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Case Report

Fulminant Fournier's gangrene following perineal trauma in a patient with suspected chronic inflammatory bowel disease: a case report

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Abstract: Fournier's Gangrene (FG) is a rare, fulminant, and necrotizing inflammation of the perineal fascia. We present a case of 35-year-old Men who have Sex with Men (MSM) man with severe gangrene (Fournier's Gangrene Severity Index (FGSI) ≥ 17) due to atypical etiology: mechanical damage to the perineum resulting from sexual intercourse and ingestion of a vasoconstrictor substance, with the background of an active, chronic inflammatory process of the intestines. In the described patient, due to severe sepsis and diverse microbiology, four radical urological interventions were initially performed, following one more reconstructive surgery. The defects were reconstructed using split-thickness skin grafts and flaps - sixth surgery. The discussion focuses on the management of the defects without orchidopexy, conventional wound management (without vacuum assisted closure (VAC) or Hyperbaric Oxygen Therapy (HBOT)), and multi-stage complications (urethral fistula and limited erections), which are noticeable on the quality of patient's life (QoL).

Keywords: Fournier's gangrene, FGSI, Doppler ultrasonography, MSM (men-who-have-sex-with-man), scrotal reconstruction, case report

Introduction

Fournier's Gangrene (FG) is a urological disease characterized by polymicrobial necrotizing fasciitis of the perineal, perianal and genital fascia [1]. It is traditionally associated with advanced age, diabetes and chronic alcoholism. Recent literature identifies specific risk cohorts, including the men-who-have-sex-with-men (MSM) population, where mechanical perineal trauma and specific bacterial flora play main roles in pathogenesis [2].

The diagnostic standard for FG remains mainly clinical - hallmark features include pain "out of proportion" to physical findings during the early phase (0-24 hours), followed by the emergence of pathognomonic signs. Those are: crepitus (35-62% presence cases), skin discoloration and hemorrhagic bullae. In its fulminant stage, the condition presents with necrosis and gray discharge. To differentiate this disease from non-necrotizing soft tissue infection, the Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score is utilized as a diagnostic adjunct (score above 6 points highly suggests the disease presence). Although as said before, the diagnosis is clinical, Computed Tomography (CT) is the imaging gold standard. It provides sensitivity in detecting subcutaneous emphysema and fascial thickening.

Current management is based on multimodal "Triad of Care": immediate, aggressive surgical debridement, broad-spectrum antibiotic therapy (Carbapenems or Poperacilin/Tazobactam_ Clindamycin). Source control requires iterative procedures - the studies report that an average of 3.5 debridements per patient are required to stop the necrotizing process. The efficacy of those interventions is time-dependent. The most significant predictor of survival is

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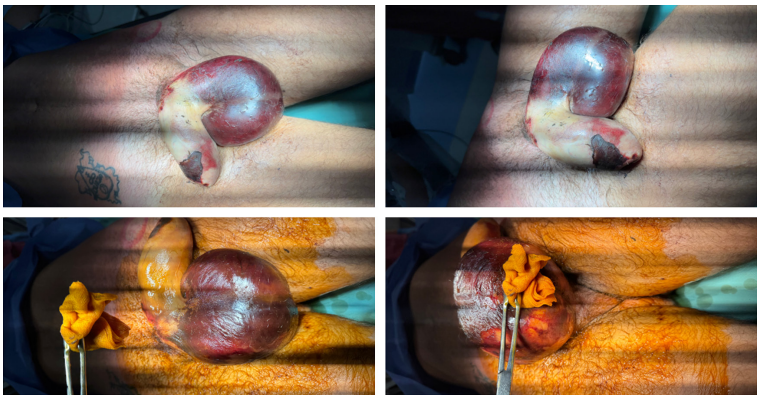

Figure 1. Clinical presentation of fulminant Fournier's gangrene upon admission. The patient is positioned in the supine position on the operating table. Notable findings include scrotal edema and necrosis involving the distal penile shaft. Marked perineal erythema toward the lower abdominal wall indicates subcutaneous fascial involvement.

surgical debridement within the first 24 hours of admission.

