



Surgical Management and Outcomes of Fournier's Gangrene: An Experience with 78 Cases

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Abstract

Fournier's gangrene is the surgical emergency condition. Early diagnosis and its management is the need of hour for high surgical outcomes.

Aim and Objective: *Early diagnosis, surgical management and outcomes of Fournier's gangrene.*

Materials and Methods: *We prospectively analysed 78 cases of Fournier's gangrene during the study period of July 2015 to July 2017 at DVVPF's Medical College and Hospital, Ahmednagar. Mean age of presentation was 68 years (range 31 -89 years). Majority of patients were in the age group of 60 - 69 years i.e 28 (35.90%) patients. Advancing age is the one of the risk factor of Fournier's gangrene.*

Results: *Triggering factors for FG in our cases series were traumatic laceration of perineum in majority of patients i.e 26 (33.33%) patients. Next factor was repeated needle insertion in 22 (28.20%) patients for removal of hydrocele fluid. Rest of factors were hemorrhoidectomy for prolapsed piles in 5(6.41%) patients, perianal abscess drainage in 2(2.58%) patients, urinary catheterisation in 1(1.28%) patient. Unknown factors was reported in 22(28.20 %) patients. Predisposing risk factors for Fournier's gangrene was diabetes mellitus in 30(38.46%) cases. Next one was advancing age (>50 years) in 21(26.92%) cases. Other factors were steroid use in 15 (19.24%) cases and chronic alcoholic use in 12(15.38%) cases. Most common infecting organism was E.coli in 48 (61.54%) cases. Next organism were Klebsiella in 18(23.08%) patients and Streptococcus in 12(15.38%) cases. Aggressive debridement was performed in all 78(100%) cases. Reconstructive procedures were done in all 78 cases either by secondary suturing in 70(89.75%) cases, skin grafting in 6(7.69%) cases and thigh pouch reconstruction in 2(2.56%) cases. No any mortality was reported.*

Conclusion: *Fournier's gangrene is the surgical emergency condition. Fournier's gangrene is a form of necrotising fasciitis, which causes rapid clinical deterioration with high morbidity and mortality. Aggressive surgical debridement and appropriate antibiotic coverage is the need of hour for high surgical outcomes.*

Keywords: *Fournier's gangrene (FG), Necrotising fasciitis, E.coli*

Introduction

The Fournier's gangrene (FG) refers to necrotising fasciitis with or without gangrene, which affects perianal, rectal and genital area. Causative organisms are polymicrobial.

In 1883, Jean Alfred Fournier first described Fournier's gangrene.⁽¹⁾ Previously FG described as an idiopathic condition. Due to improved diagnostic facilities, the definitive cause can be found in >98% of cases.

The predisposing risk factors for FG includes immunosuppression, diabetic mellitus, alcoholism, trauma, advanced age and malignancy.^(2,3)

Infection spreads in cases of Fournier’s gangrene may be cutaneous, urethral or rectal.

Aggressive surgical debridement, broad spectrum antibiotic coverage and regular monitoring of vital parameters is very essential prerequisite for better outcomes.

Materials and Methods

We prospectively analysed 78 cases of Fournier’s gangrene during the study period of July 2015 to July 2017 at DVVPPF’s Medical College and Hospital, Ahmednagar, Maharashtra, India.

Inclusion criteria:

- 1) All cases of infected scrotum
- 2) Age group : 32-89 years

The various factors which affects the outcomes in cases of Fournier’s gangrene includes age, sex, co-morbid conditions, predisposing risk factors and causative micro-organisms.

After all routine investigations, all patients were taken for emergency aggressive debridement. Pre operative inj. Supacef 1.5 gm, inj. Gentamicin 80mg and inj. Metronidazole 400 mg were gives to all the patients. After incision pus was send for culture and sensitivity. Hydrogen peroxide and betadine solutions was used for cleaning the wound. Coverage of broad spectrum antibiotics was given postoperatively. Eusol dressing was done for removing the Slough. According to pus culture and sensitivity report, appropriate antibiotics was started. After few days reconstruction of scrotum was performed.



