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Case Report

Fournier's gangrene secondary to marsupialization of Bartholin's gland: a case report

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ABSTRACT

We present the case of a 38-year-old patient without risk factors, who presented with Fournier's gangrene secondary to marsupialization of Bartholin´s gland. Fournier´s gangrene is an extremely rare complication after the instrumented management of Bartholin´s gland abscess. The case aims to explore further evidence regarding the clinical presentation, diagnosis, and timely management of these surgical complication, due to its rapid progression it can compromise the patient´s life.

Keywords: Fournier's gangrene, Bartholin glands abscess, Marsupialization

INTRODUCTION

The Bartholin's glands are in the vagina, specifically in the vulvar area, and are responsible for secreting mucus to lubricate this region.[1] The most common benign pathologies associated with this gland are cysts and abscesses, with abscesses being almost three times more common without direct associated risk factors and representing approximately 2% of all gynaecological consultations.[2,3]

Historically, Bartholin's abscesses were associated with a polymicrobial infection; however, recent studies have shown that the primary bacteria associated with this condition is *E. coli*.[4] Management is generally straightforward with few reported complications, with the preferred treatment being incision and drainage, which may be accompanied by gland marsupialization, placement of a word catheter, or silver nitrate sclerotherapy.

All these methods are comparable in terms of recurrence rates, with gland excision being the definitive treatment when previous methods have repeatedly failed.[5] On the other hand, Fournier's gangrene is a type of necrotizing fasciitis that affects the perineal area and can result from the loss of continuity of adjacent mucosa, particularly the urethral or gastrointestinal mucosa, with limited evidence and an incidence ranging from 0.3 to 15 cases per 100,000 inhabitants according to reports.[6-8]

Fournier's gangrene constitutes a form of polymicrobial type I infection typically reported in older patients or those with multiple associated comorbidities, characterized by intense abrupt pain and rapid progression that can quickly extend to the vaginal labia, inguinal region, glutes, anterior abdominal wall, and is potentially fatal.[9,10]

The aim of this article is to provide further evidence given the few reported cases related to this rare surgical complication secondary to a relatively common gynaecological procedure.

CASE REPORT

A 38-year-old multiparous woman with no significant medical history presented to the gynaecology clinic with pain in the left genital area of unexplained origin, accompanied by vulvar edema and erythema for 4 days. Physical examination revealed a firm regular mass

measuring 3×3 cm with peripheral edema, erythema, and tenderness in the lower third of the left labia majora, diagnosed as a Bartholin's gland abscess. Analgesia was administered, and surgical resolution was achieved through incision, drainage, and marsupialization of the left Bartholin's gland with no reported complications.

The patient was discharged with oral analgesics. 48 hours later, the patient reported general malaise, headache, pain at the surgical site, chills, and fever of 38.5°C. Ibuprofen 600 mg every 8 hours and trimethoprim-sulfamethoxazole 160/800 mg every 12 hours were added to her treatment.

The following day, the patient complained of persistent pain, nausea leading to vomiting for 10 times, fever of 38.9°C, headache, dizziness, and moderate malodorous bloody vaginal discharge, prompting a visit to the emergency department. Upon arrival, the patient was tachycardic (109 bpm), febrile (38.5°C), had dry oral mucosa, perioral rashes, and a malodorous blackish bloody vaginal discharge. The perineum was edematous with crepitations suggestive of subcutaneous emphysema, and there was a 1 mm necrotic lesion on the left glute. The laboratory findings are in (Table 1). Soft tissue ultrasound revealed a collection in formation with haemorrhagic content and air bubbles localized in the left labia majora measuring 43×46×47 mm, with an approximate volume of 50 cc (Figure 1). Adjacent soft tissues and the gluteal region showed collections, with the largest measuring 36×19×40 mm and a volume of 14.7 cc (Figure 2).

Pelvic CT scan with and without contrast showed thickening of the skin planes in the left gluteal and perineal regions, representing edema and extensive subcutaneous emphysema (Figure 3a). These findings extended to the proximal thigh, left labia majora (Figure 3b), pubic region (Mons pubis) (Figure 3c), ischio-anal fossa (Figure 3d), mesorectal fascia (Figure 3e) and the ipsilateral elevator ani muscle. Additionally, collections in the perineum with hyperdense foci related to blood residues and thickening of the superficial and deep perineal fasciae were observed.

