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Keywords:

Fournier gangrene, nursing care,
multiple myeloma.

Anahtar Sözcükler:

Fournier gangreni, hemşirelik
bakımı, multipl miyelom.

Fournier's Gangrene and Nursing Care in A Patient Diagnosed with Multiple Myeloma: A Case Report

Multipl Miyelom Tanılı Hastada Fournier Gangreni ve Hemşirelik Bakımı: Olgu Sunumu

Gönderilme Tarihi: 16 Ekim 2025
2026

Kabul Tarihi: 11 Mart

ABSTRACT

Multiple myeloma is a hematologic malignancy characterized by the abnormal proliferation of plasma cells in the bone marrow, accounting for approximately 10% of all blood cancers. Fournier's gangrene, in contrast, is a rapidly progressive, necrotizing soft tissue infection that affects the perineal, genital, and perianal regions and carries a high risk of mortality. Both conditions present significant complexities in treatment and care, necessitating a comprehensive and multidisciplinary approach.

The effective management of patients with multiple myeloma complicated by Fournier's gangrene requires a multidisciplinary approach, with nurses playing a pivotal role in delivering individualized and evidence-based care. This study presents the treatment process and nursing interventions for a 63-year-old male patient diagnosed with multiple myeloma who subsequently developed Fournier's gangrene.

Nursing diagnoses, based on the North American Nursing Diagnosis Association (NANDA) framework, included impaired tissue integrity, acute pain, self-care deficit, imbalanced nutrition: less than body requirements, fluid and electrolyte imbalance, altered blood glucose level, anxiety, altered level of consciousness, impaired physical mobility, knowledge deficit, risk for aspiration, and risk for falls.

This study emphasizes the importance of early diagnosis, prompt surgical intervention, and a multidisciplinary approach in managing critical conditions such as Fournier's gangrene in patient diagnosed with multiple myeloma.

ÖZ

Multipl miyelom, kemik iliğinde üretilen plazmanın anormalleşmesi sonucu ortaya çıkan, hematolojik malignitelerin yaklaşık %10'unu oluşturan bir kanser türüdür. Fournier gangreni ise perineal, genital ve perianal alanda hızla ilerleyen, nekrotizan ve yaşamı tehdit eden bir hastalıktır. Hemşirelerin, multipl miyelom ve Fournier gangreni olan hastada, bireysel bakım sürecini iyi bir şekilde yönetebilmeleri oldukça önemlidir.

Çalışmada, multipl miyelom tanılı 63 yaşındaki erkek hastada gelişen Fournier gangreninin tedavi süreci ve hemşirelik bakımı sunulmaktadır. Olguda Kuzey Amerika Hemşirelik Tanıları Birliği-NANDA kapsamında ele alınan hemşirelik tanıları "Doku bütünlüğünde bozulma, Akut ağrı, Özbakım eksikliği, Beslenmede değişim: Gerekisinden az, Sıvı elektrolit dengesizliği, Kan glukoz düzeyinde değişim, Anksiyete, Bilinç düzeyinde değişim, Fiziksel mobilitede bozulma, Bilgi eksikliği, Aspirasyon riski, Düşme riski" şeklindedir.

Sonuç olarak çalışmada, multipl miyelom tanılı hastalarda Fournier gangreni gibi kritik hastalıkların erken tanı, hızlı cerrahi müdahale ve multidisipliner tedavi ile yönetimi vurgulanmaktadır. Hemşireler, multidisipliner ekip içinde aktif rol alarak, bireyselleşmiş ve kanıta dayalı bakım ile hastaların iyileşmesinde önemli katkılar sunmaktadır.