Fig 1: Fournier’s gangrene



Fig 2: Debridement of FG

Statistical analysis

Data was analysed using the Chi-Square test where appropriate P <0.05 was considered significant.

Confidence level of 95% was specified.

Margin of error was 5%. Therefore:

$$N = Z^2 \frac{p(1-p)}{d^2}$$

Where N = sample size

p= Proportion of patients with fournier’s gangrene

d = marginal error between sample and population (0.05)

Results

Patient characteristics are summarized in Table 1. There were 78 patients in the study, all patients were male. Mean age was 68 years (range 31-89). Mean hospital stay was 38 days (range 25-48). Hospital deaths were nil.

Table 1- Characteristics of patients

Male	78 (100%)
Female	0
Mean age (Range) in years	58(46-75)
Mean hospital stay in days	38(25-48)
Hospital deaths in days	Nil

Values are mean and range or number of patients percentage

Table 2 – Distribution of patients as per age group

Age group	Number of patients (n)
30 -39 years	5 (6.41%)
40 -49 years	12 (15.39%)
50 -59 years	18 (23.08%)
60 -69 years	28(35.90%)
70 -79 years	12 (15.38%)
80 -90 years	3 (3.84%)

In our study, mean age was 68 years (range 31 -89 years). Majority of patients were in the age group of 60 - 69 years i.e 28 (35.90%) patients. Advancing age is the one of the risk factor of Fournier's gangrene. Next age group was 50 -59 years i.e 18 (23.08%) patients.

Table 3: Distribution of cases as per triggering factors for Fournier' gangrene

Triggering factors	Number of patients (n)
Traumatic laceration of perineum	26 (33.33%)
Repeated needle insertion	22 (28.20%)
Hemorrhoidectomy for prolapsed piles	5 (6.41%)
Perianal abscess drainage	2 (2.58%)
Urinary catheterisation	1 (1.28%)
Unknown factors	22 (28.20%)

Triggering factors for FG in our cases series were traumatic laceration of perineum in majority of patients i.e 26 (33.33%) patients. Next factor was repeated needle insertion in 22 (28.20%) patients for removal of hydrocele fluid. Rest of factors were hemorrhoidectomy for prolapsed piles in 5 (6.41%) patients, perianal abscess drainage in 2 (2.58%) patients, urinary catheterisation in 1 (1.28%) patient. Unknown factors was reported in 22 (28.20 %) patients.

Table 4: Case distribution as per predisposing risk factors for Fournier's gangrene

Predisposing risk factors	Number of patients (n)
Diabetes mellitus	30 (38.46%)
Age >50 years	21 (26.92%)
Steroid use	15 (19.24%)
Chronic alcoholic use	12 (15.38%)

Predisposing risk factors for Fournier's gangrene was diabetes mellitus in 30 (38.46%) cases. Next one was advancing age (>50 years) in 21 (26.92%) cases. Other factors were steroid use in 15 (19.24%) cases and chronic alcoholic use in 12 (15.38%) cases.

Table 5: Case distribution as per infecting organism

Infecting organism	Number of cases (n)
E. coli	48 (61.54%)
Klebsiella	18 (23.08%)
Streptococcus	12 (15.38%)

E.coli : Escherichia coli

According to pus culture report in our case series, most common infecting organism was E.coli in 48 (61.54%) cases. Next organism were Klebsiella in 18 (23.08%) patients and Streptococcus in 12 (15.38%) cases.

Table 6: Case distribution as per operative procedure

Operative procedure	Number of cases (n)
(A) Curative	
Aggressive debridement	78 (100%)
(B) Reconstructive procedure	
Secondary suturing	70 (89.75%)
Skin grafting	6 (7.69%)
Thigh pouch reconstruction	2 (2.56%)

In our case series, aggressive debridement was performed in all 78 (100%) cases. Reconstructive procedures were done in all 78 cases either by secondary suturing in 70 (89.75%) cases, skin grafting in 6 (7.69%) cases and thigh pouch reconstruction in 2 (2.56%) cases.

