RESEARCH PAPER

A Case of Successful Reconstruction Following Extensive Fournier's Gangrene

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ABSTRACT
Fournier's gangrene is a rapidly progressive necrotising infection of the perineum and genitalia with high mortality. Early diagnosis, aggressive debridement, antibiotics, and multidisciplinary care are essential. This case highlights successful staged management and reconstruction using superomedial thigh flaps.
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INTRODUCTION

Fournier's gangrene is an aggressive, rapidly progressive necrotising fasciitis involving the perineum, perianal region, and genitalia. It is characterised by widespread fascial destruction caused by a polymicrobial synergy of aerobic and anaerobic organisms, leading to thrombosis of subcutaneous vessels, tissue ischemia, and fulminant gangrene. The condition predominantly affects elderly or immunocompromised males, particularly those with uncontrolled diabetes mellitus, alcoholism, renal insufficiency, or peripheral vascular disease. Despite advances in critical care, the mortality rate remains high, emphasising the need for early diagnosis, prompt surgical debridement, broad-spectrum antimicrobial therapy, and meticulous supportive care. This case report details a patient with extensive Fournier's gangrene who underwent staged debridement and successful reconstruction, demonstrating the importance of a multidisciplinary approach.

Fournier's gangrene is a fulminant, necrotising fasciitis that predominantly involves the perineum, perianal region, and genitalia. First described by Jean Alfred Fournier in 1883, the condition is characterised by rapid progression, severe systemic toxicity, and a polymicrobial synergistic infection involving aerobic and anaerobic organisms.

The disease process begins in the fascial planes, spreading swiftly due to poor tissue perfusion and the presence of gas-forming organisms. Mortality remains high—ranging from 20–40% despite modern advances, primarily due to delayed diagnosis, uncontrolled sepsis, and associated comorbidities such as diabetes mellitus, chronic kidney disease, alcoholism, and immunosuppression.

Early diagnosis and immediate intervention are the cornerstones of survival. The cornerstone of therapy includes urgent surgical debridement, aggressive fluid resuscitation, hemodynamic stabilization, broad-spectrum antibiotic therapy, and meticulous postoperative wound care. Patients often suffer major tissue defects following debridement, necessitating complex reconstructive strategies that aim to restore functional and cosmetic integrity of the genital region. The present case highlights the successful use of superomedial thigh flaps in managing an extensive scrotal defect following Fournier's gangrene.

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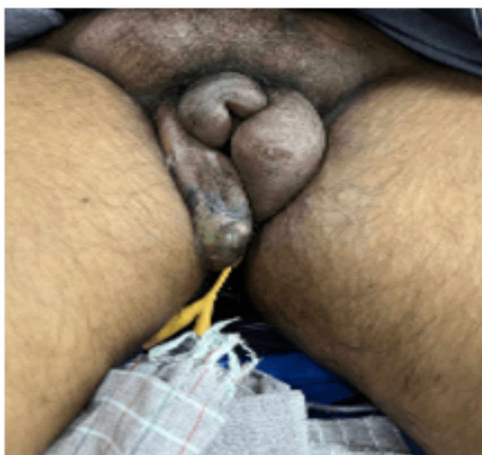


CASE PRESENTATION

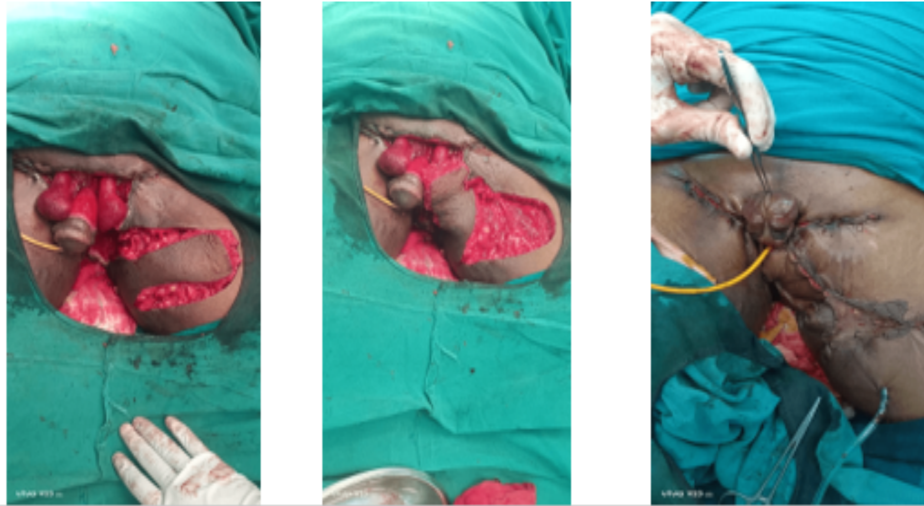
A 48-year-old male with long-standing, poorly controlled type 2 diabetes mellitus presented with rapidly progressive swelling, severe pain, and foul-smelling discharge from the scrotal region for three days. His symptoms were preceded by low-grade fever, malaise, and inability to ambulate due to pain. On arrival, he was tachycardic, hypotensive, and toxic-appearing. Local examination revealed extensive scrotal edema, crepitus, purulent discharge, and areas of necrotic skin extending to the perineum. Laboratory evaluation showed leukocytosis, metabolic acidosis, acute kidney injury, and markedly elevated inflammatory markers, consistent with severe sepsis. Emergency resuscitation was initiated, followed by immediate surgical exploration. Intraoperatively, widespread fascial necrosis was noted, necessitating extensive debridement of all devitalised tissue. Post-operatively, he received broad-spectrum antibiotics, insulin infusion for glycaemic control, and intensive supportive care. Multiple wound inspections, serial debridements, and negative-pressure wound therapy facilitated wound bed optimisation. After complete infection control and granulation formation, he underwent reconstruction using a split-thickness skin graft, resulting in satisfactory functional and cosmetic outcomes. The patient recovered well, with preserved testicular viability and no recurrence on follow-up.

