

## A Clinical Case of Fournier Gangrene

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### Rezumat

#### *Un caz clinic de gangrenă Fournier*

**Scop:** Prezentarea unui caz de gangrenă Fournier și a terapiei chirurgicale specifice.

**Prezentare de caz:** Pacient de 71 de ani cu istoric de dureri perineale, edem vechi de 2 zile și necroză, puroi cu miros caracteristic și leziuni caracteristice perineale este diagnosticat în condiții de urgență. Edemul perineal se întindea la nivelul ambelor flancuri preponderent pe stânga. Diagnosticul de gangrenă Fournier odată stabilit, s-a intervenit chirurgical de urgență sub anestezie generală. Antibioterapia cu spectru larg a fost administrată concomitent. Intervenția inițială a constat în excizia și debridarea chirurgicală a țesuturilor necrozate. Concomitent au fost prelevate culturi bacteriologice. S-au efectuat contraincizii în flancuri comunicarea prin planurile fasciale fiind bine demonstrată în special pe stânga. O colostomie pe baghetă a fost realizată în același timp operator. Reexcizii multiple s-au efectuat în zilele următoare. Datorită evoluției dificile bolnavul a fost intubat 13 zile. Medicația inotropă a fost administrată 19 zile iar antibiograma a fost adaptată culturilor (printre germenii identificați a fost și *Bacteroides eggerthii*). Reconstrucția perineului s-a realizat în aceeași perioadă de spitalizare iar la trei luni a fost închisă colostomia evoluția pacientului fiind favorabilă.

**Concluzie:** În gangrena Fournier recunoașterea leziunii și tratamentul chirurgical agresiv sunt obligatorii pentru succes. Diversiunea colonică poate fi foarte utilă și trebuie realizată de la început.

**Cuvinte cheie:** gangrenă Fournier, fasciită necrozantă, sepsis sever, colostomie, orihietomie

### Abstract

**Objective:** To present a case of Fournier gangrene and the specific surgical therapy.

**Case presentation:** A 71-year old patient with a two days history of pain in the perineal region, swelling, developing necrosis and foul-smelling lesions was examined in emergency settings. The swelling of subcutaneous plane involved the flank regions, mainly on the left side. The investigations were performed (full blood count, blood urea, electrolytes, coagulation profile). A Fournier gangrene was diagnosed and surgery performed under general anesthesia. Broad spectrum antibiotics were given concomitantly. The first surgical procedure consisted in surgical debridement and excision of all the necrotic tissue. Cultures were taken. We performed counter incisions bilaterally on both flanks. The communication through the fascial planes was clearly demonstrated, especially on the left side. A loop colostomy was also performed. Multiple re-excisions were further employed. Due to a precarious evolution, the patient were on mechanical ventilation for 13 days. Inotrope medication was given for a total of 19 days and, the antibiotherapy adapted to the antibiogram (*Bacterioides eggerthii* was identified). The reconstruction of the perineum was later performed and, after 3 months, the colostomy was closed in good conditions without further complications.

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**Conclusion:** Early recognition and aggressive surgical excision are mandatory for success in patients with Fournier gangrene. Colonic diversion can be very useful if employed from the beginning.

**Key words:** Fournier gangrene, necrotizing fasciitis, severe sepsis, intestinal diversion, orchiectomy

## Introduction

Fournier gangrene is a form of fulminant necrotizing fasciitis involving the perineum and genitalia. It is named after the French dermatologist Jean-Alfred Fournier (1832-1915) who, in 1883 presented 5 cases of perineal gangrene in men though the condition was first described by a physician named H. Baurienne in 1764 (1). There is also evidence that the disease was described by the famous Persian physician Avicenna (Ibn Seena) who lived between 980-1037 (2). When J. A. Fournier described his cases three characteristics were decisive for the diagnosis:

- sudden onset in a healthy young male;
- rapid progression to gangrene;
- absence of a definite cause.

