

A Study on the Various Treatment Modalities of Fournier'S Gangrene

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Abstract

Introduction: gangrene is a rare and potentially fatal infectious disease characterized by necrotizing fasciitis of the perineum and abdominal wall in addition to the scrotum and penis in men and the vulva in women. To repair the scrotal and perineal defects remains a surgical challenge. *Methods:* This is a prospective study, includes 30 patients who were diagnosed as Fournier's Gangrene. All patients were admitted and were subjected to routine investigation such as BC, TLC, DLC, C/S, ECG, CXR, HIV. The choice of reconstructive procedure was based on the size, location, severity of defects and availability of local tissue. Post operative follow up was done to note the complications both in hospital and after discharge for 6-12 months. *Results:* various reconstructive procedures were performed (Table 8), with special emphasis on flaps, constituting 16 cases (53.33%) of flaps. Mean hospital stay duration was 30.6 ± 9.32 days (range, 19-53 days). *Conclusions:* Management of this infectious entity should be aggressive. Several techniques that are used to reconstruct the lost tissue have shown good results.

Keywords: Fournier's Gangrene; Scrotum; Bilateral Superomedial Thigh Flap.

Introduction

Fournier's Gangrene is a severe subcutaneous infection that begins adjacent to the portal of entry, whether it is urethral, rectal or cutaneous in origin. Initially, there is a cellulitis characterized by acute

pain, edema and erythema. A spreading diffuse inflammatory reaction ensues involving deep fascial planes. As the necrotizing fasciitis extends, the overlying skin becomes secondarily involved and appears pale, erythematous, shiny and smooth. Within 48 to 72 hours, the cutaneous erythema fades and changes to a blue-black color. This progression of tissue necrosis is secondary to an obliterative endarteritis causing cutaneous and subcutaneous vascular thrombosis that allows normal flora to enter previously sterile sites by perifascial dissection. As the result of low oxygen tension, diminished vascular supply, and bacterial overgrowth in a closed space, cutaneous gangrene becomes apparent. In 4 to 5 days, gangrene is evident, pain diminishes, and the skin becomes numb secondary to pressure necrosis and infection of cutaneous nerves. Within 8 to 10 days, the necrotic tissue separates by suppuration from adjacent non-necrotic and viable tissue.

The majority of specimens have yielded normal urethral, rectal and cutaneous flora. It becomes clear that local tissue compromise, the type and dose of the contaminant, the nature of the inciting event, and the underlying health status of the host are of paramount importance in subsequent host toxicity. The organisms most commonly isolated are Bacteroids, coliforms, klebsiella, proteus, streptococcus, staphylococcus, and peptostreptococcus. Uncommon organisms include rickettsia [1,2] and entamoeba histolytica. An average of 4 organisms has been isolated in most published series or reports [1,2].

Generally, anorectal infections are caused by nonbacterial anaerobes, clostridial and nonclostridial gas formers, and synergistically active aerobic- anaerobe combinations. Streptococci are rarely causative in rectal infections. Lower urinary tract infections usually involve streptococcus, staphylococcus and the gram-negative rods. Cutaneous causes involve skin flora, such as staphylococci. One series found that 96% of patients

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had cultures positive for gram negative rods and 86% had cultures positive for gram positive cocci [3].

In most series, the severity of infection correlated well with positive cultures. Crepitance is an important sign in synergistic infections and is classically associated with anaerobic myonecrosis secondary to clostridial infections.

Methodology

A Study was carried out in a Tertiary care hospital to study various modalities of treatment After admission, patients fulfilling the inclusion & exclusion criteria will be taken in to study after obtaining written informed consent and the data to be collected regarding clinical history, examination, diagnosis, investigations, details of previous operative procedure. The diagnosis was made on clinical basis, supported by other relevant investigations. Post operative follow up will be done to note the complications both in hospital and after discharge for 6-12 months.

Statistical significance was confirmed using SPSS 20 software.