INTRODUCTION

Multiple myeloma (MM) is a haematological malignancy characterised by the abnormal proliferation of plasma cells in the bone marrow and accounts for approximately 10% of all blood cancers. It has a global incidence of 1.8 per 100,000 individuals (187,952 cases) (American Cancer Society [ACS], 2025; Ferlay et al., 2024). In Turkey, the 5-year prevalence of the disease has been reported as 9.9 per 100,000 population (Global Cancer Observatory [GLOBOCAN], 2022). MM predominantly affects males and individuals over 50 years of age and commonly presents with bone pain, anemia, renal failure, hypercalcemia, and recurrent infections. Diagnosis is based on clinical history, physical examination, laboratory findings, and bone marrow biopsy. Treatment frequently involves targeted agents such as lenalidomide and bortezomib, while refractory or relapsed cases benefit from next-generation drugs like daratumumab, carfilzomib, and pomalidomide. The primary therapeutic goals include improving quality of life, prolonging survival, and minimizing tumour burden. Stem cell transplantation remains a key consideration in treatment planning (Altuntaş & Korkmaz, 2018; American Society of Hematology, 2025).

Fournier's gangrene (FG) is a rare but rapidly progressive necrotizing infection of the perineal, genital, and perianal regions, associated with a high risk of mortality. Experts in the United States estimate that Fournier's gangrene affects fewer than 2 males for every 100,000 in the population. It manifests with severe pain, swelling, necrosis, fever, and systemic signs of sepsis (Cleveland Clinic, 2025; El-Qushayri et al., 2020). The condition primarily affects males over 50 years of age and commonly involves polymicrobial infections. The most frequently isolated pathogens include *Escherichia coli*, *Klebsiella*, *Proteus*, *Pseudomonas*, *Enterococcus*, *Bacteroides*, *Streptococcus*, and *Staphylococcus* species. A hallmark clinical sign is diminished or absent pain following the onset of gangrene. Progression to sepsis is associated with anemia, thrombocytopenia, leukocytosis, elevated creatinine levels, electrolyte imbalances, tachycardia, and hypotension. If left untreated, FG can lead to multiorgan failure and mortality (Hughes et al., 2023; Leslie, Rad, & Foreman, 2023). Management includes urgent surgical debridement, vacuum-assisted closure (VAC) therapy, wound dressings, skin grafting, hyperbaric oxygen therapy, electrolyte correction, and broad-spectrum antibiotics (Caviş, 2024).

Nursing care is pivotal in managing complex conditions such as multiple myeloma and Fournier's gangrene. Key nursing responsibilities include monitoring treatment responses; managing neutropenia and fever; providing patient education and psychosocial support; ensuring effective wound care; overseeing sepsis management; and maintaining hemodynamic stability (Danacı & Koç, 2022). The integration of evidence-based nursing interventions within a multidisciplinary framework is essential for optimizing patient outcomes.

This study examines the development of Fournier's gangrene in a patient with multiple myeloma and highlights the critical role of nursing care in the management of the resulting complications. It provides a framework for evidence-based nursing interventions tailored to complex clinical scenarios. Given the rarity of this condition, evidence regarding its nursing care and management remains limited, highlighting the need for further research to strengthen knowledge in this area (ACS, 2025). Informed consent was obtained from the patient through a voluntary consent form.

CASE REPORT

Verbal and written informed consent was obtained from the patient and their relatives for the case discussed in this study.

A 63-year-old male patient with no known comorbidities presented to the hospital in October 2023 with widespread lower back pain. Laboratory test results indicated hypercalcemia. Further evaluation using positron emission tomography/computed tomography (PET-CT) revealed significant and widespread involvement of the bone structures, leading to a diagnosis of plasma cell multiple myeloma.

The patient was initiated on chemotherapy and completed five cycles of the Bortezomib, Cyclophosphamide, and Dexamethasone (VCD) protocol. However, the treatment was discontinued due to the onset of lower extremity neuropathy. He subsequently underwent autologous stem cell transplantation on April 4, 2024, but later relapsed. To manage the relapse, he received the Ixazomib, Lenalidomide, and Dexamethasone (IRD) protocol, followed by a single cycle of the Carfilzomib, Lenalidomide, and Dexamethasone (KRD) protocol. Plasmapheresis was performed to address hyperviscosity.

