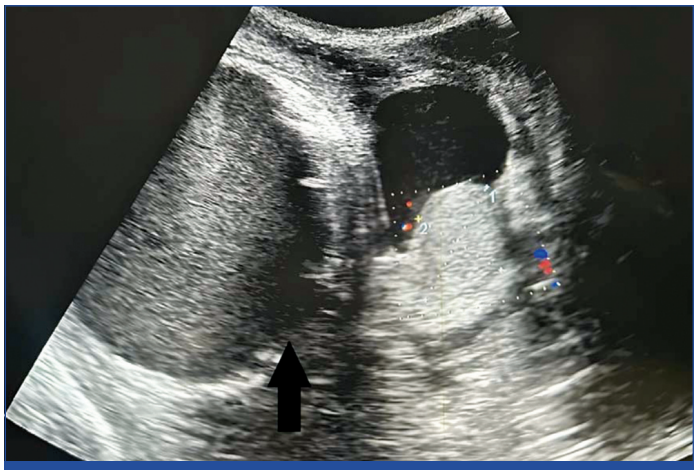
CASE REPORT

A 45-year-old Indian male presented with bilateral scrotal swelling that had been increasing gradually in size for the past five years, along with acute worsening over the preceding three days marked by rapid enlargement and foul-smelling purulent discharge. The patient was a known case of diabetes mellitus for the last ten years and was on irregular treatment. Upon his admission, the patient was febrile, tachycardic, hypotensive, and toxic in appearance, consistent with septic shock. Local examination showed diffuse bilateral scrotal swelling which measured approximately 15×10 cm, with extensive skin necrosis, crepitus, and purulent discharge as shown in [Table/Fig-1].

Regular laboratory investigations showed leukocytosis (total leukocyte count: 16,000 cells/mm^3), elevated serum creatinine (2.5 mg/dL), and deranged blood glucose levels (random blood sugar: 325 mg/dL). Due to extensive soft-tissue infection, testes could not be commented upon by ultrasonography, but it showed extensive soft-tissue oedema, distorted scrotal wall, and moderate pus-like collection in the scrotal cavity [Table/Fig-2].



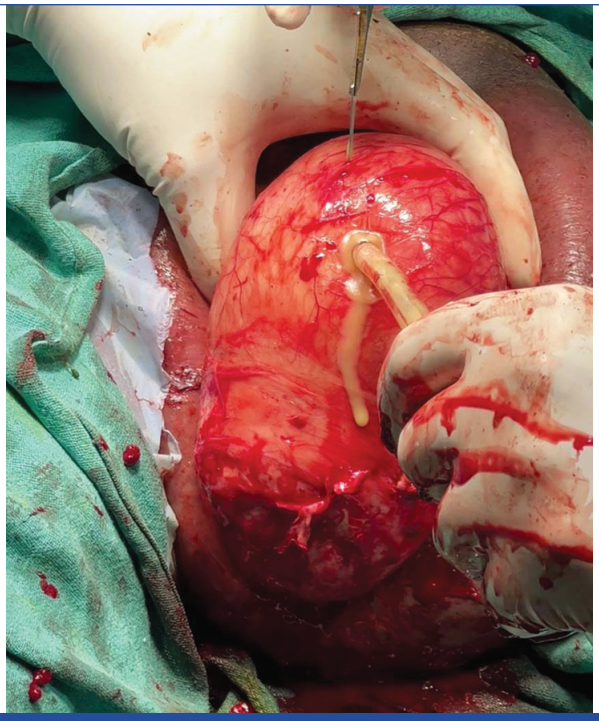
[Table/Fig-1]: Diffused bilateral scrotal swelling measuring approximately 15×10 cm, with extensive skin necrosis.



