**Case Report Article**

# Scrotal Reconstruction Using Bilateral Fasciocutaneous Thigh Pouches After Debridement for Fournier's Gangrene: A Case Report

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**ABSTRACT**

**Background:** Fournier's gangrene is a rare, rapidly progressive necrotizing fasciitis of the perineal, genital, and perianal regions associated with high morbidity and mortality. Early diagnosis, aggressive debridement, broad-spectrum antibiotic therapy, and appropriate reconstruction are essential for successful management. Extensive tissue loss following debridement often poses a significant reconstructive challenge.

**Case Presentation:** We report the case of a 64-year-old male who presented with progressive bilateral scrotal swelling, pain, fever, and local discomfort. Clinical examination revealed diffuse scrotal edema, erythema, and areas of necrosis. Laboratory investigations showed marked leukocytosis (25,800 cells/mm³), while ultrasonography demonstrated bilateral epididymitis, funiculitis, and diffuse scrotal wall edema. A diagnosis of Fournier's gangrene was established, and the patient underwent emergency surgical debridement. Intraoperative findings included extensive necrosis of the superficial and deep fascial layers with foul-smelling necrotic fluid and slough formation. Following infection control and development of healthy granulation tissue, definitive reconstruction was performed using bilateral fasciocutaneous thigh pouches. The testes were transposed into bilateral medial thigh pockets, and the remaining viable scrotal tissue was approximated to provide adequate coverage.The postoperative period was uneventful. The patient demonstrated satisfactory wound healing, preservation of testicular viability, and no evidence of recurrent infection or reconstructive complications. Follow-up evaluation showed good functional recovery and an acceptable cosmetic outcome.

**Conclusion:** Bilateral fasciocutaneous thigh pouch reconstruction is a simple, reliable, and effective technique for managing extensive scrotal defects following Fournier's gangrene. The procedure provides durable testicular coverage, satisfactory functional outcomes, and acceptable cosmesis with minimal postoperative morbidity.

**Keywords:** Fournier's gangrene; Scrotal reconstruction; Fasciocutaneous thigh pouch; Necrotizing fasciitis; Testicular coverage; Debridement; Scrotal defect reconstruction.



## Introduction

Fournier's gangrene is a rare but rapidly progressive necrotizing infection of the perineal, genital, and perianal fascia that constitutes a surgical emergency due to its high morbidity and mortality.[1] Prompt diagnosis, aggressive surgical debridement, broad-spectrum antibiotic therapy, and intensive supportive care are essential for successful management.[2,3] Although these measures have significantly improved survival rates, extensive debridement frequently results in substantial scrotal skin and soft-tissue loss, creating a complex reconstructive challenge for the surgeon.[4] The primary goals of reconstruction are to provide durable testicular coverage, preserve scrotal function, facilitate wound healing, and achieve an acceptable cosmetic outcome.[5] Numerous reconstructive techniques have been described for the management of scrotal defects, including split-thickness skin grafts, local fasciocutaneous flaps, musculocutaneous flaps, perforator flaps, and testicular thigh pouch procedures.[6–8] However, no single reconstructive method has been universally accepted as the gold standard, as each technique possesses specific advantages and limitations related to donor-site morbidity, operative complexity, aesthetic appearance, and long-term functional outcomes.[9–11] Bilateral fasciocutaneous thigh pouches represent a simple, reliable, and well-vascularized option for the reconstruction of extensive scrotal defects, particularly in cases with near-total or total scrotal skin loss.[10,11] This technique provides secure

testicular coverage while minimizing surgical morbidity and maintaining satisfactory functional and cosmetic results. We report a case of a 64-year-old male with Fournier's gangrene who was successfully managed with extensive debridement followed by scrotal reconstruction using bilateral fasciocutaneous thigh pouches, highlighting the surgical technique and postoperative outcome.

**Case Presentation**

A 64-year-old male presented to the Department of General Surgery with complaints of progressive swelling involving both hemiscrotums associated with pain, fever, and local discomfort. The symptoms had gradually worsened over several days prior to presentation, leading to difficulty in ambulation and significant tenderness in the genital region. There was no history of trauma, previous scrotal surgery, comorbidities or any other significant precipitating event .