Resolution and follow-up

Given the diagnosis of Fournier's gangrene, surgical drainage and debridement of the perineum were performed, along with laparoscopic Hartmann colostomy as an emergency procedure. Antibiotic therapy was initiated with meropenem 1 g every 8 hours and vancomycin 1 g every 12 hours. Surgical findings included an abscess and necrosis at the anal canal with a 3 cm communication with the vaginal canal, involving skin, connective tissue, and fat in the left perineal area approximately 10×6 cm, from which a culture sample was taken. 48 hours post-surgery, the patient showed satisfactory clinical progress and underwent another surgical cleaning, revealing an abscess cavity measuring 6×5×4 cm in the left glute that communicated with the anal and vaginal canals (Figure 4). 72 hours after initiating clinical management, culture results showed *E coli* (multisensitive) and *Streptococcus anginosus*, leading to the decision to start ceftriaxone 2 g daily. On the fifth postoperative day, the patient was discharged with ambulatory management including amoxicillin-clavulanate 625 mg every 8 hours for 5 days and analgesia.Two months after the acute episode, the patient underwent a new surgical procedure for restoration of intestinal transit, which was performed without complications (Figure 5). Currently, the patient has no sexual, gynecological, urological, or digestive sequelae and recently completed her fourth term pregnancy without complications, which was concluded by cesarean section due to obstetric conditions related to her medical history.

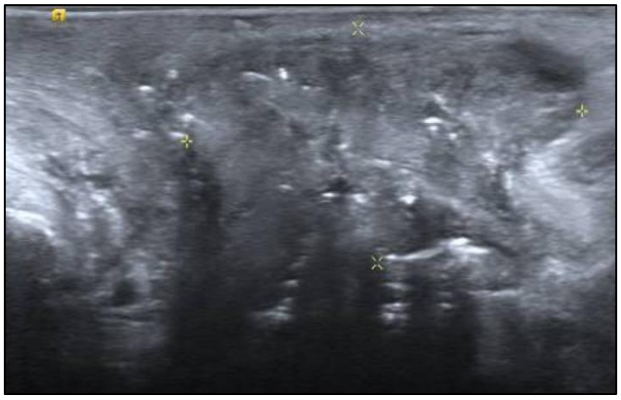

Figure 1: Left labia majora ultrasound.

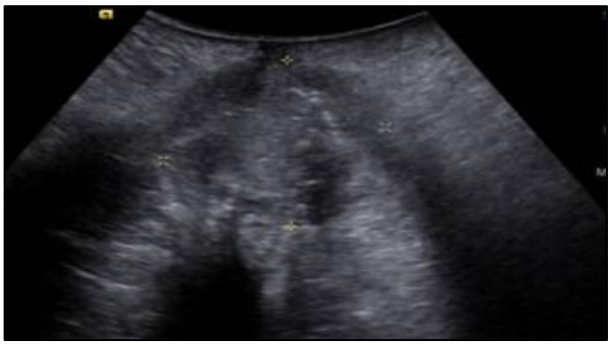

Figure 2: Gluteal region ultrasound.

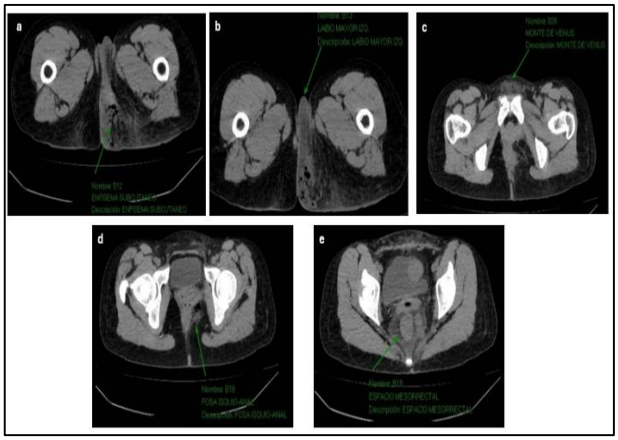

Figure 3: Computer tomography of the abdomen and pelvis that showed the extent of disease.

