

# Idiopathic Fournier's Gangrene: Report of 2 Cases

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**Abstract:** Fournier's gangrene is a rare, life-threatening soft tissue infection that, if not treated promptly, can immediately develop into systemic toxicity. One of the deadliest surgical emergencies observed worldwide is Fournier's gangrene, FG predominantly affects men but can be seen in women. The condition's mortality and morbidity, have greatly decreased over time as a result of recent advancements in critical care medicine and surgical methods. Early diagnosis, examination of the risk and etiological variables, metabolic and physiological parameters, timely resuscitation, forceful surgical debridement, broad-spectrum antibiotic treatment, and ongoing monitoring of these parameters are necessary for a favorable outcome. This will reduce the condition's high death and morbidity rates. Two distinct examples of Fournier gangrene are described in this study. In this section, we have 2 FG cases. A young adult with FG who had no accompanying comorbidities was our first instance. He had necrotizing fasciitis, which starts in the perineum and spreads to the belly and chest, and it took him longer to heal. Despite this, he made a full recovery without suffering any serious post-operative morbidity. An elderly man patient who had no concomitant conditions was our second example. Our observations show that He made a full recovery without experiencing any significant post-operative morbidity.

**Keywords:** Idiopathic, Fournier's Gangrene, Reported Two Cases

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## 1. Introduction

Historical records of genital gangrene date back to Abu Ali al-Husayn ibn Sina (CE 980–1037), a Persian physician and a founder of early modern medicine, he described genital gangrene as an operative complication of the trans perineal approach to renal calculus removal, noting the finding was an “alarm of patient death. [1]

The first modern descriptions of regional perineal gangrene were reported by a Dr. H Baurienne, noting scrotal edema in a boy gored by an ox in 1764, and Robert Robertson, a British naval surgeon, in the publication of his 1772–1774 ship logs. [1, 2] Robertson described the case of the ship butcher, an elderly male “given to drinking” who, after a sexual encounter,

developed penile and scrotal edema progressing to overwhelming infection and death within 72 hours of initial symptoms, although other physicians described genital gangrene, Fournier Gangrene (FG) was ultimately named for the French venereologist Jean Alfred Fournier (CE 1832–1914) who described it in a case series of patients in 1883. [1]

Fournier lectured and wrote about FG, which he had diagnosed in previously healthy men. The underlying etiology was unknown at the time, and it was thought. Fournier gangrene is a specific form of necrotizing fasciitis, localized on the external genital organs, as well as in the perianal region, accompanied by thrombosis of the feeding arteries, leading to

gangrene of the skin and subcutaneous tissue, with manifestations of severe intoxication and multiple organ failure. Despite the relative rarity, Fournier gangrene was and remains a formidable disease with severe complications and a high level of mortality. [3].

Fournier's gangrene (FG) is a serious surgical emergency. This clinical condition was first described by Jean Alfred Fournier (1832–1914), a dermatologist and venereologist. He had first described this condition in 5 young male patients, who had presented with a rapidly progressing fulminating infection of the superficial tissues of scrotum and penis without any definite etiological factor [3, 4].

It is interesting to note that Bauriène in 1764 had described such a case of scrotal gangrene due to traumatic injury from the horn of an ox, which was treated by multiple sittings of surgical debridement [5].

Over time, all necrotizing infections of the genitalia were included in the definition of FG.

FG is now understood to be a subclass of necrotizing fasciitis. So, regardless of sex, FG is defined as necrotizing soft tissue infections originating from or restricted to the genitalia or perineum. We discuss the outcomes of two patients of idiopathic FG that presented in two different settings.

## 2. Case Presentation

### 2.1. Case 1

A 49-year-old male patient arrived with a three-day scrotal enlargement. The swelling begins at the perineum on left side and progressed to the scrotum and the penile skin. It is accompanied by low grade fever, moderate pain. Otherwise, he has no history of trauma, alcohol or drug abuse., PMH is unremarkable. He is not from filarial endemic region. On P/E, he was acutely sick looking and in severe pain, pink conjunctiva, non-icteric sclera, Pertinent finding, the scrotum was diffusely edematous with dark discoloration, no visible distended vessels, no ulcer no discharge. It was tender with palpable crepitation. White cell count (with polymorph, left shift) and hemoglobin. Random blood sugar levels, blood urea, and serum creatinine were all within the normal range. Ultrasound showed subcutaneous emphysema.

