

FOURNIER'S GANGRENE: A CASE REPORT ON LIFE- SAVING DEBRIDEMENT TO SCROTAL RECONSTRUCTION

General Surgery

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ABSTRACT

Fournier gangrene is necrotizing fasciitis of the genitalia and perineum that can extend to the abdominal wall, gluteus or lower extremities. Predisposing factors for Fournier gangrene include obesity, diabetes mellitus (DM), alcoholism, smoking, hypertension, chronic kidney disease, perianal trauma and immunosuppressive conditions: A 57-year-old male from Chennai presented to the General Surgery OPD with a one-week history of scrotal swelling, pruritus, and discomfort. His symptoms progressed to severe pain, fever, and foul-smelling discharge. He had no history of trauma but was newly diagnosed with uncontrolled type 2 diabetes mellitus (T2DM), systemic hypertension (SHTN), and ischemic heart disease (IHD) during admission. Emergency debridement was performed, followed by multiple wound dressings and eventual scrotal and penile reconstruction with a split-thickness skin graft. Fournier's gangrene requires prompt intervention to prevent systemic sepsis and mortality. In this case report, staged debridement followed by flap-based reconstruction and skin grafting achieved excellent outcomes. Challenges included metabolic control, surgical risk due to ischemic heart disease, and post-operative wound management. This case highlights the multidisciplinary approach and surgical techniques required for successful management and recovery in high-risk patients.

KEYWORDS

Fournier's gangrene, surgical debridement, scrotal reconstruction, split - thickness skin grafting

INTRODUCTION

Fournier's gangrene (FG), a life-threatening necrotizing soft tissue infection that involves the genital, perineal, and perianal regions (1,6). As Fournier's gangrene is uncommon, it is difficult to diagnose this disease before necrosis or gangrene sets in, and disease progression, even to mortality, is rapid (1). In males, it commonly involves the scrotum and the testicles are usually spared. Various risk factors contribute to the development of this condition, including diabetes mellitus, alcoholism, malnutrition, smoking, hypertension, malignancy, sodium-glucose cotransporter-2 (SGLT2) inhibitors, immunosuppressive therapy, and organ failure (6). The microbes involved act synergistically via various enzymes like collagenase and hyaluronidase to invade and destroy tissue fascial planes (7).

There are two types: Type I is due to a mixture of aerobic and anaerobic organisms usually following an abdominal operation or associated with diabetes mellitus. Type II is due to Group A Streptococcus synergistic with a second organism (Staphylococcus aureus, Coliforms, Bacteroides spp.) (9). The characteristic symptoms of FG include severe genital pain, rapidly spreading cellulitis, and systemic toxicity manifestations [2,7]. Prodromal symptoms such as fever and lethargy may precede the onset of perineal edema, intense pain, and tenderness by up to seven days. As the condition progresses, the affected skin over the genitalia may darken, accompanied by purulent discharge and subcutaneous crepitation, while the pain diminishes due to nerve tissue necrosis (2,6,9).

FG is characterized by high mortality rates (range, ~13–45%) and represents an acute urological and surgical emergency. In this severe complication, morbidity and mortality depend on early recognition and diagnosis, hemodynamic stabilization, effective antibiotic treatment, and urgent aggressive surgical debridement (10). Several reconstructive techniques can achieve coverage of soft-tissue defects, including split thickness skin grafts, local advancement flaps, scrotal flaps, fasciocutaneous flaps, muscle or myocutaneous flaps, perforator flaps and testicular transposition (2).

CASE REPORT

A 57 year old male came to General Surgery OPD with complaints of swelling in the scrotal region since 1 week. The patient was apparently normal 1 week back after which, he had pruritus and discomfort over the scrotal region, later developed a diffuse swelling in the scrotum. Complaints of pain, fever, foul smelling discharge. Patient is unaware of his glycemic status. Diagnosed with Uncontrolled diabetes mellitus, systemic hypertension and Ischemic heart disease during admission.

On examination of external genitalia, Scrotal swelling of size 10x 10 cm involving the entire scrotal region, Skin- red and stretched, Shiny, Blackish discoloration and gangrenous skin present over the left side

of scrotum, loss of rugosity, Penis buried in the scrotal swelling, Penile edema present, Foul smelling discharge present over the gangrenous site of scrotum, Both testis and cord structures were not palpable as the scrotum is edematous, No inguinal lymph nodes palpable.