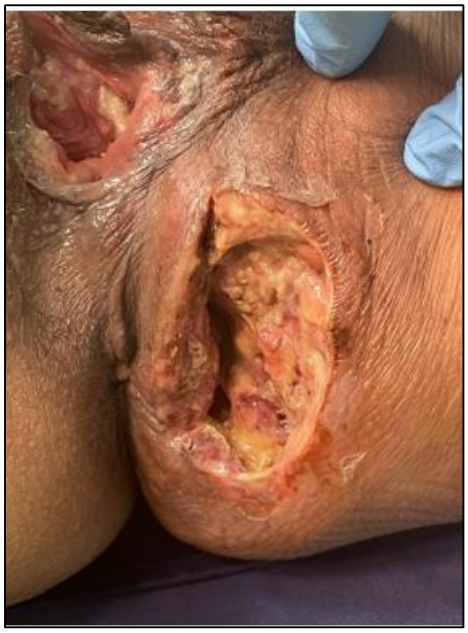

Figure 4: Fournier´s gangrene after drainage and debridement.

Figure 5: Fournier´s gangrene after treatment.

Table 1: Laboratory findings.

	Result	Normal range
White blood cells	28,380 cells/mm³	4,320-10,421 cells/mm³
Neutrophils	90.29%	50-70 %
Hemoglobin	10.1 g/dl	12.7-16.2 g/dl
Hematocrit	28.8%	38-47 %
C reactive protein	356 mg/l	Less than 5 mg/l
Creatinine	0.7 mg/dl	0.50-0.90 mg/dl

DISCUSSION

Fournier's gangrene as a postoperative complication following Bartholin's gland excision is extremely rare, with few cases reported in the medical literature, resulting in an uncertain incidence rate. Available literature suggests a general incidence for Fournier's gangrene ranging from 0.3 to 15 cases per 100,000 inhabitants, without distinguishing by sex or triggering cause, but strongly associated with comorbid or immunocompromised patients.[8,11] When investigating the microbiological agents responsible for this severe complication, there are two main categories.

Polymicrobial (Type I) or progressive bacterial synergistic gangrene

Typically involves an association between an anaerobic species (e.g., Bacteroides, Clostridium, or Peptostreptococcus) and an Enterobacteria (e.g., *Escherichia coli*, Enterobacter, Klebsiella, Proteus), along with one or more facultative anaerobic streptococci. Obligatory aerobes like *Pseudomonas aeruginosa* are rarely identified, and fungal infections predominantly isolate Candida spp.[12]

Monomicrobial (Type II)

Usually caused by group A Streptococcus (GAS), associated with toxic shock syndrome in 50% of cases due to the presence of M proteins type 1 and 3. Other associated pathogens include beta-hemolytic Streptococcus, *Staphylococcus aureus*, *Vibrio vulnificus*, and *Aeromonas hydrophila* the latter two are associated with trauma in oceans and rivers, respectively.[13,14] There are many risk factors that could be associated with Forunier´s gangrene (Table 2), however, in approximately 50% of monomicrobial cases, no clear entry point is identified, likely due to the hematogenous spread of GAS from the throat, either from symptomatic or asymptomatic pharyngitis to a site of closed trauma or muscle strain.[7]

Table 2: Risk factors for Fournier's gangrene include.[7,10,11]

Major penetrating trauma
Skin abrasions from chickenpox lesions, insect bites, or injectable drug use
Recent surgery, particularly colonic, urological, or gynecological
Mucosal rupture such as hemorrhoids, rectal fissures, or episiotomy
Immunosuppression (e.g., diabetes, cirrhosis, neutropenia, HIV infection)
Malignancy
Obesity
Alcoholism
Pregnancy, childbirth, miscarriage, or gynecological procedures

Clinical manifestations

The clinical manifestations of Fournier's gangrene are typically characterized by an abrupt onset over hours, and rarely, a subacute progression over days. This rapid progression is due to the extensive destruction of skin and underlying tissues by the involved microorganisms, leading to systemic toxicity and potentially death (Table 3).[7]

Table 3: Common symptoms and signs of Fournier's gangrene.[7,10,11]

