



FOURNIER'S GANGRENE: OUR EXPERIENCE AT A TERTIARY CARE HOSPITAL

Rashid Aslam¹, Muhammad Alam², Nadir Shah³

ABSTRACT

INTRODUCTION: An unusual, rapidly spreading fulminant form of necrotizing fasciitis that can spread to the abdominal wall in the space between the fascial planes and affects the vaginal, perianal, and perineal regions called Fournier's gangrene. **OBJECTIVE:** The goal of this study is to describe, analyse, and discuss the epidemiological, clinical, therapeutic, and evolutionary aspects of Fournier's gangrene. **MATERIALS AND METHODS:** This retrospective case series was carried out at General Surgery Department of Hayatabad Medical Complex Peshawar from January 2020 to June 2022. Analysis was done on the primary causes, risk factors, postoperative complications outcomes, and long-term follow-up findings. **RESULTS:** Total 46 patients were included in the study. Age ranged between 20-70 years with a mean age of 45 years. There were 36(78.2%) males and 10(21.7%) females with a male to female ratio of 3.6:1. Diabetes mellitus was found to be the most common risk factor 16(34.8%) followed by Tobacco 11(23.9%), Alcohol 8(17.4%), rectal adenocarcinoma 5(10.8%), morbid obesity 3(6.5%) & paraplegia 3(6.5%). Etiology was found in 31(67%) cases which includes, 13(28.2%) due to anal abscess; 7(15.2%) had a hemorrhoidal pathology, 5 (10.8%) anal fissure, 3(6.5%) had anal fistula and 3(6.5%) had developed the disease following perineal trauma. **CONCLUSION:** Fournier's Gangrene is a medical and surgical emergency with a high mortality and morbidity rate. Patients are saved through early diagnosis, antibiotic treatment, and high-quality debridement. **KEYWORDS:** Fournier's gangrene, Cleanliness stoma, Antibiotic therapy Necrosectomy

1. Rashid Aslam, Associate Professor / Chairman Deptt of General Surgery Hayatabad Medical Complex Peshawar
2. **Corresponding author:** Muhammad Alam, Associate Professor Deptt of General Surgery Hayatabad Medical Complex Peshawar
3. Nadir Shah, Specialist Registrar Deptt of General Surgery Hayatabad Medical Complex Peshawar

Corresponding author: Muhammad Alam, Associate Professor Deptt of General Surgery Hayatabad Medical Complex Peshawar

How to cite this article: Aslam R¹, Alam M², Shah N³. **FOURNIER'S GANGRENE: OUR EXPERIENCE AT A TERTIARY CARE HOSPITAL** JPUMHS; 2022;12:04, 34-39
<http://doi.org/10.46536/jpumhs/2022/12.04.373>

Received SEPTEMBER 11 2022, Accepted On 15 DECEMBER 2022, Published On 31 DECEMBER 2022.



© 2021 This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), **Attribution-Share Alike CC BY-SA**. This license lets others remix, adapt, and build upon your work even for commercial purposes, as long as they credit you and license their new creations under the identical terms

INTRODUCTION

An unusual, rapidly spreading fulminant form of necrotizing fasciitis that can spread to the abdominal wall in the space between

the fascial planes and affects the vaginal, perianal, and perineal regions called Fournier's gangrene.¹ It is brought on by a