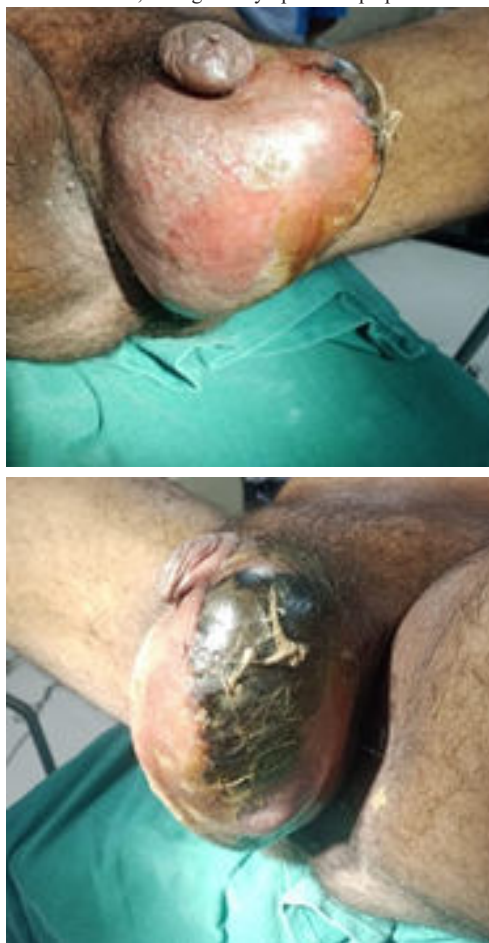


Figure 1. Preoperative picture of fournier's gangrene of scrotum

All routine blood investigations were done, which showed leukocytosis. Patient was in Diabetic Ketoacidosis. ECG was abnormal, hence cardiologist opinion and medicine opinion obtained

and orders were followed. since the patient was in the life threatening condition, planned for emergency surgical debridement.

SURGICAL DEBRIDEMENT

Under spinal anaesthesia ,patient in lithotomy position ,parts painted & draped. in view of phimosis and penile edema ,dorsal slit made and foleys catheterization done. Extensive debridement done until healthy tissue visible. Around 50ml of pus and blood was drained. Both testis & cord structure appears to be spared. The necrotizing fascitis was not extending into inguinal region. Complete hemostasis achieved. Wound wash given with saline, betadine and with hydrogen peroxide. dressing was done with bactigras. Pus sent for culture sensitivity & scrotal skin for tissue culture & sensitivity.

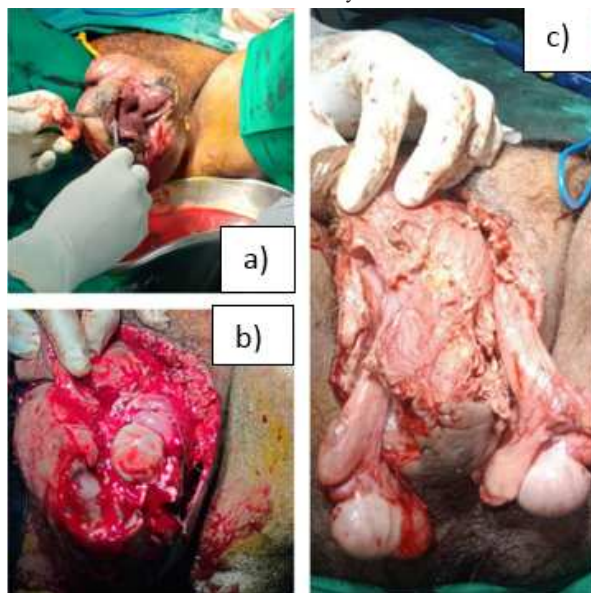


Figure 2. Intra operative pictures

- (a) debridement of necrosed scrotal skin,
- (b) testis & cord structure appear to be spared,
- (c) debridement done until healthy tissue visible.

POST OPERATIVE CARE –SERIES OF WOUND DRESSING

Post operative period were uneventful. Patient was treated with antibiotics, analgesics. Glycemic control and hypertensive management done. Pus culture and sensitivity report showed heavy growth of *Escherichia Coli* and antibiotics continued according to sensitivity. Electrolytes correction done accordingly. post operatively, wound debridement under local anaesthesia on daily basis until healthy granulation tissues were seen. Plastic surgeon and urologist opinion obtained regarding scrotoplasty and penoplasty. Bilateral thigh preparation done 1 week prior to the surgery.



Figure 3. Healthy granulation tissues seen after series of wound debridement

RECONSTRUCTIVE SURGERY

Under Epidural anaesthesia , parts painted and draped. Excess

granulation tissue removed. Median raphe of the scrotum split into two segments and the flaps was used to close the scrotum. Penis-release incision made, raw area in the penis closed and reconstructed. scrotal release incisions made and closed upto 70 % . split skin graft taken from the left thigh and it is fixed to the raw area which is present in the scrotum. Dressing done. Scrotal support applied.