With assessment of NF of scrotum pts was admitted, put on maintenance fluid, pain management, Ceftriaxone, and metronidazole. Surgical side consulted and the patient was taken to Operation Theater for surgical management. Surgical drainage of the pus, debridement, thorough irrigation of the wound with H<sub>2</sub>O<sub>2</sub> & NS done. After 48hrs extension of the infection to left medial thigh and to abdominal wall above the inguinal ligament extending to flank up to costal margin. After surgical debridement, Ceftriaxone was changed to cefepime, debridement was repeated twice at 48 hrs interval, the infection was controlled, and the wound showed dramatic healing change. On 14<sup>th</sup> post-op day reconstructive surgery was started for he has significant skin loss at midscrotum and base of penile shaft. He was discharged with an appointment of one week for second reconstructive surgery.



**Figure 1.** Fournier's gangrene.



**Figure 2.** 8th postop day.



**Figure 3.** FG after debridement.



**Figure 4.** 13<sup>th</sup> day of debridement.

### 2.2. Case 2

Male patient, age 50, had been experiencing scrotal swelling for four days. Initially, it started at perineal area before moving on to the scrotum. It was accompanied by severe pain, high grade fever, and difficulty urinating. He visited a nearby clinic and sought treatment there with

ciprofloxacin 400 mg IV bid for three days and metronidazole 500 mg IV Tid, but his condition did not improve, and he was then referred to our hospital. He has no history of smoking, alcohol abuse, drug use, perineal trauma, or other chronic medical or surgical conditions, and he is not from an area where filarial. P/E, he appeared severely ill. Pink conjunctiva, non-icteric sclera, BP 110/60 mmHg, PR 108 bpm, RR 26 bt/m, SO<sub>2</sub> 94%, T° 37.2°C, and no notably swollen lymph nodes in any accessible.

The diagnosis of FG was made tentatively. He was admitted IV line opened, Ceftriaxone 1 gm IV bid, and Metronidazole 500mg IV TID were started. The Lab. results of a blood hemogram showed polymorph nuclear leukocytosis (N-75%), 12\*10<sup>3</sup> white cells per unit of time and hemoglobin level 17.2gm/dl. Blood urea was 20mg/dl, serum creatinine was 1.2 mg/dl, random blood sugar was 100 mg/dl and LFT was within normal limits.

He was set up for quick debridement. and taken to OR, pus drained, devitalized tissue was completely removed (Figure 6) where the gangrenous process was more on the right side of scrotum and perineum, thorough irrigation of wound with H<sub>2</sub>O<sub>2</sub> & NS done. Daily wound care given and after 72hrs. Debridement was done, antibiotics continued, post-op period was uneventful. Culture was not sent due to the early initiation of antibiotics before his hospital presentation. 1<sup>st</sup> reconstructive surgery was done on the tenth postoperative day (Figure 8). and he was discharged on 14<sup>th</sup> day with appointment. (Figure 9)



**Figure 5.** Fourniere's gangrene at presentation.



**Figure 6.** 1<sup>st</sup> debridement day.



**Figure 7.** 1<sup>st</sup> debridement day.



**Figure 8.** During 1<sup>st</sup> reconstructive surgery.



**Figure 9.** Last Reconstructive surgery.

### 3. Discussion

FG is a serious surgical problem with high mortality and morbidity. Though there is a male predominance [6], this condition has been described in children also [7, 8]. Though we have not come across a single case in females, a recent publication shows a high incidence of 31.6% in female patients due to vulvar and Bartholin gland abscesses as well as in postoperative period following episiotomy and hysterectomy [9].

There are so many predisposing factors described by various authors as seen in literatures. Out of them, diabetes, old age, alcoholism, obesity, paraplegia, and renal insufficiency are commonly seen. However, it is interesting to note that in almost 30% to 50% cases no definite predisposing factor is found [10]. The most commonly seen foci of infection are those arising from gastrointestinal tract (30% to 50%), genitourinary tract (20% to 40%), and cutaneous injuries and soft tissue (20%) [10]. In our experience mostly, we have come across cases of FG arising from minor injuries or soft tissue infection of scrotal skin.