A 48-year-old male with poorly controlled diabetes mellitus presented with sudden-onset pain, swelling, foul-smelling discharge, and skin discoloration over the scrotum. He reported fever, malaise, and progressive worsening over 48 hours. On examination, he was toxic, tachycardic, hypotensive, and had erythema, tenderness,warmth over the entire scrotal region. Laboratory findings revealed leukocytosis, elevated CRP, metabolic acidosis, and hyperglycemia.

Immediate resuscitation was initiated, including intravenous fluids, insulin infusion, and broad-spectrum antibiotics comprising a carbapenem combined with clindamycin for toxin suppression. He underwent emergency surgical debridement, which revealed widespread necrosis extending through the dartos fascia, leaving both testes exposed.

Serial debridements were performed over the next few days until all non-viable tissue was removed. Vacuum-assisted negative pressure therapy (VAC) was initiated to promote granulation tissue formation, reduce bacterial load, and enhance wound contraction. After sufficient granulation tissue had developed, reconstructive planning was undertaken.

A left superomedial thigh flap was harvested to provide durable, vascularised coverage for the left testis. The right testis was placed in a subcutaneous thigh pouch to simulate a neoscrotum on the contralateral side.



The flap demonstrated excellent perfusion intraoperatively, and postoperative recovery was uneventful. The patient was discharged in stable condition and followed up regularly. At 4 months, the reconstructive outcome was aesthetically satisfactory, with preserved testicular function and no recurrence of infection.

DISCUSSION

Fournier's gangrene represents one of the most severe forms of necrotising soft tissue infections, requiring immediate multidisciplinary management. The disease progresses along fascial planes while sparing underlying muscles, leading to rapid spread and systemic toxicity. Risk factors such as diabetes mellitus, chronic alcoholism, malignancy, immunosuppression, and local trauma contribute to its development. Diagnosis is clinical but supported by imaging—ultrasound, CT, or MRI—which can identify subcutaneous gas and deep fascial involvement. Management involves aggressive fluid resuscitation, hemodynamic stabilisation, early broad-spectrum antimicrobial coverage targeting Gram-positive, Gram-negative, and anaerobic organisms, and most importantly, prompt surgical debridement. Delayed intervention significantly increases morbidity and mortality. Reconstructive strategies depend on the extent of tissue loss, ranging from healing by secondary intention to flap reconstruction. Split-thickness skin grafts remain the most commonly employed technique for large scrotal defects. Adequate timing of reconstruction—after infection control and appropriate granulation—is crucial for optimal results.

Fournier's gangrene remains a surgical emergency requiring a multidisciplinary approach involving urology, general surgery, plastic surgery, critical care, and infectious disease specialists. Rapid progression of infection in fascial planes is attributed to the synergistic action of mixed flora, including streptococci, staphylococci, enterococci, coliforms, Bacteroides, and Clostridium species. Comorbidities—particularly diabetes significantly impair immune response and microvascular circulation, accelerating disease severity.

Key determinants of outcome include:

- Time to surgical debridement
- Extent of necrosis
- Presence of shock or organ failure
- Underlying metabolic disturbances such as ketoacidosis

Reconstructive strategies depend on the size and location of the tissue defect. Options include:

1. Healing by secondary intention (for small defects)
2. Skin grafting (split-thickness grafts for well-granulated beds)
3. Local flaps (superomedial thigh flap, pudendal thigh flap)
4. Regional flaps (anterolateral thigh flap, gracilis flap)

The superomedial thigh flap used in this case offers multiple advantages:

- Proximity to defect
- Reliable vascular pedicle
- Thick, well-vascularised tissue for testicular protection
- Excellent cosmetic match

Testicular burial in the medial thigh pouch is a well-documented, safe technique for cases where local tissue is inadequate. VAC therapy, introduced prior to reconstruction, accelerates granulation, decreases bacterial load, and optimises the wound bed. Overall, success depends on staged management: sepsis control, repeated debridement, wound conditioning, and strategic reconstruction.

CONCLUSION

This case underscores the life-threatening nature of Fournier's gangrene and the critical importance of early recognition and timely intervention. Successful outcomes hinge upon prompt surgical debridement, aggressive resuscitation, infection control, and correction of metabolic derangements. Reconstructive surgery plays a pivotal role in restoring form and function once the infection is controlled. Multidisciplinary management, particularly for high-risk individuals such as diabetics, is essential to improve survival and long-term outcomes.

This case highlights the importance of timely surgical intervention, meticulous wound care, and thoughtful reconstructive planning in the management of extensive Fournier's gangrene. Using the superomedial thigh flap provided robust coverage, preserved testicular function, and yielded excellent cosmetic results. A structured, staged approach—incorporating early debridement, VAC therapy, and regional flap reconstruction—remains vital for achieving optimal outcomes in severe cases of Fournier's gangrene.

REFERENCES

1. Eke N. Fournier's gangrene: a review of 1726 cases. World J Surg.
2. Sorensen MD, et al. Fournier's gangrene: contemporary population-based analysis. J Urol.
3. Chawla SN, et al. Fournier's gangrene: management and outcomes. Urology.
4. Smith GL, et al. Reconstruction following perineal and scrotal loss. Plast Reconstr Surg.
5. Ferreira PC, et al. Fournier's gangrene: surgical strategies and outcomes. Int J Urol.