On December 16, 2024, the patient was admitted to the hospital due to epistaxis and was hospitalized in the hematology ward. A follow-up PET-CT scan revealed widespread metastases, presacral tissue involvement,

suspected central metastasis, and suspected liver metastasis. The patient was initiated on the VD-PACE (Bortezomib, Cisplatin, Cyclophosphamide, Dexamethasone, Doxorubicin, and Etoposide) protocol. Following a 14-day hospitalization in the hematology ward, the patient's condition deteriorated, and he was transferred to the internal medicine intensive care unit (ICU) for eight days. On December 29, 2024, *Klebsiella pneumoniae* growth was detected in blood cultures, and meropenem therapy was initiated with the patient placed in isolation. The patient was transferred back to the hematology ward, but on January 6, 2025, he developed a fever of 39°C. Blood, urine, stool, and sputum cultures were obtained, and the infectious diseases unit was consulted. Despite being on Meropenem and Vancomycin Hydrochloride, the patient was recommended to start Caspofungin Acetate.

On January 7, 2025, the patient reported scrotal pain, and ultrasonography revealed edematous and markedly thickened scrotal skin. Consultation with the urology department suggested the possibility of bilateral epididymo-orchitis, and surgical preparation was recommended (including anesthesia evaluation, blood transfusions, and correction of coagulation parameters). Due to thrombocytopenia (PLT: 8 K/uL) and elevated coagulation parameters (INR: 1.59), two units of platelet suspension and one unit of fresh frozen plasma were administered (Table 1). On the same day, the patient was transferred to the urology department for surgery.

Table 1. Blood parameters

Blood Parameter& Normal Range - Unit	30.10.2023	29.12.2024	07.01.2025	29.01.2025
Leukocyte (WBC) 4-10 K/uL	7.31	0.03 L	0.31 L	19.51 H
Neutrophil (NEU) 2-7 K/uL	3.91	****	0.25 L	17.65 H
Erythrocyte (RBC) 3.5-5.5 M/uL	1.72 L	2.63 L	2.87 L	2.87 L
Hemoglobin (HGB) 11-16 g/dL	5.6 L	7.5 L	8.5 L	8.1 L
Platelet (PLT) 100-400 K/uL	109	24 L	8 L	15 L
Sodium (Na) 136-146 mmol/L	125.7 L	125 L	150 H	151 H
Potassium (K) 3.5-5.1 mmol/L	3.8	3.4 L	2.6 L	3.5
Magnesium (MG) 1.8-2.6 mg/dL	1.3 L	1.8	2	2.2
Calcium (Ca) 8.8-10.6 mg/dL	7.7 L	7.8 L	6.3 L	7.9 L
Albumin 32 - 46 g/L	<15	23.4 L	15.2 L	18.5 L
Lactate Dehydrogenase LDH 0 - 248 U/L	269.4 H	534 H	249 H	277 H
C-Reactive Protein CRP 0-5 mg/L	68.2 H	260 H	265 H	210 H

"L" Low, "H" High, "K/uL" Thousand per microliter, "M/uL" Million per microliter, "g/dL" Gram per deciliter, "mmol/L" Millimole per liter, "mg/dL" Milligram per deciliter, "U/L" Unit per liter, "mg/L" Milligram per liter.

The patient was diagnosed with "Fournier's gangrene" and underwent debridement of necrotic tissue under local anesthesia (Figure 1). Wound cultures were obtained, and wet dressing changes were initiated with daily dressing recommendations. Cultures grew *Enterococcus faecium*, *Escherichia coli*, and *Pseudomonas aeruginosa*. The infectious diseases unit was reconsulted, and it was recommended to discontinue Meropenem and initiate Imipenem. Additionally, a tetanus vaccine was advised if not received within the past five years. The general surgery department was consulted, but no additional surgical intervention was deemed necessary. The patient was monitored daily by the urology department, and VAC was initiated and continued until January 21, 2025.