The most recent largescale analysis of FG cases in the United States (US) noted the incidence of FG is approximately 1.6 per 100,000 males, which peaks between the ages of 50 and 79 years (3.3 per 100,000). The incidence of FG among female patients was reported as 0.25 per 100,000 in one study, though female patients were more acutely ill at presentation, required mechanical ventilation and dialysis twice as often, experienced longer length of stay, and had higher case fatality than the male cases. [11]

Differential severity by sex is reported in other databases as well. A study of FG in Japanese patients noted female patients were more likely to be older and experience higher case fatality, increasing population prevalence of diabetes is strongly associated with risk of FG, with an increase of 0.2 FG cases/100,000 males for each 1% increase in diabetes prevalence. [12]

Management of FG basically depends on multidisciplinary approach. Initial resuscitation with fluid therapy and restoration of cardiopulmonary function to normal in patients

presenting with septic shock is very important at the time of presentation. Prompt and aggressive surgical debridement of devitalized tissue along with broad spectrum antibiotics is the main stay of the treatment of FG. Antibiotics may be modified after obtaining the culture report. The removal of all the devitalized tissue is important to stop the progress of the infection and simultaneous elimination of systemic effects of toxins and bacteria [13].

Multiple sittings of surgical debridement may be required to achieve adequate local control of infection. Local wound care after surgical debridement is very important. Wet to dry dressings, dressings with vacuum-assisted closure devices (VAC dressing), and application of various topical agents have been advocated. We prefer daily wet dressing and topical application of povidone iodine. VAC dressings have shown enhanced granulation tissue and reduction in wound surface area compared to wet to dry dressing [14].

With proper surgical debridement, local wound care, and antibiotic therapy, healthy granulation tissue appears, and most of the time primary wound closure can be done, as seen in both of our cases. However, in significant tissue loss, any of the reconstructive procedure including various flap covers may be considered depending on the case. A significant tissue loss in genitalia and perineum causing a large defect can lead to high morbidity, which can be salvaged by reconstructive surgery with adequate tissue coverage [15].

## 4. Conclusion

A life-threatening infection, necrotizing fasciitis, such as FG, requires urgent medical attention. Given the infection's quick progression, it's crucial for doctors to spot vulnerable groups that are at a high risk of contracting it quickly and recognize the clinical symptoms in order to appropriately diagnose patients at an early stage.

According to this systematic review, perineal discomfort, erythema, cellulitis, fever, abscesses, and crepitus were the most typical clinical manifestations. Depending on the stage of illness, patients may exhibit a variety of symptoms or only a few. Broad-spectrum antibiotic therapy combined with urgent surgical debridement was the most successful treatment plan for patient survival. Patient mortality in FG can be decreased with clinical training and early detection.

Future study must focus on finding additional distinct criteria that can distinguish FG from disorders that present similarly because the presentation of FG can occasionally be ambiguous and nonspecific. Fournier's gangrene needs rapid surgical intervention (FG). Because the presentation of FG can sometimes be nonspecific and vague, it is important for future research to look for more definitive characteristics that can differentiate FG from similarly presenting conditions.

Surgery is required immediately for Fournier's gangrene (FG). The main course of treatment for this illness entails a number of severe debridement, which result in the huge development of soft tissue defects in the affected area.

The fatality rate for FG is significant, making it a serious surgical emergency. The morbidity and mortality of this

dreaded clinical entity have, however, declined over time as a result of improvements in diagnostic techniques, surgical approach, powerful antibiotics, and critical care. The mortality rate of FG in hospital settings has dropped to 10% to 20% as a result of the better multimodality therapy approach.

Here, we have two FG cases. Our first case involved a young adult who had FG but no other comorbidities. He had necrotizing fasciitis that spread from the perineum to the belly and chest, took longer to heal, but otherwise made a full recovery with no significant post-operative morbidity. In our second example, an elderly male patient did not have any concomitant conditions at the time of presentation, and he made a full recovery with no significant post-operative morbidity.

## 5. Study Limitation

Patient's presentation was late and culture was not sent due to antibiotic initiation days before their presentation to the hospital.

## Consent

The customers' written informed consent was obtained, including permission to publish this information and the usage of photos.

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