The prognosis of FG is assessed using the Fournier's Gangrene Severity Index (FGSI). An FGSI score higher than 9 points is associated with a 75% probability of mortality, although modern care protocols have reduced overall rates to 12% in recent years. Beyond survival, the long-term prognosis involves morbidity - sexual dysfunction in 46-7-% of patients and reduction in quality of life (QoL) due to tissue loss.

We report the case of a 35-year-old male presenting with an exceptionally high FGSI score of 17. The pathogenesis involved convergence of mechanical trauma, mephedrone induced vasoconstriction and chronic intestinal inflammation. This report focuses on the multidisciplinary strategy that involved the efficacy of conventional wound management, with the lack of negative pressure wound therapy (VAC). Our case provides assessment of the functional, psychosexual sequelae associated with perineal reconstruction.

Pathophysiology of Fournier's gangrene

The pathogenesis of Fournier's gangrene (FG) is driven by polymicrobial infection which triggers obliterative endarteritis. This process involves inflammation, subsequent thrombosis of subcutaneous vessels, leading to localized tissue ischemia. This hypoxic environment is the primary catalyst for the fulminant progression of necrosis [3]. Microbial synergy involves aerobic bacteria (Escherichia coli, Klebsiella) consuming available oxygen, thereby lowering the redox potential. In this environment the proliferation of obligate anaerobes (Bacteroides, Clostridium), induce secretion of enzymes (hyaluronidase, heparinase and collagenase). They digest fascia and connective tissues, leading to the advance of the infection at a rate 2-3 cm per hour. Translocation of bacteria and their byproducts into the systemic circulation triggers "cytokine storm" involving proinflammatory mediators (interleukin-1 (IL-1), interleukin-6 (IL-6), tumor necrosis factor-alpha (TNF-a)). This cascade leads to increased vascular permeability, vasodilation, myocardial depression, and eventually septic shock and Multiple Organ Dysfunction Syndrome (MODS) [4].

Case presentation

A 35-year-old male was admitted to the Emergency Department via emergency medical services (EMS) on May 21, 2025, presenting with septic shock and advanced perineal necrosis. Clinical history revealed that the patients experienced mechanical perineal trauma and ingested mephedrone on May 17, 2025. Symptoms, such as localized perineal pain, edema occurred day later on May 18. The patient's condition worsened over the next four days, leading to complete loss of mobility and sepsis by the time of admission. Previous evaluations of patient's suspected chronic inflammatory bowel disease (IBD) had identified chronic rectal inflammation - it was suspected to be the primary portal of entry for the polymicrobial infection.

Initial diagnostics

On admission, the patient was hypotensive and tachycardic. Physical examination revealed necrosis involving the scrotum, perineum and palpable crepitus extending toward the lower abdominal wall (**Figure 1**). Laboratory analysis demonstrated leukocytosis (white blood cells

(WBC) 28.6 × 10^3/mm^3), elevated C-reactive protein (CRP 479 mg/L) with acute kidney injury (Creatinine 1.74 mg/dL) and procalcitonin (PCT) of 18.4 ng/mL. Electrolyte disturbances were characterized by hyponatremia (126 mEq/L) and a serum potassium of 4,6 mEq/L. Presented and calculated values, combined with the clinical presentation resulted in a Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score of 8. That number categorized the patient's condition as high-risk necrotizing fasciitis.

An imaging test was used to expand the diagnosis - scrotal ultrasonography with Color Doppler (USG-D). The examination revealed bilateral testicles of normal volume with homogeneous echogenicity and symmetrical arterial flow. The tunica vaginalis exhibited thickening with hyperechoic foci and "dirty shadowing" - pathognomonic for subcutaneous gas bubbles. Both the epididymides and spermatic cords were enlarged and heterogeneous, indicating inflammation. Whatsmore, assessment found extensive soft tissue thickening up to 20 mm extending from the penile base indicating phlegmonous progression. At the scrotal base a hypoechoic heterogeneous structure consistent with complex fluid collection or abscess. Performed scrotal ultrasonography provided evidence of Fournier's gangrene [5].