Due to the patient's deteriorating nutritional status, total parenteral peripheral nutrition (TPN) was initiated based on nutritional recommendations. The patient, diagnosed with hypovolemic hyponatremia, was also consulted with the nephrology department. The nephrology team recommended albumin replacement, a reduction in TPN with a transition to 5% dextrose (2000 cc), administration of 3000 cc/day of fluids via a nasogastric tube if tolerated, and strict monitoring of fluid intake and output (Table 2).



Figure 1. Pre- and post-debridement images

Table 2. Treatment list (26.01.2025)

Drug Active Ingredient	Dose	Route of Administration	Purpose of Use
Linezolid 2 mg/ml vial	2x600 mg	IV inf.	Broad-spectrum antibiotic
Pantoprazole 40 mg vial	1x40 mg	IV	Gastrointestinal protection
Acyclovir 250 mg vial	2x250	IV inf.	Antiviral treatment
Acetylcysteine ampoule	2x300	IV	Mucolytic and antioxidant
Escitalopram oxalate 10 mg drops	1x10 drops	PO	Antidepressant for anxiety and depression
Spironolactone 100 mg tablet	1x100 mg	PO	Diuretic and potassium-sparing agent for fluid balance
Metoclopramide hydrochloride 10 mg/2 mL	2x10 mg	IV inf.	Antiemetic
Metoprolol succinate 25 mg tablet	1x25 mg	PO	Beta blocker to regulate heart rate and treat hypertension
Meropenem 1 g vial	2x1 g	IV inf.	Broad-spectrum antibiotic
Fentanyl 75 mcg patch	1x75 mcg	TD	Management of severe chronic pain
Potassium chloride 7.5% 10 mL ampoule	1x 80 mL	IV inf.	Corrects hypokalemia, maintains electrolyte balance
Periolimel N4-600E 1500 ml	1x1	IV inf.	Parenteral nutrition
5% Dextrose 1000 mL	1x1	IV inf.	Fluid support and energy supply
5% Dextrose + 0.45% NaCl 1000 mL	1x1	IV inf.	Fluid and electrolyte support
Magnesium sulfate 15% 10 mL ampoule	1x1	IV inf.	Treatment of hypomagnesemia, electrolyte balance

“IV” intravenous; “PO” peroral (oral); “TD” transdermal; “inf” infusion; “mg/ml” Milligram per millilitre; “mg” Milligram; “mcg” Microgram; “mL” Milliliter; “g” Gram

On January 23, 2025, the patient was re-evaluated and referred to the urology department. A second debridement procedure was performed, after which the patient was monitored in the anesthesia intensive care unit before being transferred back to the hematology ward.

The patient, receiving Meropenem, Linezolid, and Acyclovir treatment and undergoing daily wet dressings, exhibited tachycardia (heart rate: 162 bpm) and dyspnea (respiratory rate: 32 breaths/min), leading to transfer to the intensive care unit on January 28, 2025. The patient's consciousness deteriorated, necessitating intubation. While being monitored in the intensive care unit, the patient experienced sudden cardiac arrest on January 29, 2025, and was pronounced deceased.

