Journal of Advances in Medicine and Medical Research

32(23): 120-125, 2020; Article no.JAMMR.62816
ISSN: 2456-8899
(Past name: British Journal of Medicine and Medical Research, Past ISSN: 2231-0614, NLM ID: 101570965)

The Role of Colostomy in Management of Fournier's Gangrene

Yasser El Brahmi[1*], Mohammed El Fahssi[1], Abderrahman Elhjouji[1], Abdelkader Ehirchiou[1], Abdelmounaim Ait Ali[1] and Aziz Zentar[1]

[1]Visceral Surgery, Military Hospital Mohammed V Rabat, Rabat, Morocco.

Authors' contributions

All the authors contributed to the realization of this work. All authors also declared that they had read and approved the final version of the manuscript.

Article Information

DOI: 10.9734/JAMMR/2020/v32i2330723
Editor(s):
(1) Prof. Dr. Emin Umit Bagriacik, Gazi University, Turkey.
Reviewers:
(1) Wilson Laffita Labañino, Angola Medical Surgical Research Institute, Angola.
(2) C. P. Ganesh Babu, Sri Balaji Vidyapeeth University, India.
(3) Parag Karkera, Bai Jerbal Wadia Hospital for Children, India.
Complete Peer review History: http://www.sdiarticle4.com/review-history/62816

Original Research Article

Received 17 September 2020
Accepted 22 November 2020
Published 10 December 2020

ABSTRACT

Study Objective: The colostomy is not used systematically for the treatment of Fournier's gangrene. Through our study, we compared two groups of patients who had faecal diversion and those how did not .we tried to get the advantages of this method and his impact on wound healing and duration of hospitalization

Patients and Methods: This is a 14-years retrospective study from 1st January 2005 to 31st December 2018. We collected 86 cases of Fournier's gangrenes, of which 30 patients benefited from a derivative colostomy, done by the same surgical team. We divided the two groups by aetiology and morbidly-mortality.

Results: In the group with colostomy, prevalent disease was perianal suppurations with the presence of risk factors in75% of cases such as diabetes, immunosuppressive therapy or patients age over 70 years old .While these factors are found only in 52% of the other group. The average days of hospital stay in the group with colostomy was 25 days and 32 in the other group, 67% of patients had a colostomy with hyperbaric oxygen therapy against 70% in the other group. Mortality was 30% in first group with colostomy, an 12.5% in the second one, the overall mortality was19% globally in the two groups.

Conclusions: In our series only 35% benefited from a colostomy: Patient with major deterioration and the presence of others diseases. But overall mortality in our series is comparable to that of teams practicing colostomy systematically.

**Corresponding author: E-mail: yasserelbrahmi@gmail.com;*

Keywords: Fournier's gangrene; risk factors; colostomy; mortality.

1. INTRODUCTION

Colostomy is not done systematically in the management of Fournier's gangrene.

But In some patients of Fournier gangrene , it is important to prevent fecal contamination in order to provide healing without wound infection. For this purposes, diverting colostomy were performed.

We compared two groups of patients how underwent faecal diversion and those who did not, and we tried to show the benefits provided by performing diversion colostomy, and it's impact on duration of hospitalization and wound healing.

2. MATERIALS AND METHODS

Our study involves a retrospective analysis of 86 cases of gangrene Fournier attended the visceral surgery department 2 of the Hospital Mohammad V in Rabat, during a period of 14 years, between first January 2005 and 31 of December 2018. Patients was divided into two groups:

- Patients who underwent a colostomy
- Patients who did not.

The general objectives of this study was to qualify the contribution of the colostomy in the management of Fournier's gangrene, to describe its impact on wound healing as well as on the length of hospital stay.

While the specific objectives was to describe the epidemiological profile of patients admitted for Fournier's gangrene and to foresee the evolutionary methods and thus to optimize the therapeutic management.

And finally to improve the results in terms of mortality and morbidity in patients with this pathology.

3. RESULTS

The average age of our patients was 50 years, between 23 yrs old to 75 years. In the group of patients with colostomy the average age was 51 years compared to 34 years in patients with no colostomy.