Serological status

To assess for potential systemic immunosuppression that could exacerbate the necrotizing process, and also taking into account the cohort represented by the patient, a virological screen was performed on admission. Serological testing for Human Immunodeficiency Virus (HIV) and Hepatitis C Virus (HCV) was negative. Anti-HBs antibody of 428 mIU/ml confirmed long-term immunization, likely prior to vaccination. These results simplified the management of potential occupational exposure during the repeated surgical debridements, furthermore reducing the risk of hepatic complications, often present during the systemic inflammatory response.

Gastrointestinal pathology

The patient's clinical history was significant for pre-existing intestinal pathology. On April 14, 2025, the patient presented to the emergency facility with hematochezia (which was initially combined to an anal fissure). However, subsequent colonoscopy on April 24, 2025, revealed mucosal changes in the rectal ampulla - circumferential inflammatory mass characterized by a "cobblestone" appearance, ulcerations and erosions. This process extended to involve the anal sphincter, which was suggestive of inflammatory bowel disease (IBD).

Histopathological results of the rectal biopsy demonstrated colonial mucosal fragments with architectural distortion, specifically minor crypt irregularities and stromal fibrosis. The lamina propria exhibited a chronic, mixed-cell inflammatory infiltrate. The absence of active crypt abscesses, non-caseating epithelioid granulomas or cellular dysplasia excluded a definitive classification of Crohn's disease or Ulcerative Colitis. The diagnosis of IBD was further refined in accordance with the European Crohn's and Colitis Organisation (ECCO) guidelines, utilizing clinical, endoscopic, and histopathological data. Consequently, the condition was categorized formally as IBD-Unclassified.

Taking those results we suspect that a chronic, structurally altered mucosal barrier served as the primary portal of entry for the infection. This environment facilitated bacterial translocation into the deep perineal fascia, becoming a predisposing factor for the development of fulminant necrotizing fasciitis [6].

Pharmacological treatment and microbiology

The laboratory findings upon admission of a polymicrobial etiology of the gangrene was confirmed: Escherichia coli, Morganella morganii, Serratia marcescens, and group A Streptococcus pyogenes were identified [7]. That very specific combination explained at least partially the tough situation of the patient. In response, we immediately launched broad-spectrum antibiotic therapy, starting with Metronidazole (3 × 500 mg IV) and Ceftriaxone (1 × 2 g IV). In the following days, we escalated the therapy: Augmentin (2 × 1.2 g IV) and Meropenem (3 × 1 g IV) were added, as well as Fluconazole (1 × 100 mg IV) due to the real risk of fungal infection.

Despite the stable improvement of the patient's condition on June 24, we detected secondary colonization of the wound and urinary

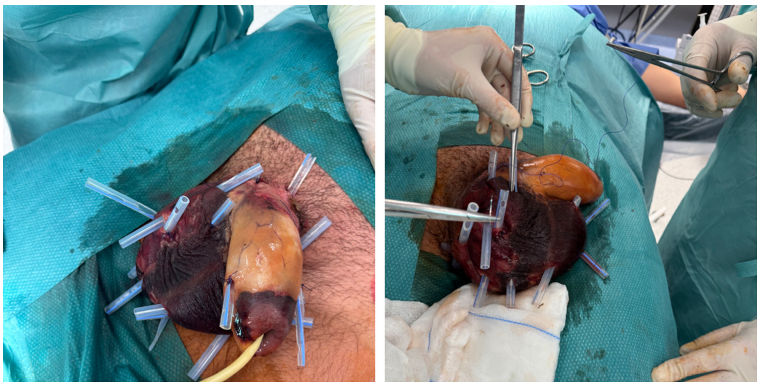

Figure 2. Post-debridement status following the initial intervention. 16 scrotal incisions and 4 penile incisions (from the base to the glans) were performed, with a total of 10 drains inserted to decompress the phlegmon. A Foley catheter was also inserted to control micturition.

tract by highly resistant Pseudomonas aeruginosa [8]. Consequently, Amikacin (2 × 500 mg IV) was also administered at a later stage of treatment in order to combat it.

