Abstract

Background: Fournier’s gangrene is a pathology with a high fatality rate, of unknown etiology and with a very unpredictable prognosis. Described by Jean Alfred Fournier in 1883. The term “Necrotizing Fasciitis” was introduced by Wilson in 1952. It is defined as a soft tissue infection that involves the muscular fasciae of the genital, anal and perineal areas, with a natural evolution that is rapidly progressive and deadly.

Objective: Describe the experience that has been evolutionary in the treatment paradigm for Fournier’s disease. Analyze deductively and critically about the myths of Fournier’s disease.

Method: It is a study with a retrospective, longitudinal, observational, descriptive and comparative design; using descriptive bio-statistics procedures. The records of all patients treated surgically for Fournier’s disease in the Surgery and/or Colon and Rectum departments of six second and third level health hospitals in Mexico City and the State of Mexico were reviewed.

Results: A total of 214 patients were analyzed, of which 188 were male (88%) and 26 were female (12%). With an age range of 16 to 79 years, average of 46 years and a bimodal mode of 44 and 38 years.

Discussion: Fournier’s disease is a pathology that has undergone diagnostic-therapeutic changes over the years, with the intention of improving, of being competent; The various treatment modalities have had very mixed results; Therefore, the search for a conduct that regulates in a standardized, ethical, scientific, efficient, practical way with low costs and that is based on scientific evidence, must be continued.

Conclusion: The speed with which the surgical intervention is carried out is essential; therapeutic delay deteriorates the prognosis of the patient, wide and aggressive debridement is essential in the first surgical procedure.

Keywords: Fournier; Fasciitis Necrotizing; Debridement Therapeutics; Forecast; Surgical

Introduction

Fournier’s disease (EF) or necrotizing fasciitis (FN), is a rare disease, with a high degree of lethality, its etiology to date is unknown, its evolution is torpid with a very unpredictable prognosis; It is described for the first time in the article “Sur une Plaie contuƒequis'eƒtterminée par le jphacele de tout le fcretum” by M. Baurienne, published in March 1764 [1], however it takes its name from Jean Alfred Fournier in the year 1883 which describes a series of cases detailing the disease [2]. The term “Necrotizing Fasciitis” was introduced by Wilson in 1952 [3]; however not much has changed since its original description [4].

FD is defined as a soft tissue infection that primarily includes the muscular fasciae, in the genital, perianal and perineal areas; with a rapidly progressive, disabling and lethal evolution; the cause itself remains unknown, unlike what is referred to in the literature [5-7]. It should be considered that the muscular fasciae do not have direct or specific anatomical blood supply, coupled with the fact that the adjacent subcutaneous cellular tissue presents a very precarious blood circulation as well as the skin, therefore it feeds through diffusion [8]. That is why, once the muscle fascia is affected by infection or FN, its spread is exponential, since the rate of spread of muscle fascia necrosis is 2 to 2.5 cm per hour [9] and antibiotic therapy, whatever it is, is ineffective.

Statistically, the EF reaches a lethality of 90% [5] with a mortality rate that oscillates between 20 and 50% on average; with an incidence of 1.6 cases per year. Its incidence is more frequent in men in a ratio of 10: 1 with women and it occurs more frequently at the age of 40 to 50 years [2,6,9-11]. It is associated with various factors, both age, and customs or lifestyle habits, diet, alcoholism and/or associated pathologies such as obesity, diabetes mellitus, among others; that condition certain immunosuppression [2,7,10,11].

The microorganisms isolated in FD are multiple (polymicrobial); although they are not omnipresent; since they are found in 54% of infected tissues, and the most frequent is Escherichia coli in 46%; other pathogens detected are: Streptococcus pyogenes, Pseudomonas aeruginosa, Klebsiella pneumoniae, Enterococcus ssp, Bacteroides fragilis, Streptococci, anaerobes and others [6,12]. The diagnosis is clinical, with a variable presentation according to: the evolution time, the associated comorbidities, and the health status of each patient [13]. The symptoms of FD are nonspecific, it can start as a sudden, intense pain, which may or may not become dull or even painless, asthenia and/or general malaise; the signs depend on the time of evolution of the disease, they are divided into local and systemic. Local signs are: edema, erythema, deformation of the area, skin necrosis, ulcers, abscess or multiple abscesses with leakage of purulent material, stench, crepitation, necrosis of tissues including the skin, subcutaneous cellular tissue and muscle fasciae; systemic signs are typical of a systemic inflammatory response to mention a few, such as non-characteristic fever, adynamia, dyspnea, tachycardia, neurological alterations, among others; they can lead to septic shock or coma [13,14].
Computed tomography is the study of choice, since it can confirm the diagnosis, determine the extent and depth of the disease; with a very high specificity and that is superior to 95%; for planning surgical treatment [2,9,15].