Exclusion Criteria

1. Uncontrolled diabetes mellitus
2. Extensive sepsis.

Table 1: Bacteriology of patients with Fournier's Gangrene (n=30)

Organism	No	%
Escherichia coli	18	60%
Staphylococcus aureus	10	33.33%
Klebsiella	8	26.66%
Pseudomonas	5	16.66%
Proteus	2	6.66%
Bacteroides	1	3.33%

Table 2: Reconstructive procedures (n=30)

Reconstructive procedure	N	%
Secondary suturing	9	30%
Split skin thickness graft	5	16.66%
Tensor fascia lata flap	2	6.66%
Medial thigh V-Y flap	1	3.33%
U/L medial thigh flap	1	3.33%
B/L superomedial thigh flap	12	40%

Discussion

Various organisms, alone or in combination, have grown from materials from wounds or excised tissue. In our study, Escherichia coli (60%), Staphylococcus

3. Patients with immunocompromised status.
4. Multi organ failure.
5. Patients on steroid treatment.

Results

Materials obtained from the wounds were examined by performing culture. The most common organisms are summarized in (Table 1). All patients received broad-spectrum antibiotics administered intravenously. Specific regimens were tailored on the basis of culture and sensitivity reports.

All patients received delayed surgical reconstruction after the appearance of healthy granulation tissue at the base of the wound.

Twenty one reconstructive procedures were performed, 12 cases under went B/L superomedial thigh flap, 2 cases underwent Tensor fascia Lata flap, 1 case Medial thigh V-Y flap, 1 case U/L medial thigh flap, and 5 cases under went split skin thickness graft, rest 9 cases under went secondary suturing.

Mean hospital duration was 30.6 ± 9.32 days (range, 19-53 days).

During the follow-up period (6 months to 12 months), we confirmed that the majority of our patients achieved social and professional rehabilitation

aureus (33.33%), and klebsiella (26.66%) were the most commonly isolated bacteria. The other organisms were Pseudomonas aeruginosa, Proteus, and Bacteroides.

Organisms that reach the subcutaneous tissue

cause obliterative endarteritis of the vessels supplying the scrotal skin, resulting in acute gangrene. The combination of edema, inflammation, and infection in an enclosed space impairs the blood supply, and the resulting hypoxia permits the growth of facultative and obligatory anaerobes.

The size of the involved area of Fournier Gangrene had been reported as a factor in predicting the prognosis, and extensive involvement increases the mortality rate. However, Chawla et al [4] concluded that the size of body surface area involved in Fournier Gangrene does not affect the outcome. The actual relationship between the lesion size of Fournier gangrene and the final survival is still controversial. The lesion size of full-thickness skin necrosis did not increase the mortality rate in our series. Reconstructive procedures are required for large skin and soft-tissue defects. The commonly used reconstructive procedures include the split-thickness skin graft, 12 cases under went B/L superomedial thigh flap, 2 cases underwent Tensor fascia Lata flap, 1 case Medial thigh V-Y flap, 1 case U/L medial thigh flap, and 5 cases under went split skin thickness graft, rest 9 cases under went secondary suturing.

In our study, 21 of 30 patients (60%) with Fournier gangrene required reconstructive procedures for wound coverage and functional restoration. Secondary healing or delayed primary closure was applied for small areas of skin defects in our study.

According to Hallock, scrotal coverage with an early single-stage sensate flap that provides complete and adequate protection of the exposed testicles is the ideal choice. Numerous thigh fasciocutaneous flaps have been used for scrotal reconstruction and represent an excellent tool for scrotal reconstruction, with good cosmetic results. Many myocutaneous flaps have also been described.

In our study, we used superomedial thigh fasciocutaneous flaps when scrotal skin loss was present (12 patients)

The superomedial thigh fasciocutaneous flap is a probable arterial flap, and was first reported by Hirshowitz et al [5]. for repair of the scrotum and vulva. It has an ample blood supply derived from three main

sources: (1) the deep external pudendal artery; (2) the anterior branch of the obturator artery; and (3) the medial femoral circumflex artery.

It offers some advantages for scrotal reconstruction, as follows: (1) it constitutes a simple, safe, and single-stage procedure; (2) it provides a sensate coverage, because both the genital branch of the genitofemoral nerve and the ilioinguinal nerve are likely to be retained with these flaps; and (3) it achieves a reasonable aesthetic result, preserving male identity. We confirmed such advantages with all of our patients. No compromise to the circulation was encountered. There were no wound-healing complications on the surface of the flaps during the postoperative period.

Conclusion

Several techniques that are used to reconstruct the lost tissue have shown good results. The superomedial thigh skin flap has proven to be a reliable method of resurfacing large scrotal defects. Reconstructive surgery makes the return to a normal social life possible in many cases

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