Urological treatment

Between May 21st and June 7th, 2025, the patient underwent four interventions, including radical excision of the necrotic tissue and thorough drainage of the spreading phlegmon [9]. One of the most difficult clinical decisions we faced involved managing his urinary output and organ protection. We opted against a suprapubic cystostomy (SPC), choosing instead to control micturition with a standard Foley catheter. Our first priority during the initial surgery involved urgent drainage of the fluid collection which was described in the ultrasound. Because of the fact that the testicles shown on Doppler ultrasound were healthy and viable and extensive inflammation and reactions along the fascia, which necessitated decompressive incisions in the lateral parts of the torso, it was not possible to create a suprapubic cystostomy or perform orchidopexy in the femoral pouches. As a result, we were left with no choice but to maintain bladder drainage with the Foley catheter and leave the testicles exposed in the perineal wound [10]. When it came to managing the significant tissue defects left behind after the debridement, we chose a more traditional way. Rather than relying on more modern negative pressure wound therapy (VAC) [11], we went for a more conventional approach - we used the silver-impregnated dressings [12]. It was a deliberate decision to rely on antimicrobial properties of silver to protect the delicate tissue as we prepared the wound for future reconstruction. Below we present a timetable and description of individual interventions.

May 21, 2025 (Intervention I: Urgent Drainage and Diagnostics): Under intravenous anesthesia, 16 scrotal incisions and 4 penile incisions (from the base to the glans) were performed, with a total of 10 drains inserted to decompress the phlegmon. A Foley catheter was also inserted to control micturition. A culture was obtained from the purulent scrotal contents (**Figure 2**).

May 24, 2025 (Intervention II: Radical Necropsy): The drain was removed. The necrotic scrotal skin was excised from the penile-scrotal angle to the perineal area, up to the border of the viable tissue. Cultures were obtained. The wound was left exposed with a sterile dressing applied.

May 31, 2025 (Intervention III: Lumbar Drainage): Due to palpable hard infiltrates from the pubic symphysis to the lumbar region, two incisions were made on the lateral abdominal areas. A silver salt-coated mesh drainage was placed, although no organized foci of pus were found. A pressure dressing was applied.

June 7, 2025 (Intervention IV: Final Surgical Sanitation): The necrotic skin was completely removed from the penis, and the necrotic tissue from the scrotum and covering the testicles was excised. The suprafascial phlegmon was evacuated through an incision on the left lower abdomen. The wound was rinsed with povidone-iodine solution, and a drain was left in place. Argosulfan dressings were applied (**Figure 3**).

Reconstruction and long-term outcomes

Definitive surgical reconstruction was performed on July 1, 2025, utilizing a combination of local flap and skin grafting techniques. The right testicle (which retained mobility), was

Figure 3. Post-reconstructive status. The images demonstrate the integration of the skin graft on the penile shaft and the local flap closure of the scotrum. Visible on the left thigh is the healed donor site from STSG harvest. A residual scar is noted at the site of the previous lumbar decompressive incision. A persistent urethrocutaneous fistula is identified at the penile base. This is still the stage which required catheterization (before the urethroplasty).

internalized using local advancement flaps derived from the scrotal remnants. The immobile left testicle and the extensive perineal defect, an intermediate split-thickness skin graft (ITSG) was harvested from the anterior left thigh. This graft was meshed (1,5:1 ratio) to ensure adequate drainage and expanded coverage of the perineal wound.

The penile shaft defect was addressed using a non-meshed, perforated portion of the same ITSG to achieve a superior cosmetic and functional result. All grafts were secured with absorbable sutures and stabilized with bolstered dressing to ensure graft uptake [13].

While initial anatomical closure was achieved during the primary reconstruction, the mid-term prognosis was characterized by functional morbidity. The patient developed a urethrocutaneous fistula (UF), identified as a secondary complication. We suspect it was the result of the prolonged transurethral catheterization and the local infarction by P. aeruginosa [14]. Furthermore, the patient reported painful erections and physical discomfort secondary to graft contracture and extensive perineal scarring, which significantly impacted his psychosexual state [15].

To address these disturbances, on February 4, 2026, the patient underwent a successful urethroplasty to repair the urethrocutaneous fistula [16]. Following three weeks of catheterization, the Foley catheter was removed on February 25, 2026. At present, the patient has regained independent voiding. Long-term urological surveillance has been initiated to monitor for potential urethral strictures (including uroflowmetry at 3, 6 and 12-month intervals).

Additionally, the resolution of the fistula and the stabilization of the local tissues have led to reduction in coital paint and an improvement in erectile function. A secondary plastic revision to optimize the aesthetic of the perineum and penile shaft and address residual scar contractures is scheduled for April 2026.