polymicrobial infection that is the product of cooperative anaerobic and aerobic bacteria.² The anorectal, genitourinary, and cutaneous sites of the infection may be identified in 95% of patients.³ Diabetes and immunosuppression are risk factors for vascular disease, lowered immunity, and increased susceptibility to infections from many microbes.^{4,5} To make a diagnosis, a physical examination and clinical markers are used. Radiological techniques can determine the severity of the disease, but it's possible to have falsely negative results. According to past research, patient outcomes were significantly influenced by the disease's spread.⁶ It could reveal the severity of the invading pathogens or the extent of the patients' immunosuppression. Numerous papers made an effort to evaluate the worth of various scoring systems.⁷ Researchers have come to use Fournier's Gangrene Severity Index (FGSI), which is frequently mentioned in Fournier's gangrene literature and is thought to be a helpful predictor.⁸ The mortality rate for Fournier's gangrene is still high in most current data, ranging from 20 to 50%.⁹ Fortunately, it is a rare condition with a recorded prevalence of 1.6/100,000 males and a peak incidence in the fifth and sixth decades. However, the incidence is rising, possibly as a result of an ageing population, an increase in patients taking immunosuppressive drugs, or a rise in patients infected with the human immunodeficiency virus (HIV).¹⁰ Early diagnosis, extensive patient resuscitation, the administration of broad-spectrum antibiotics, and aggressive radical surgical debridement's are the mainstay of treatment. In addition to analysing its epidemiology, risk factors, etiologies, diagnostic procedures, and treatment strategies, our study's goal is to share what we know about perineal gangrene.

MATERIALS AND METHODS

This retrospective case series was carried out at General Surgery Department of

Hayatabad Medical Complex Peshawar from January 2020 to June 2022, involving 46 patients of either gender with Fournier's gangrene with infectious or idiopathic origin. The study included verified cases that had an operative report. Our study excluded patients with cellulitis, anal abscesses, and inadequate data. Data collection forms taken from the patient file archives were used to collect the data. The statistical analysis was done using SPSS 23.0. Qualitative values were given as percentages, whilst quantitative data were provided as mean and standard deviation, and they were checked for normality. For statistical analysis, a P value of 0.05 was considered significant. Microsoft Excel 2013 was used for tables and graphs.

RESULTS

Total 46 patients were included in the study. Age ranged between 20-70 years with a mean age of 45 years. There were 36(78.2%) males and 10(21.7%) females with a male to female ratio of 3.6:1. Diabetes mellitus was found to be the most common risk factor 16(34.8%) followed by Tobacco 11(23.9%), Alcohol 8(17.4%), rectal adenocarcinoma 5(10.8%), morbid obesity 3(6.5%) & paraplegia 3(6.5%).

Table-1

Etiology was found in 31(67%) cases which includes, 13(28.2%) due to anal abscess; 7(15.2%) had a hemorrhoidal pathology, 5 (10.8%) anal fissure, 3(6.5%) had anal fistula and 3(6.5%) had developed the disease following perineal trauma.

Table-2

Most common presenting complaint was perineal pain 42(91.3%), fever was noted in 30(65.2%), 27(58.7%) had tachycardia and 13(28.2%) presented with hypotension.

Figure-i

Radical surgical debridement was performed in all patients consisted of excision of all necrotic tissue, cleansing with hydrogen peroxide, saline and

drainage. Along with the radical debridement, 6(13%) underwent fecal diversion with loop colostomy, 3(6.5%) needs cystostomy for urinary diversion and Orchidectomy was performed in 2(4.3%) cases. **Figure-ii.** Mean hospital stay was 9 days. Total 4 patients died during their hospitalization with a mortality rate of (8.7%).

Table-i: Risk factors

Risk factor	Frequency	Percentage
Diabetes mellitus	16	34.8%
Tobacco	11	23.9%
Alcohol	8	17.4%
Rectal adenocarcinoma	5	10.8%
Morbid obesity	3	6.5%
Paraplegia	3	6.5%

Table-2: Etiology of study patients

Etiology	Frequency	Percentage
Anal abscess	13	28.2%
Hemorrhoidal pathology	7	15.2%
Anal fissure	5	10.8%
Anal fistula	3	6.5%
Perineal trauma	3	6.5%