Objective of the Study

Describe the experience of the authors that through the years has changed, being evolutionary in the paradigm of the treatment of FD; with a phenomenon of specific adaptation in each patient and the available resources of each hospital. Analyze in an ethical, deductive, critical and evidence-based way, in the assertions or myths of PE.

Methods

It is a study with a retrospective, longitudinal, observational and descriptive design. We review the records and files of all patients treated surgically by EF in the Surgery and/or Colon and Rectum services, second and third level of health care in six hospitals in Mexico City, as well as in the State of Mexico and they are:


In a study period that ranged from June 2005 to June 2020. Age, sex, pathological history, associated factors or comorbidities, time of evolution of FD from the start, surgical treatment, surgical risk according to classification were evaluated ASA, surgical time, cultures with antibiograms, treatment lines or therapeutic behaviors with surgical intervention, bleeding number of surgical interventions, schedules of antimicrobial drugs used, days of hospital stay, days of stay in intensive care, complications, sequelae, reconstructions surgical procedures, spontaneous closure, interdisciplinary management, unit treatment costs, morbidity and mortality. With a follow-up of each patient upon discharge from the hospital at one week, one month, two months, six months or one year, until their final discharge.

The study and presentation of the results of the study using descriptive biostatistics procedures.

The management lines or behaviors have been applied depending on the institution or hospital, on the clinical conditions (seriousness)-psychological of each patient, on the resources (material and human).

Therapeutic generalities:

- Supportive medical management.
- Control of comorbidities (By multidisciplinary team).
Empirical antibiotherapy, double scheme (Spectrum for gram-negative and anaerobic). With only the use of second generation quinolones or cephalosporins, and the administration almost exclusively of metronidazole, due to almost no resistance already documented.

• Handling of amines if required.
• Supplemental oxygen therapy.
• Ventilatory mechanical assistance if necessary.

It is vitally important to describe the surgical technique and the high points as canons or prerogatives: "After asepsis and antisepsis of the area to be intervened in the appropriate position depending on the affected region, in modified lithotomy or in the Kraske or Seville razor position, after placing sterile fields, an incision is made in the area with greater involvement or affection (erythema, edema, hyperthermia, necrosis or spontaneous discharge of purulent material); The abscess or abscesses found in the various compartments or septa are drained, taking a sample for culture of the purulent material and infected tissue (culture-biopsy), the infected and/or necrotic tissues must be dissected and resected until tissue is found viable or healthy. With extreme care in hemostasis and essential or crucial anatomical structures not involved. Surgical lavage is performed with 10% povidone iodine for 10 minutes, followed by sterile water for its removal and secondly the use of hydrogen peroxide, haemostasis is verified in an exquisite way and the bloody area is left exposed, without any closure. Procedure is completed”.

The surgical management fee is based on:

1. Complete and correct drainage of it or abscesses.
2. Resection of all infected and/or necrotic tissues until viable or healthy tissue is found.
3. Surgical scrub with 10% povidone iodine for 10 minutes (action by contact, not by carving or abrasion), in a second term the use of hydrogen peroxide.
4. The bloody area is left exposed, without any closure or confrontation.

The specific therapeutic behaviors are grouped below in a classification:

• **Behavior I:** Surgery, healing and honey: 1st Surgery as the axis of treatment and healing every 12 hours with 10% povidone iodine and subsequent application of honey. With surgeries every 72 hours for debridements and consecutive surgical washes ranging from 3 to 7 surgical procedures added to the first.

• **Behavior II:** Surgery and cures: 1st Surgery as an axis of treatment and healing every 8 hours or up to every 6 hours for wound service with lidocaine hydrochloride spray, water, soap and the use of chlorhexidine; with a family training to carry them out. On rare occasions a 2nd surgery is performed.