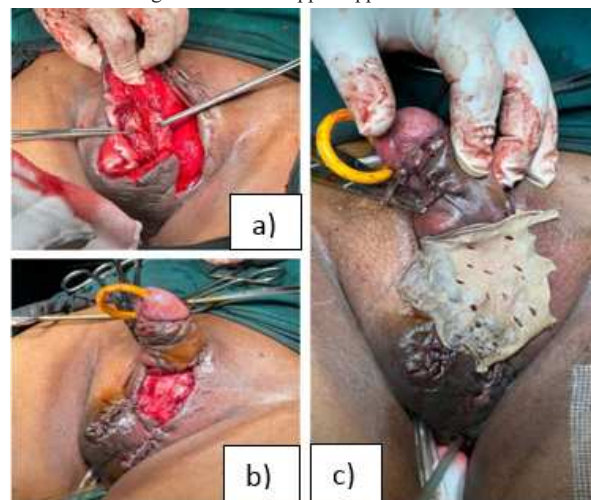


Figure 4. Scrotal Reconstruction

- (a) Median raphe of the scrotum was split and the flaps were used to close the scrotum,
- (b) Penile and scrotal release incisions made and was closed,
- (c) SSG taken from the left thigh and fixed to the raw area.

OUTCOMES AND FOLLOW UP

Post operative period uneventful. USG scrotum done after 2 weeks which showed, bilateral testis and epididymis normal in echotexture and vascularity. patient symptomatically recovered and discharged.



Figure 5. After scrotal reconstruction (On POD 14)

DISCUSSION

Necrotizing fasciitis is a rapidly progressive inflammatory infection of the fascia, with secondary necrosis of the subcutaneous tissues. Fournier's gangrene, a rare necrotizing soft tissue infection of the

perineum, constitutes a true urological emergency, characterized by a high mortality rate (6). The differential diagnosis of Fournier's gangrene includes many conditions, such as cellulitis, acute epididymitis, orchitis, strangulated hernia, scrotal abscess, streptococcal necrotizing fasciitis, vascular occlusion syndromes, herpes simplex virus infection, gonococcal balanitis, pyoderma gangrenosum, allergic vasculitis, polyarteritis nodosa, necrolytic migratory erythema, warfarin necrosis, and ecthyma gangrenosum (4).

The rate of patients affected by Fournier's gangrene who presents diabetes mellitus is estimated between 36–56%, attributed to their small vessel disease, defective neuropathy and immunosuppression (5). It begins as a local infection that is caused by bacteria inhabiting the lower gastrointestinal tract or the perineum. FG is a polymicrobial infection of the perineoscrotal region that manifests as a rapidly progressing necrotizing fasciitis (10).

The systemic signs are out of proportion to the local extent of the disease. Spread of infection is in facial planes. In due course, extensive necrosis occurs. The testes are usually spared as they procure blood supply intraabdominally (9). Fournier's gangrene necessitates aggressive multimodal approach, including, hemodynamic stabilization, early administration of broad-spectrum antibiotics, and emergency operative treatment (6,9).

Reconstruction should ideally be limited to 1 stage and should be technically simple and low cost. Orchiectomy should never be required, because the testicles and the spermatic cord have blood supply and venous drainage distinct from the skin and fascia of the perineum and the scrotum (3). Reconstructive options are split-thickness skin grafting, using residual scrotal tissues, a temporary or permanent adaptation of the exposed testes into the medial thigh, local fasciocutaneous flaps, musculocutaneous flaps, or even free flaps can be used.

CONCLUSION

In conclusion, it is required a prompt application of a multimodal approach with intra-venous fluid support, antibiotic therapy, correction of metabolic disorders, and an aggressive surgical approach to improve the chance to successful therapy. Multiple debridements may be required, often resulting in significant soft-tissue loss requiring reconstruction. The goals of reconstructing Fournier defects are to provide protective coverage of the testes, preserve testicular function, and gain acceptable cosmetic results with minimal associated morbidity and mortality. For defects larger than 50% of the scrotum or extending beyond the scrotum, split-thickness skin grafting or flap reconstruction is recommended. Skin grafting is a simple and technically easy procedure, can be performed in a single stage, and can cover large defects with acceptable functional and cosmetic results. The thin skin resembles normal scrotal skin. This case highlights the importance of early diagnosis, aggressive debridement, and tailored reconstruction techniques in Fournier's gangrene. A multidisciplinary approach ensures better functional and aesthetic outcomes successfully, even in high-risk patients.

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