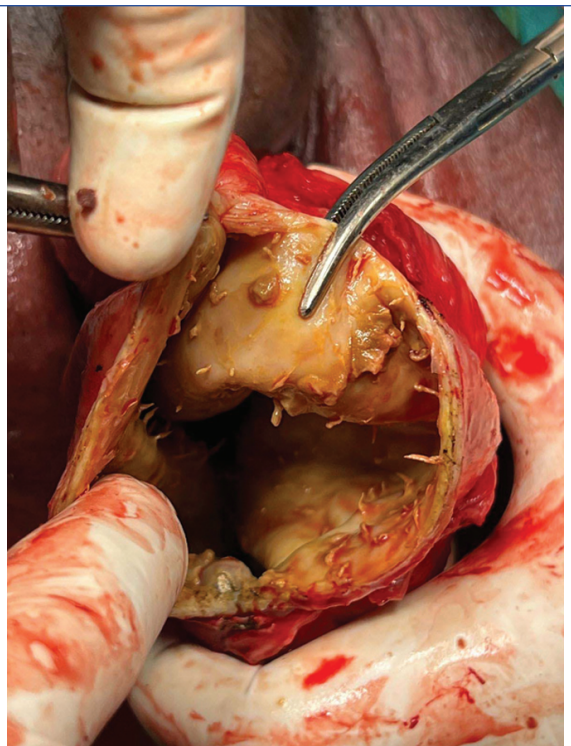
[Table/Fig-2]: Extensive soft-tissue oedema, distorted scrotal wall, and moderate pus like collection in the scrotal cavity (black arrow).

A provisional diagnosis of FG (extensive necrotising fasciitis of the scrotum) was made. The patient was thereby immediately resuscitated with intravenous fluids, insulin infusion, broad-spectrum antibiotics, and vasopressor support. Emergency surgical intervention was undertaken. Intraoperative findings revealed extensive necrosis of scrotal fascia and subcutaneous tissue and pus pockets along both the spermatic cords [Table/Fig-3]. Both testes appeared non-viable and were removed, and thus a bilateral orchidectomy with wide excision of necrotic scrotal wall while preserving viable scrotal tissue, thereby avoiding total scrotectomy, was performed [Table/Fig-4].

The wound cavity was then copiously irrigated with betadine and Hydrogen peroxide (H_2O_2) to reduce microbial load to help further in



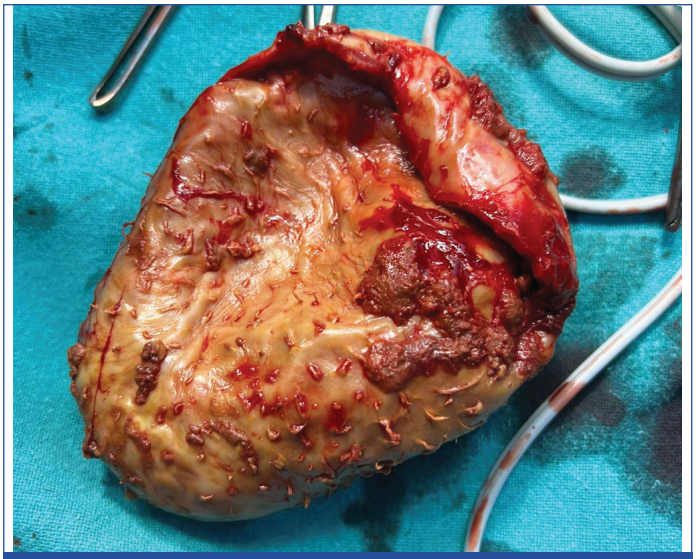
[Table/Fig-3]: Intraoperative findings revealed pus pockets along both the spermatic cords.