• **Behavior III:** Surgery and artesa: 1st Surgery as the axis of treatment and healing in the Artesa every 24 hours only with soap and water, after applying with a lidocaine hydrochloride spray; with subsequent surgeries every three to four days, or every week, with debridement and surgical scrubbing. With an average of 3 to 5 surgical procedures.

• **Conduct IV:** Surgery, dressings and bioactive patches: 1st Surgery as the axis of treatment and healing with 10% povidone iodine, as well as hydrogen peroxide, with subsequent application of bioactive patches every 5 days, such as hydrocolloids, hydrogel or alginates depending on the patient’s evolution and the level of infection or no. The clinical and wound response was evaluated every 3 to 4 days, subjecting him to a 2nd or 3rd surgery with debridement and surgical lavage as required by the patient.
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- **Conduct V**: Surgery and VAC system: 1st Surgery as an axis of treatment and use of the VAC system, which depending on the patient’s evolution, the VAC system is changed every 4 to 5 days with a frequency of 3 or up to 5 replacements with debridement and surgical lavage if warranted, or failing that only replacement in bed.

- **Conduct VI**: Surgery and sediluviums: 1st Surgery as the axis of treatment. With subsequent handling only with sediluviums starting every 4 hours and later every 8 hours. And home delivery after 5 or 7 days.

In all the behaviors, the criteria for hospital discharge included: achieving granulation tissue and initiation of wound contraction, clinical and hemodynamic improvement.

**Statistical method**

Through descriptive biostatistics studies with a sample of consecutive cases, performing 2 x 2 contingency tables, with cohort designs and odds ratio, the difference between groups is analyzed using Fisher’s exact probability and Pearson’s $X^2$, with the SPSS 25 statistical package. The 95% confidence interval is calculated using the normal approximation of the binomial distribution. In some values, Mantel-Haenszel-Yates corrections are applied to increase reliability.

**Results**

There were a total of 214 patients, of which 188 were male (88%) and 26 were female (12%). With an age range of 16 to 79 years, with an average of 46 years and a bimodal value of 38 and 44 years.

Regarding the comorbidities, factors and previous diagnoses, associated are detailed in table 1; the most frequent comorbidity was obesity with a BMI equal to or greater than 30 present in 152 patients (71%), in a second place diabetes mellitus 146 cases (68%), dyslipidemia was the third comorbidity in 86 people (40%). With regard to risk factors, alcoholism and smoking were the two most frequent. Likewise, baseline diagnoses were identified, which were grouped into five sections: previous trauma, proctological/abdominal history, urological, gynecological and obstetric and healthy subjects. The pathologies of each group that stood out: they are the anal abscess in 79% of the proctological/abdominal group; the urological scrotal abscess reaching 67% and the bartolinitis in the gyneco-obstetric, leading with 86% within this group of patients. It is necessary to clarify that the same patient could have had one or more comorbidities, or factors and/or a diagnosis; however, the healthy patients did not have any of the three clinical conditions.

The average time in which the patient with SCD goes to seek medical attention in the emergency room is 9 days, with an interval of 5 to 24 days; Likewise, surgical care after arrival at the emergency service is 42 hours, with a range of 2 to 83 hours. 60% of patients undergo surgery after 48 hours. 10% at 2 hours and the remaining 30% falls within the range of this time period.

The anesthetic risk according to the American Society of Anesthesiologists (ASA) was estimated as follows.

- ASA I 3 patients = 2%.
- ASA II 51 patients = 23%.
- ASA III 126 patients = 59%.
- ASA IV 34 patients = 16%.

The cultures performed included: those performed before surgery or in the 1st surgical intervention and subsequent cultures, which were sometimes 2 to 3 more cultures from the same patient. 229 cultures were performed in 165 patients for the 1st time; 40 subsequent cases as the 2nd occasion and 24 of them for the 3rd time, representing a coverage of 77% of the total and the results had development in