Severity stratification: the FGSI score

The Fournier's Gangrene Severity Index (FGSI) was utilized to objectively assess the patient's physiological derangement and to determine mortality risk [17]. The FGSI evaluates nine parameters: temperature, heart rate, white blood cell count, hematocrit, and serum levels of sodium, potassium, creatinine and bicarbonate. Based on the clinical data from May 21, 2025, the patient's FGS score was 17 points. This value, exceeding the established threshold of 9 points which is traditionally used to predict survival (an FGSI > 9 correlates with a mortality rate of approximately 75%). Furthermore, the patient exhibited metabolic fluctuations characteristic of sepsis - while initially laboratory findings indicated hyperkalemia, subsequent blood analysis a day later, demonstrated hypokalemia. These electrolyte shifts reflected the severe systemic inflammatory response, in combination with high FGSI score in this case justified the decision for immediate and radical surgical debridement [18] (**Table 1**).

The calculated FGSI score was 17 (4+4+0+3+3+3+0+0+0), which, significantly exceeding the threshold of 9 points, correlates with an expected mortality rate of over 50%.

Table 1. Fournier's gangrene severity index (FGSI) assesment

Fournier's Gangrene Severity Index (FGSI) parameter	Patient Value (21/05)	Point Value (Range)	Calculated Points
Body temperature (> 38.4 °C or < 36 °C)	39 °C	0-4	4
Heart rate (> 90/min)	130/min	0-4	4
Breathing (> 20/min)	16/min	0-4	0
Creatinine (> 1.5 mg/dl)	1.74 mg/dl	0-3	3
Potassium (> 4.0 mEq/L)	4.6 mEq/L	0-3	3
Sodium (< 135 mEq/L)	126 mEq/L	0-3	3
Bicarbonates (< 20 mEq/L)	26,2 mEq/L	0-4	0
Hematocrit (< 30%)	33.3%	0-3	0
Leukocytes (> 15 × 10^3 mul)	14.6 × 10^3 mul	0-3	0
TOTAL (FGSI Score)			17

Discussion

Multifactorial etiology

Our case illustrates the convergence of multiple factors leading to a fulminant clinical crisis. The primary pathogenesis was driven by the coexistence of chronic intestinal inflammation, acute mechanical perineal trauma, and the effects of psychoactive substance use. Although histopathological analysis did not confirm acute inflammatory bowel disease (IBD) activity, the presence of structural rectal distortion suggests permanent mucosal barrier compromise. This structurally altered tissue likely facilitated the translocation of the intestinal flora into the deep perineal space [19].

In the men-who-have-sex-men (MSM) population, the intersection of mucosal trauma and the local intestinal microbiome is a documented pathway for the development of necrotizing soft tissue infections [20]. The pathophysiological hallmark of this case was obliterative endarteritis, excavated by mephedrone induced vasoconstriction, which induced focal ischemia and created an environment for the rapid proliferation of anaerobic pathogens.

Microbiology and urinary management

The clinical severity in this case was reflected by an FGSI score of 17, a value correlating with a mortality risk exceeding 75%. Such a high score required immediate radical surgical intervention to achieve source control [21]. The fulminant profession of the necrotizing process was driven by a dysregulated systemic inflammatory response ("cytokine storm") which precipitated significant hemodynamic instability and organ dysfunction.

Initial microbiological analysis identified a complex polymicrobial environment, including Group A Streptococcus pyogenes and obligate anaerobes, requiring broad-spectrum antimicrobial therapy [22]. During the clinical course, secondary colonization by Pseudomonas aeruginosa was registered. This is a recognized complication in patients undergoing prolonged hospitalization and iterative debridement of extensive wound cavities [23].

Regarding urinary management, the initial use of transurethral Foley catheter, rather than a suprapubic cystostomy (SPC), was a decision aimed at avoiding additional surgical trauma in the already infected pre-pubic abdominal region [24]. However, the subsequent development of urethrocutaneous fistula (UF) requires retrospective analysis.