Eversince then the aetiology and characteristics of the disease have been better understood. At his time Fournier lacked the methods to identify the cause of the disease. Also, it is known that Fournier's gangrene or progressive necrotizing fasciitis as it is named today, affects not only healthy young men but also women (though in very small number compared with men). We also know today that different co-morbidities (diabetes, liver and kidney disease, alcoholism) are making some patients more prone to develop the disease. Malnutrition, AIDS, malignancy, renal failure, and immunosuppressive chemotherapy are other risk factors, but the outcome is not dependent on these (3,4). Just one fact did not change in Fournier's gangrene, that it still carries a high mortality (20-67%) (5,6).

## Clinical case

Seventy-two year old patient with no other previous medical history was seen in the emergency department for severe pain in the perineal region. The patient remembers to have experienced pain 48 hours before. He was seen after 24 hours in a regional hospital where horseshoe perianal abscess was diagnosed and the patient was operated in ambulatory settings. No clear recording of the previous intervention was available. Postoperatively, after a short period the patient experienced intense pain in the perianal region, chills and malaise.

Local examination was gently done. In the perianal region edema, erythema and necrosis of the scrotal skin were found. Extension of the edema and erythema was obvious in both flanks more extensive on the left. Two longitudinal perianal incisions with meshes were seen and dish-water discharge with



**Figure 1.** Local examination showing edema, erythema and necrosis



**Figure 2.** Flank erythema (extension of the infectious process through fascia)

foul smell was present (Fig. 1, 2). Blood pressure was 75 mm Hg systolic and 50 mm Hg diastolic with a pulse rate of 100 per minute and a body temperature of 37.8°C. We also noted that the last micturition was almost with 24 hours before (oligo-anuria was present).

At admittance lab values were: leucocytes 23,100/mm<sup>3</sup>, hemoglobin 12.9 g/dl, hematocrit 39.8% with preponderance of immature elements (Arneth shift). Na<sup>+</sup> was 132.4 mEq/dl, K<sup>+</sup> 3.98 mEq/dl, blood urea nitrogen 145.5 mg/dl, blood creatinin 2.42 mg/dl, glycemia 118 mg/dl.

Plain X-ray of the abdomen and ECG were performed. Other imagistic techniques were not employed due to the patient critical status.

A clear diagnosis of Fournier gangrene with severe sepsis was made and the patient was taken to the operating theatre. Risk assessment was 4 on ASA scale.

In lithotomy position under general anesthesia further exploration of the perineal region was performed. Large incisions and debridement were performed (Fig. 3 and 4).