Among the patients presented in this study, 77 patients are male compared to 9 females, which's mark a strong male predominance with a sex ratio of 8M/ 1F.

65% of our patients had at least one associated disease ;diabetes mellitus was the most important antecedent Table 1.

The presumed aetiology of Fournier's gangrene was found in 92% of cases while in 8% of cases (7 patients) no cause was detected. The aetiologies found are dominated by proctological causes (Table 2).

Clinical signs on admission were predominantly pain, edema and skin necrosis . The local extension of the necrosis was limited to the perineum in 18 patients (21%). It is extended to the external genitalia in 12 patients (14%). Its affects the abdominal wall in 8 patients (10%), the chest wall in 5 cases (6%). More rarely extended the lumbar wall 2 cases (2%). (Table 3).

Bacteriological samples were taken from 58 patients (67%), and we found a single *E. coli* germ in 9 patients (10%) and several germs in 39 patients (45%), thus confirming the poly-microbial nature of this infection. The most common bacterial agents involved were *Escherichia coli* (83%) and *Streptococcus* (35%).

The use of imaging techniques, particularly CT scan abdomen and pelvis , was rarely used only in 16% in our cases, because the fact that the majority of patients were admitted in an advanced stage of diseases where the diagnosis of was obvious and did not require any recourse to further investigations.

All our patients were admitted to the emergency room and then transferred to the visceral surgery department benefiting from a biological assessment, electrolyte rehydration, parenteral nutrition and heparin therapy.

Some patients were initially admitted to the intensive care unit for septic shock or loss of consciousness which required active resuscitation measures.

The surgical management consisted of aggressive surgical debridement in extreme

urgency, diversion colostomy was performed in 30 patients (35%).

The average time to colostomy was three days with extremes ranging from 2 to 10 days. Two colostomy sides were used: left iliac (82%) and transverse (18%).

Bladder catheterization was performed systematically.

Daily dressing was performed in all patients in the operating theater and then in the ward after improvement of the wounds.

Hyperbaric oxygen therapy has been indicated in patients with extensive gangrene with signs of toxicity or in positive Clostridium cultures.

65% of our patients were able to benefit from hyperbaric oxygen therapy sessions, 36 of patients in the group of non-colostomized patients and 20 in the group of colostomized patients.

The length of hospital stay was variable with an average of 30 days,between 15 to 48 days, 25 days in the group of patients without colostomy, and 32 days in the group of patients with colostomy. The postoperative course was marked by certain complications (Table 4).

Wound revision was performed only once in 13 patients (15%), and was done twice in 9 patients (11%) because of the extension of necrosis. 42 patients underwent reconstructive surgery (including restoration of continuity and other plastic surgery procedures) which corresponded to 100% in the group of colostomized patients and 14% in the group of non-colostomized patients.

68 patients dischargedor 80% of recovery rate. The follow-up was carried out in outpatient department . 16 cases of death were recorded in this group or 19% of a death rate , 7 patients in the group of patients without colostomy or 12.5% of the cases, and 9 patients in the group of patients with colostomy, or 30% of the group.

Table 1. Patient history and comorbidities on admission

Patient history	Number of cases	Percent%
Diabetes	35	40
Arterial hypertension	24	27
Heart disease	16	19
Smoking	16	19
Vascular pathology	11	13
Immunosuppression	11	13
Renal pathology	9	10
Liver disease	7	8
Pulmonary pathology	6	7
Chronic alcoholism	6	7

Table 2. Etiologies and points of departure

Etiologies	Colostomized patients/number	Total Percentage of cases in%
proctological	25/64	75
Genitourinary	2/9	10
Traumatic	3/5	6
Retro-peritoneal (abscess of the p	0/1	1
Unknown	0/7	8

Table 3. Extent of gangrene

The extension	Number of cases colostomized / not colostomized	Percentage in% colostomized / non-colostomized cases
Perineum	6/12	7/14
External genitalia	6/6	7/7
Thoracic wall	3/2	4/2
Lumbar / abdominal wall	7/5	9/6
Member root	8/5	10/6