Figure-i: Common presenting complaints

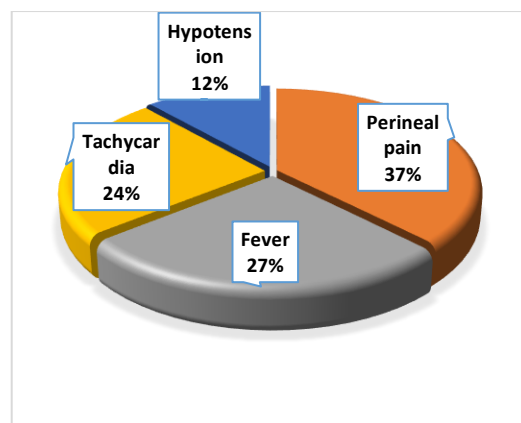
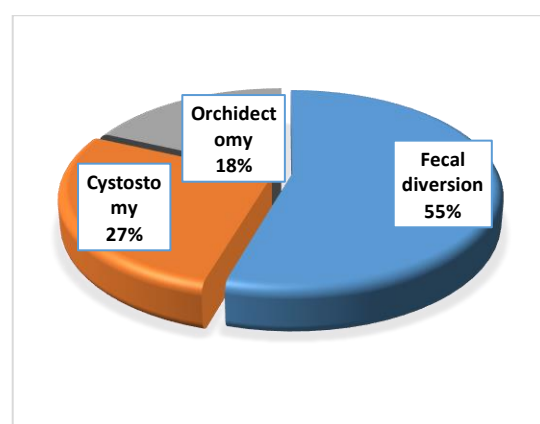


Figure-ii: Different surgical procedures



DISCUSSION

French dermatologist and venerologist Professor Jean- Alfred Fournier initially reported Fournier's gangrene in 1833.¹¹ About 1.6 cases of Fournier gangrene occur for every 100,000 males each year, accounting for 0.02% of all hospital admissions.^{12,13} The male to female ratio for the same set of patients was 3.6:1, with a mean age of 45. An average age of 50 years within a range of 20-80 years was found by Vargas F et al which is quite similar to our results.¹⁴ The gender ratio in our study was 3.6:1, which is consistent with previous studies.¹⁵ Diabetes mellitus is the most common risk factor, accounting for 34.8% of cases, followed by tobacco (23.9%) and alcohol (17.4%). Diabetes was identified as a risk factor by Eray IC et al in 14% of cases and Rosen DR et al in 35% cases.^{16,17} While smoking is not explicitly mentioned as a

risk factor for Fournier's gangrene in the literature, it was found in 23.9% of cases in our patients. However, it has yet to be shown if smoking would be one of the risk factors for the occurrence of perineal gangrene.

Essentially, the diagnosis is clinical, physical symptoms that might cause septic shock can be local at first or universal at a later stage. Numerous other diagnoses can be made, such as strangulated hernia in the phlegmon stage, scrotal or ischio-rectal abscess, balanitis, herpes infection, pyoderma gangrenosum, polyarteritis nodosa, warfarin necrosis, and ecthyma gangrenosum.¹⁸ Aerobic and anaerobic Gram-negative and positive species make up the bacterial strains that cause Fournier's gangrene, with anaerobic and snowy crackles appearing less frequently on clinical examination. The most common bacteria identified were *E. coli*, *P. aeruginosa*, *Proteus*, *Klebsiella*, *Streptococcus* species, *S. aureus*, *Enterococcus*, *Clostridia*, and *Bacteroides*, with *Candida* and multi-resistant *Staphylococcus aureus* being less frequently found in patients who had spent more time in the hospital. Imaging analysis can assist in separating the diagnosis of gangrene from other illnesses such as simple cellulitis and scrotal edema. A rapid and simple diagnostic technique that aids in establishing differential diagnoses is the use of bedside ultrasonography. Imaging is also required to investigate the aetiology, to confirm the diagnosis in situations of uncertainty, to determine the degree of the disease, and in cases of extremely advanced gangrene. Before the clinically found snowy sign, which has a sensitivity of 19–64%, a standard X-ray with a sensitivity of 90–100% may identify gas within soft tissue.¹⁹

Emergency patient resuscitation, broad-spectrum antibiotic treatment, and surgical debridement form the basis of the medical and surgical care. Reducing systemic toxicity, halting the spread of the illness,

and getting rid of the infection's germs are the objectives of treatment. For the infection to be stopped in its tracks, necrotic and devitalized tissue must be removed quickly and completely. Retrospective analysis of 72 patients with Fournier's gangrene by Yilmazlar T et al revealed that considerable mortality was linked to treatment delay.²⁰ All of the patients in our study had a cleaning stoma and a radical debridement. Depending on the severity of the necrosis, the surgical debridement was performed under general anesthesia on the posterior and anterior perineum as well as the inguinal areas. It was frequently repeated as necessary with dressings. Reconstructive plastic surgery was done if necessary after the infection was under control and the tissues were healthy.