Table 3. Nursing diagnoses and intervention

NURSING DIAGNOSIS	RELATED FACTORS (Etiology)	CHARACTERISTICS	NURSING INTERVENTIONS	EVALUATION/OUTCOME
Acute Pain	Trauma, surgical intervention, inflammation, tissue damage, cancer	Severe pain (Pain score: 7/10), tenderness, restlessness, fatigue	- Assess pain using validated scales (e.g., Visual Analog Scale) every 4 hours. - Administer prescribed analgesics on schedule, monitor effectiveness and side effects. - Educate patient on pain management techniques including relaxation and proper medication use. - Document pain characteristics in detail: location, onset, duration, intensity, quality, aggravating/relieving factors. - Appropriate positioning is provided for the patient.	- Pain intensity scores reduce to $\leq 3/10$ within 24 hours. - Patient reports improved comfort and ability to perform daily activities. - No adverse effects from analgesic treatment.
Fluid and Electrolyte Imbalance	Vomiting, diarrhea, excessive sweating, kidney diseases, inadequate fluid intake, medications	Dry mouth, fatigue, dizziness, changes in urine output, Sodium (Na^+), potassium (K^+), calcium (Ca^{2+}), and magnesium (Mg^{2+}) levels are low.	- Record fluid intake and output hourly. - Monitor serum electrolyte levels daily. Deficient electrolytes should be replaced in accordance with the physician's orders. Signs and symptoms of electrolyte deficiency should be monitored. - Administer IV fluids according to medical orders, adjust based on lab results. - Educate patient on importance of adequate hydration. - Collaborate with dietitian to adjust nutrition.	- Fluid intake/output balanced within ± 500 mL over 24 hours. - Patient reports decreased symptoms like dizziness and fatigue.
Imbalanced Nutrition: Less than Body Requirements	Nutritional disturbances, surgical procedures, depression, swallowing difficulties	Weight loss, fatigue, poor skin condition, weakened immune system. Hemoglobin and Albumin level is low.	- Weigh patient daily at the same time. - Assess swallowing function using standardized bedside swallowing tests. - Provide texture-modified diets as needed. - Encourage oral nutritional supplements and monitor intake quantitatively. - Coordinate with nutritionist for personalized plan. Deficient electrolytes should be replaced in accordance with the physician's orders. Signs and symptoms of electrolyte deficiency should be monitored. - Document calorie and protein intake daily.	- Patient weight stabilizes or increases by at least 0.5 kg/week. - Nutritional intake meets $\geq 75\%$ of calculated needs. - Improvement in skin turgor and energy levels observed.
Altered Blood Glucose Level	Diabetes, medications (e.g., steroids), nutrition issues, kidney diseases, Infection.	Tremors, sweating, dizziness, fatigue, blurred vision, thirst, excessive urination	- Measure blood glucose levels before meals and at bedtime. - Administer insulin or oral hypoglycemics as ordered; monitor for hypo/hyperglycemia signs. - Provide fast-acting glucose (e.g., juice) immediately if hypoglycemia detected. - Record all blood glucose values in patient chart.	- Blood glucose levels maintained between 70-110 mg/dL. - No episodes of symptomatic hypoglycemia or hyperglycemia during hospitalization.
Impaired Skin Integrity	Trauma, surgical procedure, infection, diabetes, poor nutrition, poor hygiene, excessive pressure (pressure ulcers)	Wounds, ulcers, bleeding, inflammation, edema, tissue necrosis	- Clean wound with sterile saline and apply prescribed dressings using aseptic technique. - Use negative pressure wound therapy (VAC) as ordered. - Inspect skin daily for signs of infection or pressure injury. - Reposition patient every 2 hours to relieve pressure. - Provide high-protein, vitamin-rich diet to support healing. - Document wound size, appearance, and exudate amount/color.	- Wound healing. - Absence of infection symptoms. - Restored skin integrity.
Altered Level of Consciousness	Infection, hypoxia, trauma, metabolic disturbances, medications, dehydration	Confusion, dizziness, drowsiness, unresponsiveness, loss of consciousness	- Assess level of consciousness using Glasgow Coma Scale (GCS) every 4 hours. - Monitor vital signs and oxygen saturation continuously. - Administer oxygen therapy as ordered. - Monitor lab values (electrolytes, blood glucose,	- GCS score improves or stabilizes at 15/15 within 48 hours.