The mechanical presence of transurethral catheter, combined with the virulent local environment (colonization by P. aeruginosa) likely contributed to localized urethral wall ischemia and breakdown. While transurethral drainage mitigated surgical risks associated with an SPC in an infected abdominal wall, an earlier transition to a diversion method that provided source isolation might have protected the patient from developing the urethrocutaneous fistula. This case highlights the trade-off between immediate surgical safety and the long-term risk of urethral complications. We took into account all the pros and cons and made a decision. Despite the distant occurrence of the fistula, the current condition of the patient after recent

surgery (urethroplasty), confirms our belief that in the broader perspective our practice was adequate to the patient's clinical state.

Surgical protocol and reconstructive surgery

Post-debridement wound management is a primary determinant of long-term functional success [25]. In this case, the extensive fascial involvement precluded the use of protective techniques such as femoral pouches or previously mentioned suprapubic cystostomy (SPC). This resulted in prolonged testicular exposure and the use of lateral decompressive incisions in the abdominal area [26].

Remarkably, the utilization of conventional silver-impregnated dressings avoided the potential mechanical complications of Negative Pressure Wound Therapy (NPWT/VAC) in tge complex perineal area [27]. This conventional strategy is supported by literature regarding silver's antimicrobial efficacy in high-risk patients [28]. While Hyperbaric Oxygen Therapy (HBOT) is often used to enhance tissue oxygenation, the radical nature of the surgical debridements proved sufficient for source control in our case [29].

The reconstruction focused on preservation of testicular function and mobility. The use of local scrotal advancement flap for the right testicle, in comparison with the intermediate split-thickness skin graft (ITSG) for the left testicle and penile shaft, reflects contrasting results. The flap-covered testicle retained full mobility, whereas the ITSG-covered testicles became fixated. This reinforces the clinical consensus that local flap reconstruction is superior to skin grafting for maintaining scrotal function [30]. To support graft integration, the patient received metabolic support, specifically a high-protein nutritional protocol, in order to counteract the catabolic state caused by the state of sepsis.

Long-term care

The successful closure of the urethrocutaneous fistula on February 4, 2026 is an important milestone in the patient's recovery. The persistent presence of the fistula post-reconstruction was likely exacerbated by the initial colonization of the urinary tract with highly resistant P. aeruginosa (which had created a difficult environment for tissue regeneration). The successful outcome of the urethroplasty, followed by the removal of the Foley catheter on February 25, 2026, demonstrated that even high-severity Fournier's gangrene cases can achieve functional restoration, thanks to multidisciplinary care and well-planned treatment.

The requirement for serial uroflowmetry post-urethroplasty, implies the necessity of long-term urological surveillance in order to detect late complications (such as strictures). Additionally, the reported improvement in erectile function and reduction in coital pain following the resolution of the fistula highlight the importance of addressing psychosexual health. Proper psychological attitude of the patients allows to improve the overall treatment efficacy [31].

The planned secondary plastic revision in April 2026 further emphasizes that the management of FG is a chronic process. Our case confirms that survival in fulminant FG is not a solitary endpoint. The ultimate goal is the full restoration of a patient's quality of life (QoL) through an integrated approach involving urological, plastic and psychological support [32, 33].

Conclusions

Aggressive, multi-stage surgical treatment combined with targeted antibiotic therapy allowed for the successful management of extremely severe Fournier's gangrene (FGSI $\geq$ 17) in a patient with a statistical mortality risk exceeding 50%. Therapeutic success was inextricably linked to the early identification of a unique constellation of triggering factors: chronic inflammatory process of the rectum, mechanical trauma to the perineum in the MSM population, and the vasoconstrictive effects of psychoactive substances, which together led to rapid tissue necrosis. The treatment course demonstrated that in selected clinical situations, conventional wound management with silver dressings, while omitting negative pressure wound therapy (VAC), hyperbaric oxygen therapy (HBO) and orchidopexy, can be a safe and effective strategy for preparing the wound bed for fast reconstruction. Functional results confirmed the superiority of local flaps over split-thickness skin grafts (ITSG) in maintaining testicular mobility. This case highlights that survival in extreme Fournier's Gangrene is possi-

ble. However, the true measure of success lies in the long-term, interdisciplinary management of the functional and psychosexual complications that define the patient's new reality.

Disclosure of conflict of interest

None.

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