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<table>
<thead>
<tr>
<th>Comorbidities</th>
<th>Number of patients</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus</td>
<td>146</td>
<td>68</td>
</tr>
<tr>
<td>Arterial hypertension</td>
<td>94</td>
<td>40</td>
</tr>
<tr>
<td>Obesity</td>
<td>152</td>
<td>71</td>
</tr>
<tr>
<td>Previous surgery</td>
<td>28</td>
<td>13</td>
</tr>
<tr>
<td>Neurological deficit</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Neoplasia</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Induced immunosuppression</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Heart disease</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>Chronic renal insufficiency</td>
<td>23</td>
<td>11</td>
</tr>
<tr>
<td>Hyperuricemia</td>
<td>38</td>
<td>18</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>86</td>
<td>40</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>47</td>
<td>22</td>
</tr>
<tr>
<td>Previous trauma</td>
<td>74</td>
<td>35</td>
</tr>
<tr>
<td>HIV</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Liver disease</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Thyroid disease (hypo or hyperthyroidism)</td>
<td>17</td>
<td>8</td>
</tr>
</tbody>
</table>

**Factors:**
- Alcoholism | 73 | 34 |
- Smoking | 59 | 28 |
- Drug addiction | 41 | 19 |
- Disability or incapacity | 4 | 2 |

**Previous diagnostics with percentage per group and the total percentage is the general:**
- Healthy subjects. | 21 | 10 |

**Proctological and abdominal history:**
- Anal abscess. | 3 | 5 |
- Anal fistula. | 2 | 3 |
- Complicated hemorrhoidal disease. | 2 | 3 |
- Complicated abdominal hernia. | 6 | 10 |
- Complicated diverticular disease. | 62 | 29 |
- Total | 69 | 33 |

**Urological history:**
- Orchepidymitis-Orchitis. | 33 | 67 |
- Scrotal abscess. | 11 | 23 |
- Urological procedure. | 49 | 23 |
- Total | 93 | 43 |

**Gynecological and obstetric history:**
- Obstetric trauma. | 0 | 0 |
- Bartholinitis. | 7 | 86 |
- Septic abortion. | 0 | 0 |
- Use of piercings. | 1 | 13 |
- Episiotomies. | 0 | 0 |
- Total | 8 | 4 |

*Table 1: Factors and comorbidities associated with patients with Fournier's disease by number and percentage.*

**Citation:** Morelos Adolfo García Sánchez, *et al.* "Fournier's Disease. A New Treatment*. EC Gastroenterology and Digestive System 7.10 (2020): 69-86.
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141 patients (66%). This bias was due to the lack of infrastructure and paramedical personnel in the different shifts of all the hospitals and the lack of supplies to be able to cultivate anaerobic microorganisms and fungi; in 90% of the cases the antibiogram was lacking.

Escherichia coli was isolated in 110 (78%); Enterococcus fecalis 61 reported (43%), Streptococcus pyogenes 57 cases (40%), Enterococcus faecium 39 subjects (28%), Bacteroides fragilis 21 (15%), Bacteroides prevotella in 7 samples (5%) and finally 2 patients presented Pseudomonas aeruginosa (1%). Polymicrobial cultures were 58 cases (41%). These results were only from the first culture and in the subsequent cultures carried out 64 in total, it was only possible to isolate some pathogen in only 7% of the cases, which were 5 cases (Table 2). The average surgical time of surgery is 129 minutes with a range of 36 to 205 minutes.

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Number of cases</th>
<th>Percentage</th>
<th>2nd Crop</th>
<th>3rd Crop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escherichia coli</td>
<td>110</td>
<td>78</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Enterococcus faecalis</td>
<td>61</td>
<td>43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Streptococcus pyogenes</td>
<td>57</td>
<td>40</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Enterococcus faecium</td>
<td>39</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bacteroides fragilis</td>
<td>21</td>
<td>15</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Bacteroides prevotella</td>
<td>7</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>304</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Pathogens isolated in patients with fournier’s disease.

The antimicrobial treatment used is variable and depends on each hospital, on the availability, clinical condition, as well as on the laboratory results of each case, the extension and the subsequent culture. The common use is the dosage combination of two agents, a specific anaerobic such as metronidazole and the second for gram-negative such as Ciprofloxacin vs Cefuroxime. In the Hospital as Infectology with only the empirical use of monotherapy with Cefotaxime. In others, in their absence, Ceftazidime and metronidazole. And in very advanced and severe cases, the Imipenem combination was established with the synergy of Amikacin. Therapeutic modifications were made according to cultures with antibiogram if they were available.