In the literature, it is common to combine several types of therapy, such as the use of negative pressure and hyperbaric oxygen therapy. Although a suprapubic cystostomy for urine diversion may be necessary in some cases with significant urethral or penis involvement, a urethral catheter often offers an acceptable diversion. Only a small percentage of patients with anorectal and sphincter region involvement and a significant risk of faecal contamination require a colostomy. Patients with sphincter lesions or those needing intensive perianal debridement may receive a colostomy. Studies in the literature have suggested that patients with severe lesions of the perianal region other than Fournier's gangrene may benefit from using intestinal catheters (Bowel management catheter) or stool management kits to prevent faecal contamination.

When this procedure was used to treat Fournier's gangrene, Eray et al reported good outcomes and positive effects when compared to patients who had stool diversion in terms of length of hospital stay and cost. In our department, washing

colostomies are used to promote quick healing and avoid stoma contamination of debridement wounds. Despite appropriate medical and surgical care and good resuscitation, Ruiz TJ et al found that 16% of his sample of 1728 patients who had Fournier gangrene died.²¹ Male mortality was reported to be 7.5% and female mortality to be 12.8% by Malik AM et al but these differences were not statistically significant.²² In our study 8.7% mortality rate was observed, which is comparable to data from other series.

CONCLUSION

Fournier's gangrene is an uncommon yet serious condition. Fournier gangrene is a high medico-surgical emergency. Its multidisciplinary approach combines aggressive surgical intervention, initially targeted broad-spectrum antibiotic medication, and rigorous resuscitation. It has a high risk of morbidity and mortality. The prognosis depends on the diagnosis, length of treatment, size of the lesions, and effectiveness of debridement. Sometimes, reconstructive surgery is required.

ETHICS APPROVAL: The ERC gave ethical review approval

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin

FUNDING: The work was not financially supported by any organization. The entire expense was taken by the authors

ACKNOWLEDGEMENTS: We are thankful to all who were involved in our study.

AUTHORS' CONTRIBUTIONS: All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated in the work to take public responsibility of this manuscript. All

authors read and approved the final manuscript.

CONFLICT OF INTEREST: No competing interest declared.

REFERENCES

1. S. Wongwaisayawan, S. Krishna, M. Haroon, Y. Nisha, A. Sheikh, Fournier gangrene: pictorial review, *Abdom Radiol.* 45 (11) (2020) 3838–3848.
2. A.R. Gennaro, A Foreign Body (Chicken Bone) in the Rectum Causing Extensive Perirectal and Scrotal Abscess: Report of a Case.:3, 1975.
3. O. Baraket, W. Triki, K. Ayed, S.B. Hmida, M. Amine, A. Baccar, et al., Facteurs thérapeutiques affectant la cicatrisation au cours des gangrènes du périnée [Internet], *Pan Afr Med J* (2018) [cité 15 févr 2021];29.
4. C. Arvieux, F. Reche, Traitement chirurgical des gangrènes du périnée, *EMC - Techniques chirurgicales - Appareil digestif* 6 (2) (janv 2011) 1–7.
5. R.A. Agha, C. Sohrabi, G. Mathew, T. Franchi, A. Kerwan, N. O'Neill, et al., The PROCESS 2020 guideline: updating consensus preferred reporting of CasE series in surgery (PROCESS) guidelines, *Int. J. Surg.* 84 (déc 2020) 231–235.
6. N. Eke, Fournier's gangrene: a review of 1726 cases: Fournier's gangrene, *Br. J. Surg.* 87 (6) (2000) 718–728.
7. M.D. Sorensen, J.N. Krieger, F.P. Rivara, M.B. Klein, H. Wessells, Fournier's gangrene: management and mortality predictors in a population based study, *J. Urol.* 182 (6) (2009) 2742–2747.
8. A. Singh, K. Ahmed, A. Aydin, M.S. Khan, P. Dasgupta, Fournier's gangrene. A clinical review, *Arch. Ital. Urol. Androl.* 88 (3) (5 oct 2016) 157.
9. S.-Y. Chen, J.-P. Fu, C.-H. Wang, T.-P. Lee, S.-G. Chen, Fournier gangrene: a review of 41 patients and strategies for reconstruction, *Ann. Plast. Surg.* 64 (6)