Table 7 Distribution of cases as per laboratory findings

Laboratory findings	Number of patients (n)
Leucocytosis	78 (100%)
Anaemia	32 (41.03%)
Raised BSL (Hyperglycemia)	30 (38.46%)
Raised serum creatinine	12 (15.38%)
Hypoproteinemia	8 (10.25%)

In our case series, total leucocyte count was raised in all 78 (100%) cases. Low haemoglobin was found in 32 (41.03%) cases. Hyperglycemia was reported in 30 (38.46%) cases. Serum creatinine was raised in 12 (15.38%) cases and hypoproteinemia in 8 (10.25%) cases.

Follow up

During the study period, patients were followed upto a period of 6 months. In all cases there were no any complications of surgical management nor readmission.

Discussion

Fournier's gangrene is the surgical emergency condition. Diagnosis of Fournier's gangrene is fully clinical. Radiological investigation may also needed in few cases. In our study, all cases were

operated in emergency setting. Majority of patients in our study were in the age group of 60-69 years i.e. 28 patients (35.90 %). In Khan I et al study majority of patients were in the age group of more than 50 years.⁽⁴⁾

The time interval between the onset of disease and surgical management is the most important factor in determining morbidity and mortality and final outcome of surgical management.⁽⁴⁾

In Kokut M et al study, patients were presented in the hospital between 2-7 days after the first symptom.⁽⁵⁾ In our case series, patient presented between the 3-8 days after the onset of disease. Late presentation in surgical OPD may be because of social stigma or lack of awareness. However in our study no any mortality was reported. We have performed aggressive surgical debridement and proper coverage of broad spectrum antibiotics. Pus culture and sensitivity report was also taken into consideration.

In literature predisposing factors mentioned are diabetes mellitus, advanced age, steroid use, malignancy and chronic alcoholic use.⁽⁶⁾ In our case series, most important predisposing factor was diabetes mellitus. Another risk factors were age >50 years, steroid use and chronic alcoholic use. Immunodeficiency is also one of the predisposing risk factors for Fournier's gangrene. In our case series immunodeficiency syndrome was present in 4 (5.13%) cases.

In our study, in majority of cases route of spread was cutaneous. Infection spread by repeated needle investigation for drainage of hydrocele fluid. Repeated needle insertion was reported in 22 (28.20%) cases. Traumatic laceration of perineum in 26 (33.33%) cases. Hemorrhoidectomy for prolapsed piles in 5 (6.41%) cases, perianal abscess drainage in 2 (2.58%) cases. Urinary catheterization in 1 (1.28%) cases. Kahan and Saleem had also reported similar route of spread.⁽⁴⁾

Raised WBC count (leucocytosis) was present in all our case series patient. Low haemoglobin (anaemia) in 32 (41.03%) cases. Hyperglycemia in 30 (38.46%) cases. Raised serum creatinine in 12

(15.38%) cases and hypoproteinemia in 8 (10.25%) cases. Hejase MJ et al also reported these clinical findings but his proportion of presentation were different.⁽⁷⁾ Disparity in these two results probably because of different sample size.

Aggressive surgical debridement and broad spectrum antibiotics and post operative proper dressing are the main line of treatment of Fournier's gangrene. Chawla SN et al also reported same protocol for line of management for Fournier's gangrene.⁽⁸⁾

In literature it is mentioned that use of hyperbaric oxygen help in wound healing. However in our case series we did not use hyperbaric oxygen because of lack of facility of hyperbaric oxygen in our hospital.

Laor et al formulated Fournier's gangrene severity index (FGSI).⁽¹⁰⁾ FGSI score >9 has 75% probability of death and score ≤9 associated with 78% probability of survival. In our case series FGSI was not evaluated.

Conclusion

Fournier's gangrene is the surgical emergency condition. Fournier's gangrene is a form of necrotising fasciitis, which causes rapid clinical deterioration with high morbidity and mortality. Aggressive surgical debridement and appropriate antibiotic coverage is the need of hour for high surgical outcomes. In literature very studies are reported about Fournier's gangrene, so it needs further more studies.

Conflict of interest-None

Funding- None

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