The results of the different driving behaviors are specified in table 3. It details some important characteristics such as the bleeding associated with each treatment modality: thus, in group I it was 1,600 ml, unlike in group VI it was 200 ml, with a total average of 791 ml in total. Regarding the days of hospital stay at the beginning 15 years ago, they were very long, greater than 100 days, but currently it has been shortened to an average of 46 days, with a range of 5 to 121 days; the average length of stay in the intensive care unit was 14 days with a range of 4 to 19 days. When we compared the bed days for each of Behaviors I, II, III, IV, V to Behavior VI using the X² test, statistical evidence with a likelihood ratio of 2,950 was demonstrated. The average number of subsequent surgeries was 3 with a total of 4 in the entire study group and a range of 1 to 7 procedures, and the ordinal groups of behaviors I, V were compared with VI with Fisher’s exact probability and X² showing statistical difference (p = 0.713). Surgical complications were expressed in urethral injuries in two cases due to the initial etiology of the disease, a perforation of the rectum and the last one with injury to the anal sphincteric complex due to previous surgeries because both patients were referred; in total 4 complications that represent 3%, there was no statistical difference between any of the management behaviors, even with continuity correction 0.430 with p = 0.113. The general complications were 17 nosocomial pneumonias, two pulmonary embolisms, three endocarditis, and two abdominal abscesses; a total of 24 patients that is 11%. The total sequelae were 5 (4%): two urethral strictures, one anal incontinence, one limitation in locomotion, and three colostomies, two of which were only performed due to forced diversion of the fecal matter due to rectum perforation and fecal incontinence. third was a patient already operated sent as a reference.

### Table 3: Results of therapeutic behaviors.

<table>
<thead>
<tr>
<th>Variables cases</th>
<th>Hemorrhage average ml</th>
<th>Days EH No.</th>
<th>No. ICU days.</th>
<th>No. surgeries subs</th>
<th>Complication QX No./%</th>
<th>Complication QX No./%</th>
<th>Sequels No./%</th>
<th>Reconstructions No./%</th>
<th>Do not close Yes/No.</th>
<th>Morbidity No./%</th>
<th>Mortality No./%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct I 61</td>
<td>1600</td>
<td>93</td>
<td>18</td>
<td>5</td>
<td>3/2</td>
<td>17/7</td>
<td>2/1</td>
<td>2/1</td>
<td>38</td>
<td>22/10</td>
<td>18/8</td>
</tr>
<tr>
<td>Conduct II 20</td>
<td>400</td>
<td>21</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Conduct III 49</td>
<td>1000</td>
<td>65</td>
<td>12</td>
<td>4</td>
<td>1/1</td>
<td>3/2</td>
<td>3/2</td>
<td>9/4</td>
<td>48</td>
<td>7/3</td>
<td>4/2</td>
</tr>
<tr>
<td>Conduct IV 16</td>
<td>700</td>
<td>41</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Conduct V 38</td>
<td>850</td>
<td>57</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>4/2</td>
<td>0</td>
<td>0</td>
<td>37</td>
<td>4/2</td>
<td>6/3</td>
</tr>
<tr>
<td>Conduct VI 30</td>
<td>200</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total 214</td>
<td>791</td>
<td>46</td>
<td>14</td>
<td>3</td>
<td>4/3</td>
<td>24/11</td>
<td>5/4</td>
<td>11/5</td>
<td>185</td>
<td>33/15</td>
<td>28/13</td>
</tr>
</tbody>
</table>

11 reconstructions were performed by the Plastic Surgery service (5% of all cases), there was only one patient with success. By deduction, in the rest of the patients, spontaneous closure was the option (185 patients). It should be noted that the Surgery service performs the reconstruction of the scrotal area, two of the vaginal area, and a Parker surgery for reconstruction of the anal sphincteric complex; In total, 83 scrotal reconstructions were performed successfully, representing 39%.

The total morbidity was 33 cases, as the 1st cause was nosocomial pneumonia and that is 15% and a mortality of 13% that were 28 patients due to sepsis of multiple etiology that was combined from acute chronic malnutrition, anemia, nosocomial pneumonia, acute renal failure, generalized sepsis up to septic shock. There was a comparative statistical difference between Behavior I and V with the rest of Behaviors II, III, IV and VI. With a corrected value of $p = 0.567$ with a demonstrable difference in morbidity but not in mortality, $p = 0.402$ except for Behavior I, where there was a statistical difference with the rest of Behaviors.