On examination, the patient was conscious, oriented, and hemodynamically stable. Abdominal examination revealed a soft abdomen with tenderness in the suprapubic region, while bowel sounds were present and no organomegaly was detected. Local examination of the inguinoscrotal region demonstrated diffuse bilateral scrotal swelling with erythema, edema, and increased local temperature. Areas of skin discoloration and necrosis were noted over the scrotum. No enlargement of regional lymph nodes, including inguinal and supraclavicular lymph nodes, was observed. The remainder of the systemic examination, including per rectal examination, was unremarkable. Laboratory investigations revealed a hemoglobin level of 12.5 g/dL and marked leukocytosis with a total leukocyte count of 25,800 cells/mm$^3$, suggestive of severe underlying infection. Ultrasonography of the abdomen and pelvis demonstrated Grade I renal parenchymal changes and Grade I prostatomegaly. Ultrasonography of the inguinoscrotal region revealed bilateral epididymitis with funiculitis and diffuse scrotal wall edema.(Figure-1) Based on the clinical presentation, laboratory findings, and radiological investigations, a diagnosis of Fournier's gangrene was established. Considering the rapidly progressive nature of the disease, the patient was taken for emergency surgical exploration and debridement. Intraoperatively, the scrotal skin was markedly edematous and erythematous, with the presence of foul-smelling necrotic fluid. Extensive necrosis involving both superficial and deep fascial layers was identified, accompanied by loss of normal tissue bleeding and easy separation of fascial planes with slough formation, confirming the diagnosis of necrotizing fasciitis. All necrotic and non-viable tissues were aggressively debrided until healthy bleeding margins were obtained.(figure-1)

Following successful infection control and development of a healthy granulating wound bed, reconstructive options were evaluated. The extensive loss of scrotal tissue necessitated definitive reconstruction to provide durable testicular coverage while preserving function and achieving an acceptable cosmetic outcome. After careful surgical planning, reconstruction using bilateral fasciocutaneous thigh pouches was undertaken. Healthy granulation tissue was observed covering both testes. Bilateral pockets were created in the medial aspects of the thighs, and each testis was carefully transposed into the respective thigh pouch. The residual viable scrotal skin margins were trimmed and approximated with interrupted sutures to provide additional support and contour.(Figure-2)

Postoperatively, the patient received broad-spectrum antibiotic therapy, regular wound care, and supportive treatment. The postoperative course was uneventful, with no evidence of recurrent infection, wound dehiscence, or flap-related complications. The testes remained viable with satisfactory healing of the reconstructed area. On follow-up, the patient demonstrated good functional recovery with stable testicular coverage and an acceptable cosmetic appearance. He was discharged in stable condition with advice for regular outpatient follow-up. Patient consent was taken for this report.

**Figure 1.** (a)Preoperative clinical photograph showing extensive scrotal skin necrosis with exposed testes following aggressive debridement for Fournier's gangrene. (b) Intraoperative view demonstrating complete debridement of necrotic tissue with healthy granulation tissue over both testes before reconstruction.

**Figure 2.** (a) Immediate postoperative photograph following bilateral fasciocutaneous thigh pouch reconstruction showing successful transposition of the testes into medial thigh pouches. (b) Follow-up photograph demonstrating satisfactory wound healing, stable testicular coverage, and an acceptable cosmetic outcome after bilateral thigh pouch reconstruction.

**Discussion:**

Fournier's gangrene is a rare but life-threatening necrotizing soft tissue infection of the genital, perineal, and perianal regions that requires prompt diagnosis and aggressive management. It commonly affects elderly individuals and patients with underlying comorbidities such as diabetes mellitus, obesity, chronic renal disease, and immunosuppression. Mortality rates remain high despite advances in medical and surgical care. Early aggressive debridement combined with broad-spectrum antibiotic therapy and intensive supportive care remains the cornerstone of treatment.