Clinical manifestation	Incidence (%)
Edema extending beyond erythema	75
Intense pain	72
Erythema with indistinct margins	72
Fever and tachycardia	60
Crepitation	50
Skin bullae, necrosis, or ecchymosis	38

While patients may present with these symptoms, they may also experience myalgias, arthralgias, diarrhea, and anorexia, making early infection challenging to distinguish. As the condition progresses, the patient may develop septic shock, which must be recognized promptly for effective antibiotic and surgical management.[10]

Diagnosis

Fournier's gangrene should be suspected in patients with soft tissue infections and signs of systemic illness such as fever and shock, in conjunction with rapid clinical progression and severe pain. The definitive diagnosis is made through surgical exploration of the soft tissues, assessing the presence and extent of necrosis, and subsequent debridement of the affected tissue. Surgical exploration should not be delayed for additional diagnostic tests if there is a significant clinical suspicion. During surgery, one typically observes edematous, friable tissues with fine, non-purulent exudate and opaque gray fascia. It is crucial that all removed tissue is sent for staining and culture studies to identify the microorganisms present.[15]

Laboratory tests that may be altered include leukocytosis, coagulopathy, predominantly metabolic acidosis, elevated inflammatory markers, hyperlactatemia, increased creatinine levels, and elevated creatine kinase as a marker of muscle damage. However, these tests are nonspecific as they indicate the consequences of gangrene rather than a pathognomonic alteration of the disease.[16]

While imaging studies should not delay surgical intervention, if possible, a CT scan is recommended for its high specificity. The most useful finding is the presence of gas in soft tissues, accompanied by fluid collections and inflammatory changes beneath the fascia. Although MRI is quite sensitive, it is not as effective at detecting gas in soft tissues. On the other hand, ultrasound lacks validated studies for rapid evaluation of Fournier's gangrene.[17,18]

It is important to remember that the absence of certain symptoms and signs, such as fever, specific cutaneous manifestations, or imaging findings, and attributing the pain or symptoms to other clinical causes like cellulitis, pyoderma gangrenosum, gas gangrene, pyomyositis, or deep vein thrombosis, could hinder the diagnostic process and delay timely management of the patients.

Management

Patients with Fournier's gangrene secondary to Bartholin's gland abscess drainage are critical and require aggressive fluid resuscitation along with the early initiation of broad-spectrum antibiotic therapy covering both gram-positive and gram-negative bacteria, as well as anaerobes. This therapy should be continued until the patient stabilizes. Recommended empirical therapy includes clindamycin, gentamicin, ampicillin-sulbactam, and third-generation cephalosporins. If a fungal infection is suspected, recommended agents include fluconazole, vancomycin, or piperacillin-tazobactam. Antibiotics should be adjusted or rotated based on culture and sensitivity results to achieve targeted pharmacological therapy.[19]

Extensive surgical debridement is the cornerstone of management and should be performed within the first 12 hours of hospital admission. Debridement involves removing non-viable tissue until bleeding margins are reached. The wound should be irrigated with abundant saline post-debridement and meticulous hemostasis must be ensured. The surgical bed should be covered with wet gauze, which needs to be changed throughout the day. If a VAC system is available, it should be used to promote rapid tissue recovery, reduce hospital stay, and decrease costs. Hyperbaric oxygen therapy could be beneficial for accelerated recovery if there are no contraindications. Depending on the extent of the disease, procedures such as cystostomy, hysterectomy for deep involvement, or, as in this case, a Hartmann colostomy may be performed to prevent wound over infection and promote healing. However, there is no clear indication for such procedures, making this a topic of ongoing debate.[20]

CONCLUSION

Fournier's gangrene as a consequence of Bartholin's gland abscess drainage is a rare but extremely dangerous complication. If not recognized promptly and managed with timely surgical and clinical intervention by a multidisciplinary team, it can be highly fatal. This case illustrates such a complication that was successfully resolved with antibiotics, fluid therapy, extensive surgical debridement, and a Hartmann colostomy. Fortunately, the patient did not experience long-term sequelae and achieved a term pregnancy without complications within 12 months. In conclusion, aggressive management of this

complication increases the chance of a successful outcome without sequelae.

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