- (juin 2010) 765–769.
10. A. Dekou, P.-G. Konan, E. Gowe, C. Vodi, B. Kouame, A. Fofana, et al., Gangrène des organes génitaux externes (GOGE): traitement chirurgical et reconstruction plastique, *Basic Clin Androl.* d'éc 21 (4) (2011) 247–253.
 11. García A, Martín J, Vaquero A, Sánchez T, de Tomás J, Lago J, Turégano F: Fournier's gangrene: analysis of prognostic variables in 34 patients. *European Journal of Trauma and Emergency Surgery* 2011, 37:141–145.
 12. J.S. You, Y.E. Chung, K.S. Cho, S.W. Kim, I. Park, The emergency computed tomography as important modality for early diagnosis of Fournier gangrene, *Am. J. Emerg. Med.* 29 (8) (oct 2011) 959.e1–959.e2.
 13. Z. Yan, X. Gang, X. Xie, Y. Gao, Z. Li, G. Wang, A case report and literature review: identification of a novel AIRE gene mutation associated with Autoimmune Polyendocrine Syndrome Type 1 in East Asians, *Medicine* 99 (18) (2020), e20000.
 14. F. Vargas, A. Boyer, Gangrène de Fournier 8 (2011).
 15. I. Rosa, F. Guerreiro, Hyperbaric oxygen therapy for the treatment of Fournier's gangrene: a review of 34 cases, *Acta Med. Port.* 28 (5) (17 sept 2015) 619.
 16. I.C. Eray, O. Alabaz, A.T. Akcam, A. Ulku, C.K. Parsak, G. Sakman, et al., Comparison of diverting colostomy and bowel management catheter applications in Fournier gangrene cases requiring fecal diversion, *Indian J. Surg.* 77 (S2) (2015) 438–441.
 17. D.R. Rosen, M.E. Brown, K.G. Cologne, G.T. Ault, A.M. Strumwasser, Long-term follow-up of Fournier's Gangrene in a tertiary care center, *J. Surg. Res.* 206 (1) (2016) 175–181.
 18. E. Ozturk, Y. Sonmez, T. Yilmazlar, What are the indications for a stoma in Fournier's gangrene: indications for a stoma in patients with Fournier's gangrene, *Colorectal Dis.* 13 (9) (2011) 1044–1047.
 19. Sallami S, Maalla R, Gammoudi A, Ben Jdidia G, Tarhouni L, Horchani A: Fournier's Gangrene: What are the prognostic factors? Our experience with 40 patients. *La Tunisie Medicale* 2012, 90:708–714.
 20. Yilmazlar T, Ozturk E, Ozguc H: Fournier's Gangrene: An analysis of 80 patients and a novel scoring system. *Tech Coloproctol* 2010, 14:217–223.
 21. Ruiz-Tovar J, Córdoba L, Devesa JM: Prognostic Factors in Fournier Gangrene. *Asian J Surg* 2012, 35:37–41.
 22. Malik AM, Sheikh S, Pathan R, Khan A, Sheikh U: The spectrum of presentation and management of Fournier's gangrene-An Experience of 73 Cases. *J Pak Med Assoc* 2015, 60:617–619.