The interdisciplinary management was constant and total in the first instance, specialties or professionals such as Emergencies, Internal Medicine, Critical Medicine, Infectology, Nursing; the need is almost imperceptible when carrying out Driving Behavior VI, achieving quasi independence.

With regard to unit costs, (16) a very scrupulous and specific approach is made; with direct and indirect costs grouped in each Management Conduct from I to VI, in a maximum unit cost and an average unit cost. The items to be calculated are hospital bed days, ICU bed days, surgeries performed, dressings, laboratories, emergency management, specialty consultations, electrocardiograms, radiological studies and tomographies. In the management behaviors, special supplies such as bioactive patches or the vacuum assisted closure system or VAC are specified. See table 4. It should be noted that the variable costs of drugs, supplies, solutions, special substances, specific studies, etc. are not included.

Analyzing the maximum unit costs we have to note that they are exorbitant, like the average cost; Obviously, Behavior VI shows a saving that equates up to 2,500% compared to Behavior I, likewise the saving is 1,100% with Behavior V. Comparing VI with IV the saving is 640%.

Either way, the VI behavior is truly overwhelming, with an obvious brutal saving in financial resources.
Fournier’s Disease. A New Treatment

Discussion

The real origin of FD includes an infectious process, which can be secondary to trauma, previous surgery or adjacent primary pathology (gynecological, urological or proctological). But what triggers this “cataclysm”? Regarding the aggressiveness of the infection or in terms of the extension of the area, or the depth of the tissues that involve the muscular fasciae but not the muscles; or to an increased systemic inflammatory response, leading to high fatality and consequently death; is what to date is unknown. Unlike what is mentioned by other authors where it is categorically stated that the factor or the previously installed disease is the genesis of this pathology [7,17-19]. We question why not all anal abscesses of any of the five types undergo a PE, or the already immunosuppressed transplant patients do not suffer from it; Likewise, doubt arises in patients with bartolinitis, in scrotal abscesses, or in perineal trauma, in anal fistulas, etc. The answer is really a big question.

The international literature available from EF, evokes and concentrates all its efforts on creating classifications, severity indices to stratify risks, assess lethality or predict what we already know happens, but what the end would have, complicate the scenario or highlight the impossibility not to modify the health-disease process at all, if there is no therapeutic innovation or real benefit that impacts the health or cure of the patient with this disease. The EF is an unspoken example of this assertion [2,6,7,9,12,15,20,21].

In the treatment options in PE, the use of antibiotic therapy is based as a cornerstone; in other words, of the latest generation or broad spectrum, or with a triple scheme, hopeful in its specific and effective therapeutic action as in other pathologies. But it is ignored that the main treatment axis is the effectiveness of the surgical intervention, where a refined technique through the years, however simple it may seem, with the prerogatives followed to the letter, makes it possible to greatly modify the prognosis; since by definition the FN in its physiopathology it is deduced that the muscular fasciae do not have direct blood circulation (arteries and veins), but it is only by diffusion [16] and the surrounding tissues being totally devastated; which leads to a lack of diffusion of the best medicine, the most genetically or technologically evolved, the most expensive, or with 3 or 4 simultaneous schemes [13].

The treatment of FD varies widely in what has been documented and experienced over the years. All references in the medical literature mention that emergency and repetitive or consecutive surgical interventions (Figure 1 and 2) with subsequent debridements and surgical scrubs are crucial [2,9-11,14,21]. But in the search to accelerate or eliminate the infection and cure the patient, complementary alternatives to surgical management have been sought.

![Figure 1: EF in his 3rd surgery.](image-url)
The use of unprocessed honey in wound management has been implemented since ancient times, it is considered as the oldest dressing, used already by the Greek doctor Dioscorides father of pharmacology in the 1st century AD (40-90s) to treat infected burns and wounds. The healing properties of honey are mentioned in the Bible, the Koran and the Torah. In PE, the use of honey is very substantial, in terms of its benefits and effects on the infection-healing process, although it is an empirical saying; But its management is difficult in terms of permanence on the contact surface and in the human psyche (culture) for its implementation, both by the health personnel, the patient and their relatives; In its favor is that it is low cost, its effectiveness is honestly even questionable, since it has not yet been scientifically evaluated in recent protocols and with significant statistics [22,23].