In the present case, a 64-year-old male presented with bilateral scrotal swelling, pain, fever, and severe local infection. Laboratory investigations revealed significant leukocytosis (25,800 cells/mm$^3$), while ultrasonography demonstrated bilateral epididymitis, funiculitis, and diffuse scrotal wall edema. Emergency surgical exploration confirmed extensive necrosis of the superficial and deep fascial layers with foul-smelling necrotic fluid and slough formation, findings characteristic of Fournier's gangrene. Similar observations were reported by Fajdic and Gotovac Hrgovic and by Yanar et al.[1,3], who emphasized that early and aggressive debridement is essential to reduce mortality and halt disease progression.

Following successful control of infection, reconstruction of the resultant scrotal defect became the primary challenge. Reconstruction after Fournier's gangrene aims to provide durable testicular coverage, preserve function, facilitate wound healing, and achieve an acceptable cosmetic outcome. Chen et al.[4] reported that the choice of reconstructive technique depends largely on the extent of tissue loss, patient characteristics, and surgeon preference, with no universally accepted gold-standard procedure.

Various reconstructive techniques have been described in the literature. Split-thickness skin grafting is a commonly used option due to its simplicity and low donor-site morbidity. However, skin grafts may provide limited protection to exposed testes, are susceptible to contracture, and often fail to reproduce the normal contour and appearance of the scrotum. In patients with extensive scrotal loss, cosmetic outcomes may therefore be suboptimal. Similar concerns regarding aesthetic appearance and functional restoration have been highlighted in previous reconstructive studies.

Musculocutaneous and fasciocutaneous flap-based reconstructions, including gracilis muscle flaps, pudendal thigh flaps, and medial circumflex femoral artery perforator flaps, provide robust vascularized

tissue coverage and have shown excellent wound healing outcomes. Hsu et al.[6], Kayikcioglu[7], and Coskunfirat et al.[11] reported satisfactory reconstructive results with these techniques. However, such procedures may be associated with longer operative duration, donor-site morbidity, increased technical complexity, and occasionally bulky reconstruction that may compromise cosmetic satisfaction.

In our patient, reconstruction was performed using bilateral fasciocutaneous thigh pouches after establishment of a healthy granulating wound bed. This technique was selected because it offers a relatively simple, reliable, and well-vascularized method of testicular coverage while minimizing operative complexity. Healthy granulation tissue over both testes allowed successful transposition into bilateral medial thigh pouches, with preservation of testicular viability and satisfactory wound healing. Unlike extensive flap procedures, this approach required minimal additional donor-site morbidity and provided adequate protection of the testes.

The postoperative course was uneventful, with no evidence of recurrent infection, wound breakdown, or reconstructive complications. Follow-up evaluation demonstrated successful testicular coverage with preservation of function and an acceptable cosmetic appearance. These findings are consistent with previous reports suggesting that thigh pouch reconstruction is a safe and effective option for managing extensive scrotal defects following Fournier's gangrene.

Overall, the present case highlights the importance of timely diagnosis, aggressive surgical debridement, and individualized reconstructive planning in patients with Fournier's gangrene. Bilateral fasciocutaneous thigh pouch reconstruction proved to be a practical and effective reconstructive strategy in our patient, providing durable testicular coverage, satisfactory functional outcomes, and acceptable cosmesis. This technique may be particularly useful in elderly patients with extensive scrotal tissue loss where a simpler reconstructive option is preferred.

## Conclusion

Fournier's gangrene is a surgical emergency that requires early diagnosis, aggressive debridement, and prompt infection control to reduce morbidity and mortality. Extensive tissue loss following debridement often necessitates reconstructive intervention to achieve durable testicular coverage and satisfactory functional outcomes. In the present case, bilateral fasciocutaneous thigh pouch reconstruction proved to be a simple, reliable, and effective technique for managing extensive scrotal defects. The procedure resulted in successful wound healing, preservation of testicular viability, and acceptable cosmetic appearance without significant postoperative complications. This case highlights the utility of bilateral thigh pouches as a valuable reconstructive option in selected patients with Fournier's gangrene.

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