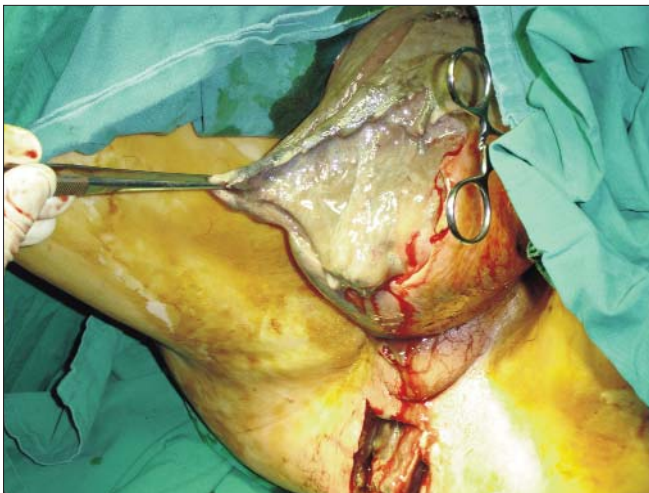


**Figure 3.** Perineal excision – necrotic tissue over the scrotum with dish-water discharge

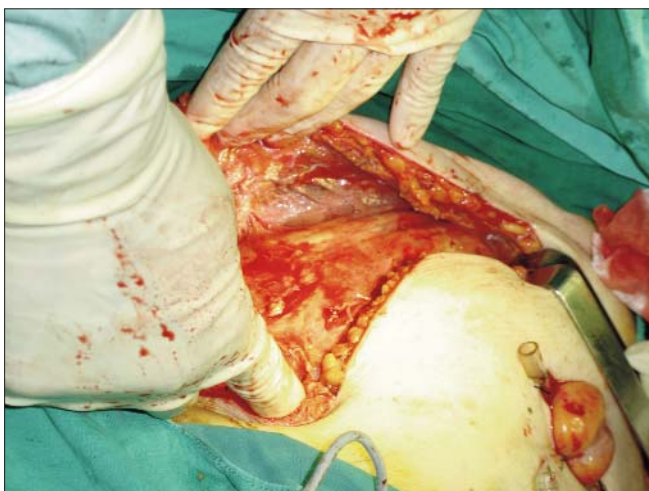


**Figure 5.** Flank incision (loop colostomy is also seen)

The whole scrotal skin was gangrenous and had to be removed. Incisions were performed onto the abdominal wall on both flanks, more extensively on the left side (Fig. 5). Exploration showed communication with the lateral abdominal wall through fascial planes. Hydrogen peroxide (3%) and povidone iodine in large amounts were used for the intraoperative lavage after samples for bacteriology were taken. Due to the origin of gangrene (perianal abscess) a loop colostomy was performed for diversion of the fecal stream (Fig. 5).

Postoperatively the patient needed inotrope positive support (norepinephrine, dobutamine) and ventilatory support for 13 days. At first, antibiotherapy consisted only in ertapenem i.v. Daily evaluation of the wound was performed under anesthesia. Enteral nutrition through naso-gastric tube was started from the third postoperative day. Due to the necrosis of both testicles orchiectomy was done on the fourth day. The cultures identified *Bacteroides* spp. (including *B. eggerthi*), *enterococcus* spp., gram-positive cocci. Antibiotic

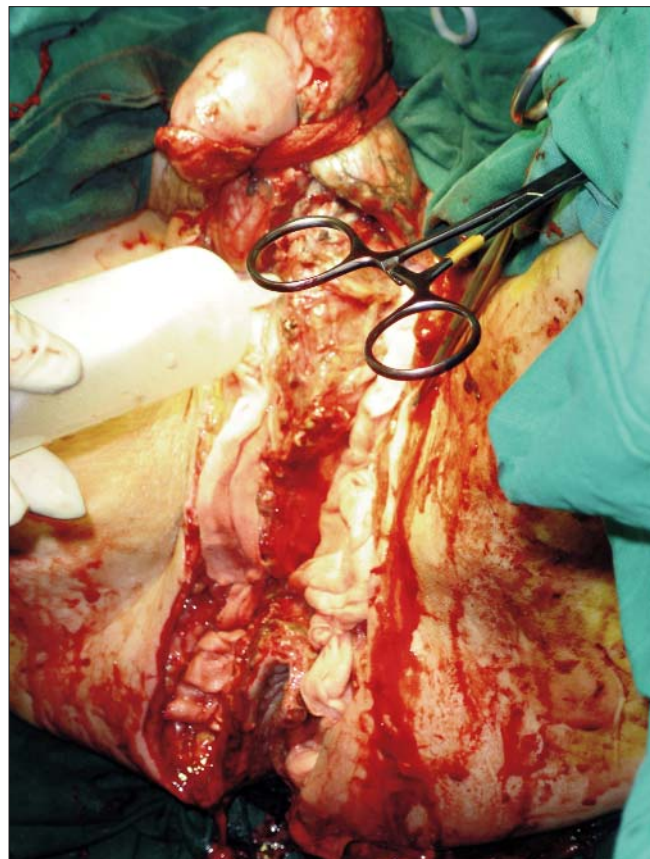


**Figure 4.** Finalizing the procedure, lavage (meshes are seen)

treatment was changed after the antibiogram to cefoperazone and metronidazole then to piperacillin-tazobactam and metronidazole. Antibiotherapy was given for a total of 20 days. The evolution was favorable and, on the 13-th postoperative day, the patient was extubated.

The patient developed a catheter infection with *Acinetobacter baumannii* which was treated accordingly.

The postoperative treatment included also transfusions (1350 ml total blood and 400 ml erythrocyte concentrate).

On the 32-nd postoperative day a secondary suture was performed. On the 37-th postoperative day the patient was discharged in good health (Fig. 6). Three months later the patient was admitted for colostomy closure which was done under general anesthesia and the patient had an uneventful recovery (Fig. 7).