Table 4. Secondary complications of admitted patients

Complications	Number of cases of patients with colostomy / patients without colostomy	Percentage of cases of patients with colostomies / patients without colostomies
Urinary tract infection	2/5	2 ,5/6
Pulmonary infection	4/7	5/8
Thrombophlebitis	1/3	1 ,2/3,5
bedsores	3/2	3,5/2,5
Other	4/10	5/12

Table 5. Risk factors

Risk factors	S. ETTALBI series, 45 cases Morocco	S. KABAY series, 72 cases Turkey	S. JARBOUI Series, 35 cases Tunisia	GHNAMM series 74 cases
Diabetes	35,5%	45%	65%	51,35%
Coticotherapy	4%	-	-	-
Alcoholism	27%	8%	-	-
Malnutrition	-	6%	-	-
Heart Failure	93%	-	-	1,35%
Smoking	51%	-	-	-
Arterial hypertension	17%	5%	25,7%	-
Renal failure	6%	2%	-	1,35%
Obesity	-	1 ,38%	-	-
No	-	25%	-	32,43%

4. DISCUSSION

The incidence of Fournier's gangrene (FG) is approximately 0.3 / 100,000 in Western countries. It is not confined to one region of the world, although the largest clinical series come from the African continent [1].

Classically she has a predilection for young adults aged 20 to 50, but it can be found at any age from a few days to 89 years.

However, there is an increase in the average age from 40.6 years between 1883 and 1945 in the review of Mc CREA to 51.3 years between 1945 and 1979 in the JONES study.

In our series the average age was 50 years which is identical to results of other recent studies [2,3]. Sorensen and his colleagues identified high age as a risk of mortality in a large population study evaluating the clinical characteristics of 1,641 patients from 593 hospitals.

Men are ten times more affected than women. This difference can be explained by better drainage of the perineal region in women through vaginal secretions.

However, according to Czymek et al, Female sex is a risk factor for mortality in patients with Fournier's gangrene and associated with a higher incidence of peritonitis and retroperitonitis [4].

In our series, 9 patients were female (10%), 4 of whom had a colostomy. Diabetes is associated with FG in 20 to 70% of cases, making it the most common risk factor associated with this infectious process. In our series 35 patients were diabetic or 40% of our cases, including 18% in the group of colostomy patients [5].

Hemodialysis, as well as kidney transplantation are also recognized risk factors for FG. In our series, 9 patients received hemodialysis, of which 3 were colostomized Several studies recognize HIV as a disease predisposing to perineal gangrene. However, for ELEM and RANJAN, HIV infection does not influence the progression of perineal gangrene [5,6]. In our series, none of the patients had HIV infection.

Oncological Patients also have a great predisposition to develop Fournier's gangrene, either by the neoplastic disease itself, or by the chemotherapy used in its treatment. In these two situations, there is an immunosuppression which

promotes the development of serious infections [6].

In our series, 11 patients were on immunosuppressive treatment (13%) including 7 patients in the group of colostomized patients. Alcoholism is the second major risk factor involved in development of perineal gangrene. Its prevalence among patients affected by this condition ranges from 10 to 76% of cases.

Alcoholism is associated with a poor prognosis, especially in diabetic patients [7,8].

It is not the only toxic habit incriminated in gangrene perineal, in fact, chronic smoking can also be at the origin.

In the majority of cases the cause of gangrene of the external genitalia can be identified. But in some cases, the cause remains unclear in 5 to 35% of cases.

In our groups, the aetiology of FG was not found in 7 patients either a percentage of 8%. However, it is difficult to confirm with certainty absence of aetiology, because of different symptoms that make the diagnosis difficult either poor informations that patient provide to make a proper diagnosis, or a lack of instrumental methods of investigation. Currently, the concept of "idiopathic foudroyant gangrene" described by Fournier in 1884 is therefore not used , and a causal lesion must be systematically located and treated.

Surgical treatment is the most effective and irreplaceable weapon, it is a major pillar in the management of perineal gangrene. It is currently the determining factor in the prognosis. It allows the removal of non-vascularized or poorly vascularized lesion.