			infection markers) daily.- Ensure bed in low position, use side rails, and remove hazards to maintain safety.	- No injury due to impaired consciousness. - Patient shows improved orientation and responsiveness.
Impaired Physical Mobility	Pain, muscle weakness, musculoskeletal diseases, post-surgical recovery, aging	Inability to walk, loss of balance, reduced joint mobility, lack of physical coordination	- Recommend physical therapy and exercises. - Organize the environment for patient safety. - Provide assistive devices (e.g., walking aids). - Recommend bed exercises. Reassess mobility progress daily.	- Increased patient mobility. - Reduced risk of falls. - Recovery of independent mobility.
Self-Care Deficit	Physical-mental disabilities, depression, aging, illness, post-surgical recovery	Inadequate hygiene, difficulty with clothing changes, need for assistance.	- Organize patient care and provide guidance. - Provide practical exercises for self-care skills. - Recommend supportive devices and equipment. - Support family caregivers.	- Personal hygiene and appearance are maintained daily. - Patient and caregivers report increased confidence in self-care.
Anxiety	Illness, treatment process, environmental factors, stress, uncertainty	Rapid breathing, sweating, restlessness, excessive thinking	- Establish open communication with the patient. -Teach deep breathing and guided imagery techniques. - Minimize environmental stressors (noise, light, interruptions).	- Observable reduction in restlessness and physiological signs.
Knowledge Deficit	Inadequate education, communication barriers, complexity of the illness	Failure to ask questions, misinformation, treatment resistance, worry	- Provide education to the patient and their family. - Clarify any misunderstandings. - Provide written materials and answer questions. - Provide education using simple language, visuals, and written materials.	- The patient has accurate knowledge. - Improved treatment adherence. - Reports confidence and satisfaction with provided information.
Risk for Aspiration	Swallowing difficulties, loss of consciousness, aging, neurological disorders	Coughing, choking sensation, difficulty swallowing	- Recommend small, slow bites for patients with swallowing difficulties. - Teach positioning before swallowing to prevent aspiration. - Monitor post-meal positioning. Elevate head of bed to 90° during and 30 min after meals.	- No aspiration-related complications (e.g., pneumonia) observed.
Risk for Falls	Poor balance, age, treatment side effects, environmental factors, weak muscles, altered consciousness	Loss of balance, lack of coordination, slow movement	- Make the environment safe (adequate lighting). - Secure bed rails. - Provide assistive devices. - Keep call bell and personal items within reach.	- No falls occur during hospitalization. - Patient demonstrates safe use of assistive devices.

Nursing Care

The patient's nursing care was guided by the NANDA nursing diagnoses, which included Acute Pain, Self-Care Deficit, Impaired Tissue Integrity, Knowledge Deficit, Imbalanced Nutrition: Less Than Body Requirements, Fluid and Electrolyte Imbalance, Altered Blood Glucose Level, Anxiety, Altered Consciousness, Risk for Falls, Impaired Physical Mobility, and Risk for Aspiration (Figure 2). A detailed explanation is provided in Table 3.