Follow-up was done at 3 and six months the patient having a good local and general evolution with complete recovery (Fig. 8 and 9).

## Discussion

Fournier's gangrene is a highly lethal situation. Although the disease was first described in healthy adults, today the majority of cases with Fournier gangrene have comorbidities diabetes being the most common (6).

Fournier's gangrene is a polymicrobial infection. The most commonly found pathogens in progressive necrotizing fasciitis



**Figure 6.** Perineal suture-reconstruction at interval (final aspect)



**Figure 7.** Colostomy closure three months later (arrow pointing the anastomosis)



**Figure 8.** Final aspect at one year (perineum)



**Figure 9.** Final aspect at one year (left flank)

of the perineum are: *Bacteroides* spp, *E. coli*, *Streptococcus* spp., *Staphylococcus* spp, and *Peptostreptococcus* spp. An average of four isolates is found in Fournier's gangrene. Usually, Fournier's gangrene is caused by the synergistic action of aerobic gram-negative rods, gram-positive cocci, and anaerobes. Anorectal abscesses (ischioanal, perianal, and intrasphincteric account for more than 70% of the cases). Seldom perineal fasciitis can occur as a result of a rectal malignancy (7). Other causes are genitourinary or skin infection/trauma of the region (8). In our patient the typical flora was found. One specific germ found in our case was *Bacterioides eggerthii* but without specific impact.

In Fournier's gangrene the infection leads to thrombosis of subcutaneous and cutaneous blood vessels, resulting in gangrene of overlying skin. Infection of the superficial perineal fascia (Colles fascia) may spread to the penis and scrotum in continuity with dartos and Buck's fascia. The extension can go further through fascial planes to the abdominal wall as was the case in our patient. Myonecrosis is rarely seen.

Fournier's gangrene is generally diagnosed clinically. Pain is an important complaint. Swelling and erythema of the region follow pain. Systemic symptoms such as fever or chills are frequently encountered. As time passes, septic shock can ensue.

Clinical examination encounters erythematous, edematous, cyanotic, indurated, blistered, and/or frankly gangrenous skin. Dish-water discharge can be seen especially when lesion of the perineal region preexists. Thorough examination of the perineum and genitalia is essential.

Plain X-rays can show air sometimes before it is felt and can be helpful in showing the origin of the infection (e.g. perineal abscess). Ecography and CT-scan are also of use. CT-scan can very clearly delineate the extension of the infection and pinpoint the source. In the present case we could not use CT-scan due to the time issue (severe sepsis was present).

Regarding the etiology it is clear that the perianal abscess was the origin of the necrotizing fasciitis in our case. What is not quite clear is whether the abscess was from the start a Fournier's gangrene and the previous surgical procedure was

inappropriate or, the fascial gangrene developed as a result. Thus early recognition of the disease is crucial.

Urgent operation is the key factor for a good prognosis; the spreading of the infection through the fascial planes was clearly very fast in this case.

In our opinion, beside a timely diagnostic, the most important factor for a favorable evolution is frequent surgical evaluation and correct debridement and excision of necrotic tissue anytime this is required. In the above mentioned case the surgical exploration was performed six times, more than the average 2-4 suggested by others (9,10).

Vacuum-pack technology seems very adequate decreasing the need for dressing and reducing the days of hospitalization but at that time it was not available (11).

While loop colostomy is not employed routinely we consider it helpful in selected cases, especially when the origin of gangrene is from the perianal region (12,13). In our view it is very useful especially when dressing difficulties are encountered.

Orchiectomy was done due to extensive necrosis involving the organs. While this is not generally advocated it is still necessary in more than 21% of the cases (4,14,15). Even if we do not have a clear evidence and a clear explanation, the clinical situation of the patient after orchiectomy was improved.

Hyperbaric oxygenotherapy is considered a useful adjunctive measure in these cases, but this was not available (16).

## Conclusion

Fournier's gangrene remains a highly lethal situation. Crucial for prognosis is precocious diagnosis and urgent surgical therapy, in conjunction with all the other supportive measures. Antibiotherapy is mandatory. Correct debridement and large incisions, repeated exploration of the wound in the operating room are the most important measures for a good prognosis.

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