**CASE REPORT**

**A Case of a Penile Necrosis in a Patient with Simultaneous Fournier’s Gangrene and Priapism**

Bakali Issaoui Zakaria, Gaudan Ayoub, Kharbach Youssef, Khallouk Abdelhak

Department of Urology, Mohammed VI University Hospital
Faculty of Medicine and Pharmacy, Abdelmalek Essaâdi University, 90000 Tangier, Morocco

**ABSTRACT**

Fournier's gangrene (FG) is a necrotizing fasciitis of the perineal and genital areas, characterized by severe complications and a high mortality rate. The occurrence of concurrent priapism is extremely rare and carries a very poor prognosis. We report the case of a 74-year-old male patient with no medical history who presented with FG of the scrotum and penis associated with simultaneous priapism. He received intravenous antibiotic therapy, cavernous aspiration, and surgical debridement. In the following days, the penis became completely necrotic. A total penectomy was performed with a perineal urethrostomy following complete wound closure. There are only a few documented cases in the medical literature of simultaneous Fournier's gangrene and priapism. Consequently, there is no established protocol for managing this rare occurrence. When gangrene extends to the penis, cavernous aspiration is not recommended as it tends to exacerbate penile necrosis in the majority of cases. However, early administration of broad-spectrum antibiotic therapy, surgical debridement, and urinary diversion are necessary to prevent necrosis and sepsis.

**Keywords:** Fournier’s Gangrene; Priapism; Penile Necrosis; Total Penectomy.

**Correspondence:** Dr. Bakali Issaoui Zakaria, Department of Urology, Mohammed VI University Hospital, Faculty of Medicine and Pharmacy, Abdelmalek Essaâdi University, 90000 Tangier, Morocco. Email: Zakariaissaoui753@gmail.com

**Copyright © 2024 Bakali Issaoui Z et al.** This is an open access article distributed under the [Creative Commons Attribution 4.0 International](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**INTRODUCTION**

Fournier's gangrene (FG) is a rare but severe necrotizing fasciitis, with an incidence rate of 1.6 cases per 100,000 males per year. It is a polymicrobial infection that most frequently occurs in patients with risk factors such as diabetes and chronic kidney disease [1,2]. The etiology is identified in 95% of cases. This is a medical emergency that can result in sepsis and death. We present the case of a 74-year-old patient with no significant past medical history who developed FG and priapism, leading to complete necrosis of the penis [3,4].

**CASE REPORT**

A 74-year-old patient was admitted to the emergency department with large, painful, inflamed bursae and penis. The initial symptoms manifested one month ago with the appearance of erythematousquamous lesions on the bursae. These lesions spread to the penis and thighs. The patient had a history of untreated tinea cruris. He had no toxic habits and no history of diabetes, chronic renal disease, or recent trauma. Clinical examination revealed wet gangrene of the bursae with a 4 cm area of necrosis and subcutaneous crepitus, a hard, swollen penis associated with ischemia-related hemorrhagic mucosal suffusion, and tinea cruris (Fig. 1).

![Fig 1: Fournier’s gangrene associated with priapism.](image-url)
Rectal examination was normal. Vital signs were as follows: blood pressure 120/80 mmHg; pulse 95 bpm; body temperature 36.5°C; and respiration rate was 20. Laboratory tests showed: hemoglobin 9.5 g/dL; leukocyte count 19,000/μL; C-reactive protein 506 mg/L; thrombocyte count 134,000/μL; creatinine 26 mg/L; sodium 145 mmol/L; potassium 4.7 mmol/L; glucose 160 mg/dL; and HbA1c value was 4.8%. Urine tests showed negative results, and HIV test was negative.

Scrotal and perineal ultrasonography revealed thickening of the scrotal wall and subcutaneous emphysema (Fig. 2). Color Doppler showed decreased flow in the cavernosal arteries.

Broad-spectrum antibiotic treatment was immediately initiated, combining imipenem and metronidazole. A suprapubic catheter was inserted. Surgical exploration revealed scrotal necrosis. We performed a complete necrosectomy and considered the penile induration as associated with priapism. A cavernous aspiration was performed, revealing black blood (Fig. 3). Four days later, the penis became completely necrotic (Fig. 4).

Twenty days later, we decided to perform a complete penectomy with a perineal urethrostomy for urine diversion (Fig. 5). He continued to have appointments with a psychologist both during and after his hospital stay to address the psychological effects of his condition.

Fig 2: Scrotal US: thickening of the scrotal wall and subcutaneous emphysema.

Fig 3: Aspect after Surgical debridement of necrotic tissue.

Fig 4: (A) complete penile necrosis. (B) Pathology specimen (Total penectomy).