In addition, the use of a number of substances over time has allowed us to have experience and knowledge about the complement of the management of FD and the same wounds; meanwhile, it must be taken into account that the human body is constantly changing, in a general scenario as well as in the local one (wound healing or bloody area), existing a specific biological variability in each individual, which forces to change the same therapy [24].

The use of bioactive patches is another alternative; its relatively low cost with its effectiveness in the bloody area (wound) is an accelerator of the healing phases; they make an effective tool for the complementary therapeutic management of FD; It is documented that an initial and only previous surgical procedure, as well as an early hospital discharge with outpatient management with this modality is possible. Reducing hospitalization times, human resources and material supplies, complications, morbidity and mortality; without neglecting the financial costs [24,25].

The management of wounds with negative pressure or vacuum assisted closure system (VAC) was born in 1995, which little by little, has managed to be introduced as the first line or, failing that, as the only option in complementary management in FD [23,24,26]. The VAC system accelerates the formation of granulation tissues, removes infectious and exudative material, increases blood supply and reduces edema, facilitating the contraction phase for closure [2,6,27]. Its effectiveness is not questioned in other types of wounds, but what must be taken into account is that the management of the area with different anatomical surfaces, irregular and in flexion zones, reduces the

**Figure 2: EF in his 4th surgery.**
Fournier’s Disease. A New Treatment

Another extremely effective alternative that complements the treatment of FD is hyperbaric oxygen therapy, but with many connotations; among them having the resource, the stratospheric increase in cost, collateral effects on ears, eyes, joints and complications as serious as air embolism. Its use is limited, prolonged and complex [10,32]. In the Infectology Hospital of the High Specialty Medical Unit of the Mexican Institute of Social Security, the resource is available and it was possible to take advantage of the III conduct. In only 10% of patients.

Now we analyze why cures play an invaluable role in the complementary management of PE. The daily cleaning with soap and water of the previously debrided bloody areas, which for years was a bastion in the treatment of patients with SCD, (under the name of Artesa) at the Hospital of Infectious Diseases of the High Specialty Medical Unit of the Institute Mexican Social Security. It presents acceptable or beneficial results [33] very similar to what is reported in this study.

All of the above returns us to the starting point, where to carry out an effective cure, more frequently every 12 or every 8 hours a day, reliable, with a high degree of dedication, will and commitment; makes a significant difference in the prognosis of patients with FD: with the use of tensile-active substances, from simple soap or antiseptics such as 10% povidone iodine for 10 minutes (action by contact, not by rubbing or abrasion), in a second term the use of hydrogen peroxide (which have been banned unscrupulously or due to cognitive incompetence) [34-36] or chlorhexidine with greater acceptance today being carried out only when the area in question maintains signs of infection and as explained before, it is modified or changed according to the evolution of the healing process of the bloody area in each patient, to only soap and water; or only irrigation with sterile solution [37].

On the other hand, there are other tools for wound management, which are not specific yet for PE, classified as: dermal substitutes, temporary biological, permanent biological, temporary synthetic and permanent synthetic. Not leaving behind the new that is still in experimentation, such as growth factors, stem cells and gene therapy [24].

Finally, a tool never before valued or taken into account is exposed, as the bastion of complementary treatment for FD, without any reference in the world medical literature for the management of this disease; This arises from the fact that the authors observed that ano-rectal pathologies, as well as surgical procedures in this area, have their own characteristics that are different from other anatomical parts of the body. They have a high concentrated degree of microbial contamination (eunctories), it is a humid area most of the time, with little ventilation, little light, with many areas of friction and with high mobility or flexion, it is also vital in many aspects for the homeostasis of the patient. Despite all this against; pain is reduced in less than 72 hours, prevents infection and bacterial colonization, reduces edema, removes the acute inflammatory phenomenon and stimulates the granulation tissue towards a complete and successful healing under the mechanism of a late secondary closure.

This tool is sediluvium or sitz baths, which with an initial periodicity of every 4 hours for 20 minutes with water at room or cold temperature (without any additive or substance, that is, commonly as it comes out of the shower) in the first 3 weeks, with prolongation every 8 hours for a month, and finally every 12 hours until complete healing [38-40]. Sediluviums become a watershed in complementary treatment for FD; with a break in the traditional conjuncture of what is known, becoming an innovative paradigm due to the enormous advantages that this therapeutic modality presents; It is essential to raise awareness in the patient, who assimilates the disease and cooperates in its treatment or rehabilitation; this task is the responsibility of the treating physician who must pass on his will and psyche (Figure 4-6). The advantages of Conduct VI are commendable:

**Figure 4: Abuse of the use of the VAC.**
Fournier’s Disease. A New Treatment

Figure 4: EF 1st surgery

Figure 5: One month after the use of silt.