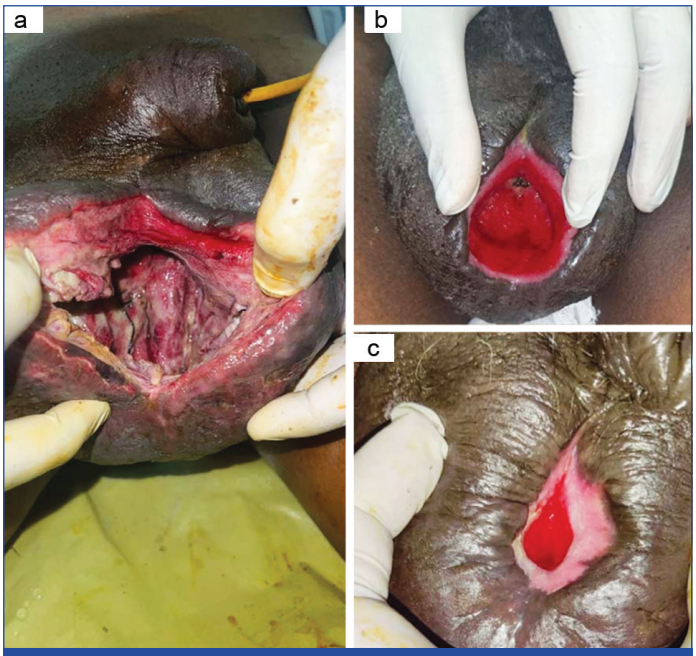
[Table/Fig-4]: Bilateral orchidectomy with wide excision of necrotic scrotal wall.

chemical cleansing, and the cavity was packed for further planned serial debridement. The excised specimen of necrotic tissue after debridement is shown in [Table/Fig-5]. The wound cavity was left open, copiously irrigated with antiseptic solution, and then packed.

Postoperatively, the patient was shifted to the intensive care unit. His wound care involved continuously repeated surgical debridement of devitalised tissue. It also included chemical debridement with the use of antiseptics (betadine, H_2O_2, and other topical solutions), enzymatic debridement, which includes application of collagenase dressings to selectively dissolve necrotic tissue while sparing viable structures. Thereby, all these debridement procedures increased the separation of slough and helped in the prevention of further infection. These dressings were performed carefully under aseptic conditions, and close attention was paid to the haemodynamic status of patient. Postoperative healing of patient is shown in [Table/Fig-6].



[Table/Fig-5]: The excised specimen of necrotic tissue after debridement.



[Table/Fig-6]: Postoperative healing of wound of patient: a) Immediately postoperative condition of wound; b) Condition of wound after initial debridement procedures; c) Condition of wound after repetitive debridement procedures.

In subsequent weeks, the wound bed had healthy granulation tissue. Serial clinical examination revealed a progressive reduction in the size of the wound. The cavity gradually contracted and eventually healed with secondary intention. It did not require any reconstructive surgeries like skin grafting and flap cover. The patient slowly recovered and was discharged in good health when the wound had completely epithelialised. He had a satisfactory scrotal contour, no infection recurrence and good functional outcome at 3-month follow-up.

DISCUSSION

The FG is a life-threatening necrotising fasciitis of the perineal, genital and perianal regions, with rapid progression, destruction of the soft-tissues, systemic toxicity, and a high mortality rate [1]. FG commonly affects middle-aged to old men with co-morbidities, especially diabetes mellitus, immunosuppression, alcoholism or vascular disease [2]. Although bacterial infections (often polymicrobial) are the primary proximate causes of FG, in endemic areas, chronic lymphatic pathology, including filarial infection, has also been listed among the less common comorbid or predisposing conditions [2,3]. Early symptoms are usually not specific: pain, swelling, erythema of genital, perineal or perianal skin; with the progression of the infection, few manifestations such as skin necrosis, crepitus, purulent discharge with a foul smell, systemic symptoms (fever,

tachycardia, hypotension), rapid extension along fascial planes (Dartos, Colles, Scarpa fascia) become evident [4,5].