The colostomy is most often performed during the first intervention, sometimes 48 to 72 hours later once the patient's general condition has stabilized [9,10]. In the series of S. Ettalbi, it was performed in 42% of cases, 84% for A. EL Mejjad and 5% at S. Jerboui. Some authors perform colostomy routinely in all patients, others suggest it only when a colorectal cause is suspected [11].

We believe that colostomy should be performed in selected patients in order to protect wounds from fecal contamination in cases of extensive sphincter lesions or extensive perineal debridement.

This decision is difficult to make during the initial surgery because of acute inflammation and necrosis that prevent further examination. Usually, the tissue edema subsides within the first 48 hours, which allows a better evaluation of the sphincters and perianal tissues. Therefore, a decision about performing a colostomy is postponed to the second examination, which is almost always carried out 48 hours after the initial debridement. Thus, the colostomy facilitated local care and promoted healing by allowing high-calorie enteral nutrition [12,13].

For our series, 35% of cases received a colostomy.In the group with colostomy, the aetiology is dominated by perianal suppurations with the presence of an aggravating factor present in 75% of cases: Diabetes, immunosuppressive treatment or age over 70 years. These factors are only found in 52% in the other group.

The mean stay in the colostomy group was 25 days while it was 32 days in the other; with as a variant only 67% of cases with colostomy had hyperbaric oxygen therapy against 70% in the other group. Mortality in the colostomized group was 30% and 12.5% for the non-colostomized, so overall 19%.

5. CONCLUSION

In our series, only 35% benefited from a colostomy with the criterion of choice: major deterioration and the presence of risk factors. The overall mortality in our series is comparable to that of colostomized teams. We recommend a deferred colostomy after the first dressings depending on the deterioration and pre-existing defects.

CONSENT

As per international standard informed written participant consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard written ethical permission has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Sarkis P et al. Gangrène de Fournier: Revue de la littérature récente. Prog Urol. 2009;2:75-84.
2. Altarac S, Katusin D, Crnica S et al. Fournier's gangrene: Etiology and outcome analysis of 41 patients. sl. Urol Int. 2012;88:289-293.
3. Hasdemir AO, Buyukasik O, Col C. The clinical characteristics of female patients with Fournier's gangrene. s.l. Int Urogynecol J Pelvic Floor Dysfunct, 2009;20:1439-1443.
4. Bayar S, Unal Ae, Demirkan A, Atasoy C, Karayalcin K. Fournier's gangrene complicating blunt thoracic trauma sl surgery. 2004;6:693-694.
5. Chawla Sn, Gallop C, Mydlo Jh**.** Fournier's gangrene: An analysis of repeated surgical debridement. sl. Eur Urol. 2003;5:572-575.
6. Chazan B, Kopelman D, Katz Z, Kniznik D, Chen Y, Colodner R et al. Fournier's gangrene as the initial presentation of HIV infection sl. Int J infect Diseases. 2007;2:184-185.
7. S Lasocki, A Geffroy, P Montravers. Dermohypodermites bactériennes nécrosantes et fasciites nécrosantes (DBHN-FN) périnéales ou GF sl. Annales françaises d'anesthésie et de réanimation. 2006;25:971-974.
8. Jeong Hj, Park Sc, Seo Iy, Rim Js. Prognostic factors in Fournier's gangrene sl. Int J Urol. 2005; 12,8:1041-1044.
9. Heyns Ce, Theron Pd. Fournier's gangrene. Emergencies urology. 2007;50-60.
10. Fabiani P, Benizri E. Traitement chirurgical des gangrènes du périnée. Sl. Encycl Méd Chir (Elsevier, Paris). Techniques chirurgicales - appareil digestif. , 1998;40-695.
11. Frezza Ee, Atlas I. Minimal debridement in the treatment of Fournier's gangrene. sl. Am Surg.1999;11:1031-1034.
12. P Cadot I. Rouquette P Szym et al. Les cellulites graves, ou gangrène de Fournier du périnée sl. Journal de Chirurgie Viscérale, 2003,1:22-32.
13. Benizri E, Fabiani P, Migliori G, Quintens H, Chevallier D, Amiel J et al. Les gangrènes du périnée. Analyse de 24 observations. sl. Prog Urol. 1992;2:882-891.

Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle4.com/review-history/62816