Figure 6: After 4 months of sediluvium use.

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1. Early discharge at home. With an exponential impact on the reduction of hospitalization days.
2. Integration of the patient into her family and even social environment. Avoiding depression and activating your physical mobility.
3. Avoid complications due to immobility or the hospital environment.
4. Achieve an impressive saving of financial resources.
5. Evidence that there is no morbidity or mortality reported.
6. Saving the indiscriminate use of drugs, avoid future antimicrobial resistance. She was only discharged with a single antibiotic for 14 more days (2nd generation quinolone-ciprofloxacin) and an analgesic such as paracetamol.
7. Accelerates the entire healing process in a fast and effective way.
8. No relapses are reported.
9. It does not require subsequent surgeries or reconstruction surgeries.
10. Less amount of blood loss.
11. The patient’s handling of the treatment is simple or straightforward, it does not consume financial and material resources, neither from him, nor from the public health institution.

It is essential to clarify that the derivative colostomy is only and exclusively indicated in total incontinence, due to pathology of the central nervous system or rupture and/or anatomical lesion of the puborectalis bundle (80% continence is its normal function), and not even of the sphincteric complex anal: comprising the external anal muscles in its three portions and internal anal (20 normal continence on average); Another reason is when the FN comes from the abdominal cavity due to a pathology of the rectum or colon, such as perforation of either of the two, or due to complicated diverticular disease. So its use indiscriminately can be barbaric [41,42]. In this study, only 3 colostomies were performed, two of them due to abdominal causes (deceased) and one due to iatrogenic lesion of the puborectalis and sphincters, with total anal incontinence in the 1st surgery performed in a referred patient from another hospital. It should be pointed out that the anal sphincters and the rectum itself are never involved by FN due to the fact that they have direct circulation with real arteries, and the other reason is that they do not have fasciae, therefore the EF does not affect them. The same happens with the testicles, organs with direct arterial circulation from the aorta [8]. Therefore, the colostomy is a real barbarism to perform it without a real indication.

There was no need to perform cystostomy in any patient in this study, although there was total damage due to rupture of the spongy urethra in two cases with FD, due to trauma and iatrogenesis when placing a Foley catheter previously; the early repairs were made and their splinting, unlike what was reported in the literature [43,44].

The reconstructive surgeries performed by the Plastic Surgery service were very scarce, except that the perineum and perianal area are therefore very difficult to graft due to their irregular surface, as they are the flexion zone and the exit of the erectile, condemning to failure safe; in addition to the lack of support and interest on the part of this specialty; This led to strategies such as performing 83 scrotal reconstructions by the Colon and Rectal Surgery service with some success (Figure 7); thus the use of zinc, vitamin C and rehabilitation, in a punctual and scrupulous follow-up that lasted up to 1 year; with spontaneous closure, scarcely deforming scars and with a total functional capacity in each one of the patients. It is estimated that the muscles in these areas that are practically intact, of large dimensions and with very good blood circulation, achieve an excellent contraction of the healing phase, achieving an effective late secondary closure.

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Conclusion

EF has an etiology unknown to date. The speed with which the surgical intervention is carried out is essential; therapeutic delay deteriorates the prognosis of the patient, wide and aggressive debridement is essential in the first surgical procedure.

The main treatment for FD is surgical intervention: immediate or priority, only once, with great effectiveness if the canons described to the letter are followed.

In PE, all complementary therapeutic tools have a certain degree of effectiveness. Surgical reconstruction is not necessary in PE except in specific areas such as the vaginal introitus, the scrotum, the penis and the abdominal wall with extensive areas greater than 20 cm in their greatest diameter.

Sediluvia or sitz baths are an innovative, simple, inexpensive and effective therapeutic approach, applicable in most cases with FD. Sediluviums become a part of the complementary treatment for PE; with a break in the traditional conjuncture of what is known, becoming an innovative paradigm due to the enormous advantages that this therapeutic modality presents and with statistical evidence.

That is why it is the purpose of this publication to present the results and the experience of the authors.

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