The FG needs a multimodal and aggressive management. Emergent and radical surgical debridement of all necrotic tissue, broad-spectrum intravenous antibiotics against aerobes and anaerobes, haemodynamic resuscitation, and supportive care in an intensive environment are the primary aspects of treatment [4,6]. Adjunctive treatment also involves repeated serial debridements, diversion (urinary or fecal) where necessary, hyperbaric oxygen therapy and reconstructive surgery (skin grafts, flaps) when infection has been controlled [6]. Earlier studies reported very high mortality rates in FG, which usually range from 20% to 40%, with some series documenting mortality as high as 45-50% [7,8]. The article presents a rare case of FG necessitating bilateral orchidectomy that was successfully treated with serial surgical, chemical, and enzymatic debridement without scrotectomy or reconstructive flap surgery; it highlights role of personalised wound care for good patient outcomes.

In a case reported by Suleimanov V et al., a 40-year-old diabetic male patient from Saudi Arabia presented with 10 days of fever, scrotal pain, and swelling and was initially treated with debridement and antibiotics as a scrotal abscess, but later he progressed into necrotising fasciitis of the abdominal wall, retroperitoneum and lower back, which required repeated extensive debridements and Vacuum Assisted Closure (VAC) therapy. Multidrug-resistant organisms (Group A Beta-Haemolytic *Streptococci*, *Escherichia coli,* Enterococci) were identified in cultures, and despite escalating to piperacillin/tazobactam and clindamycin, there was persistent fever, leukocytosis, along with right pleural effusion. This was later traced on Computed Tomography (CT) to a large right subphrenic abscess, further successfully drained with a pigtail catheter growing *Escherichia coli, Pseudomonas* and *Acinetobacter* [9]. This resulted in a split-thickness skin grafting operation from both thighs on day 34 with wound granulation and bilateral anteromedial thigh flap scrotal reconstruction on day 46, and all went well with no flap necrosis or infection.

In a case reported by Takahashi T et al., an 85-year-old male from Japan with diabetes, heart failure, cerebral infarction, and with neurogenic bladder on catheterisation who presented with fever, oliguria, scrotal pain, swelling, blackened scrotal skin, and crepitus to the lower abdomen. His laboratory investigations showed leukocytosis, high C-Reactive Protein (CRP), anaemia, hypoalbuminaemia, electrolyte imbalance, and electron-CT scan also revealed extensive subcutaneous emphysema, confirming FG. He was treated conservatively at first with meropenem, as the family refused to undergo surgery, he improved later on, and scrotal debridement on day 18 showed necrosis with the exposed right testis, cultures included *Enterococcus faecium*, *Enterobacter cloacae* and *Pseudomonas aeruginosa*. The remaining subcutaneous emphysema necessitated repeat debridement and abscess drainage and scrotal closure on day 31, followed by recovery, discharge on day 52 and readmission to his nursing facility in stable condition [10].

In a case reported by Provenzano D et al., a 66-year-old male patient from Italy presented with a history of uncontrolled type 2 diabetes, obesity, chronic kidney failure, and chronic heart failure who had painful perianal swelling of 14-day duration, fever, tachycardia, and hypertension. CT revealed a 6x4 cm perianal abscess with rectal displacement, fat stranding, multiple gas pockets, and small lymphadenopathy, which confirmed the diagnosis of FG. Although the extent of the disease justified colostomy, due to his co-morbidities, urgent surgical debridement was done together with i.v. fluids, metronidazole and meropenem. Cultures of *Escherichia coli* were seen and targeted antibiotics were maintained. He had three debridements and five wound revisions, exhibited progressive healing without grafting and was discharged after 20 days, and continued with outpatient wound care using bioactive and hydrocolloid dressing until he improved [11].

CONCLUSION(S)

The present case emphasises the significance of timely diagnosis, resuscitation and surgical intervention in FG, especially in uncontrolled diabetic patients. Despite extensive necrosis and bilateral orchidectomy, serial surgical and chemical, enzymatic debridements with careful wound management resulted in secondary healing without scrotectomy or reconstruction flap.

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