Fig 5: Aspect after Perineal urethrostomy.
DISCUSSION
FG is a polymicrobial type I necrotizing fasciitis affecting the perineal, perianal, or genital areas, characterized by severe complications and a high level of mortality. It is marked by obliterator endarteritis of the subcutaneous arteries, leading to gangrene of the skin and subcutaneous tissue [4]. Simultaneous priapism is very rare; it has two primary mechanisms. High-flow priapism is commonly associated with penile or perineal trauma. Low-flow or ischemic priapism is more frequent, arising from vascular stagnation and decreased venous drainage [5]. In our case, it was most likely attributed to a low-flow mechanism resulting from thrombosis of corporeal sinusoidal spaces and draining veins secondary to the infectious process.
FG can affect individuals of various ages and genders, predominantly men aged between 30 and 60 [6]. It has been shown to be associated with many conditions such as diabetes mellitus, alcoholism, atherosclerosis, immunosuppression, local trauma, genitourinary infections [7], liver or renal disease [8]. It is rarely truly idiopathic, with an identifiable cause found in approximately 95% of cases, often stemming from urethral, anorectal, and skin infections [9].
By definition, FG is a polymicrobial infection involving both anaerobic and aerobic organisms [10]. The clinical examination in our patient revealed tinea cruris with fissuring of the inguinal folds, which may serve as a potential portal of entry. Klebsiella pneumoniae was identified in the skin culture, and the pus culture was polymicrobial.
The diagnosis of FG is primarily clinical, with the most common symptoms being scrotal pain and swelling, erythema, and fever. Clinical examination of the perineum and genitalia may reveal subcutaneous crepitus, tissue necrosis, and pus. The disease often begins silently and painlessly, which can delay diagnosis [11]. Radiological investigations and laboratory tests play crucial roles if the diagnosis is uncertain. Although definitive diagnosis usually relies on surgical exploration, laboratory findings such as elevated serum creatinine, leukocytosis, anemia, hypotremia, hypocalcemia, and hyperglycemia are commonly observed [12-15].
Scrotal and perineal ultrasonography may reveal thickening of the scrotal wall and subcutaneous emphysema, characterized by echogenic zones with reverberation artifact and the classical ‘dirty’ shadowing [16]. CT is highly useful for identifying the source of infection and evaluating the extent of necrosis, revealing subcutaneous emphysema, soft tissue inflammation, and thickening [16]. While MRI is less frequently discussed in FG literature, it can provide similar information as CT but with a wider field of view, enabling thorough evaluation of infection extent, particularly beneficial in advanced cases [9].
In our case, the diagnosis was evident from necrosis of the scrotal wall and subcutaneous crepitus. Ultrasonography confirmed the diagnosis, demonstrating subcutaneous emphysema. Surgical exploration revealed more extensive necrosis than clinically observed.
The aim of treatment in FG is to halt the spread of infection and necrosis, and to avoid sepsis and systemic toxicity through intensive fluid resuscitation, correction of electrolyte imbalance, broad-spectrum antibiotic therapy, and early surgical debridement [17]. FG is a polymicrobial infection; hence, broad-spectrum antibiotics are necessary. Currently, no specific recommendations exist regarding optimal antibiotic therapy. Generally, triple therapy with penicillin, metronidazole, third-generation cephalosporins, and aminoglycosides is essential [18]. Nonetheless, surgical exploration is imperative to assess the extent of the infection. Early and radical debridement of devitalized tissue is crucial to halt infection progression and is critical for survival [19].
Urinary diversion remains a subject of debate. Some authors advocate for urinary diversion in all cases through a suprapubic cystostomy, while others suggest it should be reserved for patients with extensive urethral inflammation [20]. A suprapubic cystostomy was necessary in our patient due to periureteral inflammation. Several authors recommend the use of Hyperbaric Oxygen Therapy (HBOT) as it enhances tissue viability and growth. It is initiated after patient stabilization and continued until wound closure is achieved [21,22]. The occurrence of priapism was a notable feature in our case. As the duration of our patient's priapism exceeded 24 hours, we decided to treat it according to the isolated priapism protocol, but unfortunately, cavernous aspiration was unsuccessful. A similar case was published by Charbonneau, H. and Pène, F. in 2010 of cracking priapism related to FG [5], where irrigation of corpora cavernosa and penile shunt were unsuccessful. The management of FG associated with priapism is very difficult; penile aspiration in a septic environment may lead to the introduction of germs into the deep tissues of the penis at the level of the sinusoidal cavities of the corpora cavernosa. This may explain the rapid worsening of the necrosis, ultimately resulting in total penile necrosis. Cavernous aspiration must be reconsidered as it may aggravate the infection and accelerate penile necrosis.
Clinical differentiation between dry and wet gangrene is crucial for choosing appropriate treatment. In cases of dry gangrene, the two treatment strategies include conservative treatment and partial penectomy [23]. Wet gangrene generally requires more aggressive treatment, usually with a complete penectomy. Initially, we opted for a conservative approach until penile necrosis developed in our patient. Perineal urethrostomy for urine diversion was necessary once complete wound healing had occurred.
CONCLUSION
FG is a serious and fatal condition that, despite prompt and appropriate treatment, carries a poor prognosis. The simultaneous occurrence of FG and priapism is exceptionally rare, and the resulting infection is associated with a more severe clinical course. Cavernous aspiration must be carefully considered, as it may aggravate necrosis. Antibiotic therapy is the mainstay of treatment. It is necessary to perform prompt and extensive debridement surgery, including a complete penectomy, in order to prevent the spread of infection and sepsis. Following complete wound closure, definitive urinary diversion is required.
ACKNOWLEDGMENTS

We want to acknowledge our patient from whom we learn.

COMPETING INTERESTS

The authors declare no competing interests with this case.

REFERENCES