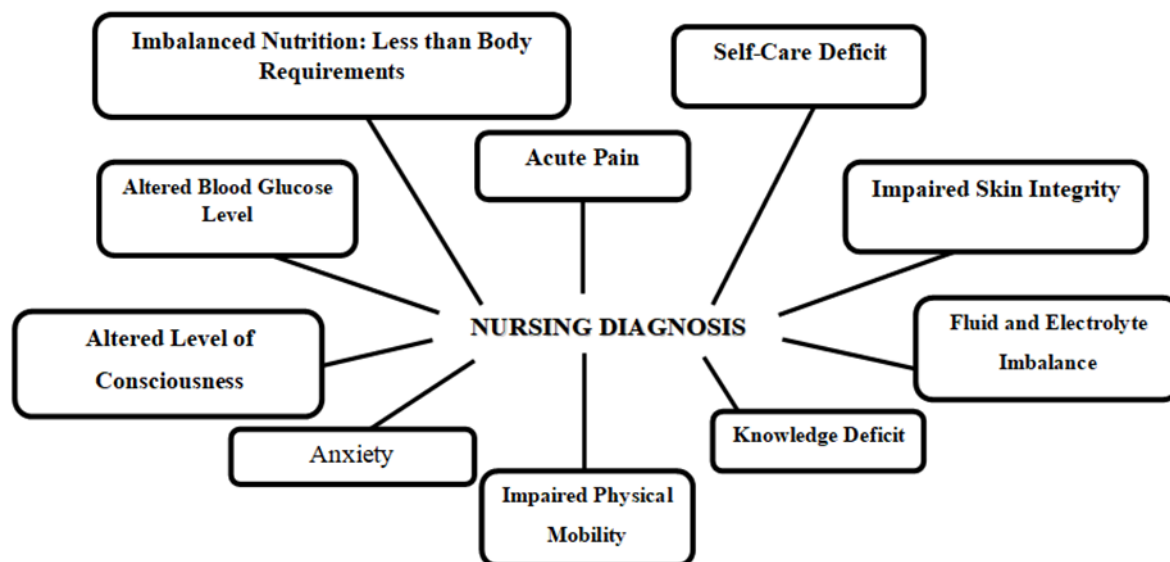


Figure 2. Nursing diagnoses

It should be clarified that all nursing interventions described in this case report were provided exclusively in the hematology ward. Preoperative preparation and postoperative care for the patient with Fournier's gangrene were managed within this ward; care in the intensive care unit was not included in this report. During the preoperative period, nurses focused on patient education, anxiety management, optimization of fluid-electrolyte balance, and nutritional support. Postoperatively, care included wound management such as wet dressing changes, VAC therapy monitoring, infection prevention, pain management, assistance with self-care, and regular monitoring of vital signs and laboratory parameters. Ongoing care also encompassed supporting physical mobility, fall prevention, blood glucose monitoring, and psychosocial support.

Although nursing care was provided for additional psychosocial and clinical concerns, including "Disturbed Body Image," "Sexual Dysfunction," "Actual Infection," and "Risk for Impaired Skin Integrity," these diagnoses were not included as primary nursing diagnoses in the manuscript. The focus was maintained on the priority NANDA-I nursing diagnoses that directly addressed life-threatening and immediate physical care needs, highlighting the most critical aspects of patient management. Nevertheless, interventions addressing body image and sexual health, infection prevention measures, daily skin assessments, and preventive strategies for pressure injuries were all implemented as part of the patient's comprehensive and holistic nursing care plan.

DISCUSSION

This case presentation examines Fournier's gangrene and the associated nursing care in a patient diagnosed with multiple myeloma. The co-occurrence of these two conditions requires a comprehensive and multidisciplinary approach. Fournier's gangrene is a life-threatening necrotizing infection that necessitates urgent treatment, especially in immunocompromised patients like those with multiple myeloma. Early symptom recognition—such as severe pain, skin discoloration, and systemic signs of infection—is critical. Surgical debridement for the removal of necrotic tissue is a crucial component of management (Caviş, 2024). In this context, nursing care plays a crucial role in monitoring the patient's condition, detecting early signs of deterioration, and preventing complications through meticulous wound care and hygiene practices.

In a study, a 69-year-old male with multiple myeloma developed Fournier's gangrene after cytostatic drug therapy, presenting with scrotal swelling. Surgical debridement and concurrent antibiotic therapy resulted in favorable clinical progression (Graf *et al.*, 1983). Similarly, our patient underwent repeated debridement procedures. The immunosuppressive effects of multiple myeloma treatment increase susceptibility to infections, as also demonstrated in a case report of Fournier's gangrene following chemotherapy for testicular cancer (Nonaka *et al.*, 2024). In such patients, nurses play a pivotal role in reducing infection risk through strict infection control measures, close monitoring for sepsis, and patient education on self-care (Geres & Kotchetkov, 2020).

Another study presented a 34-year-old woman with ulcerative colitis on immunosuppressive therapy who required surgical debridement for Fournier's gangrene. Initially treated with broad-spectrum antibiotics (piperacillin/tazobactam), the regimen was later changed to meropenem based on wound culture results identifying *Klebsiella pneumoniae* and *Streptococcus anginosus* (Pecorino *et al.*, 2024). In our case, broad-spectrum antibiotics were also initiated after the diagnosis in an immunocompromised patient.

Advanced wound care techniques, including VAC therapy and specialized dressings, can facilitate healing and potentially reduce the need for further surgical intervention. For example, a 32-year-old male developed Fournier's gangrene following circumcision for phimosis. Broad-spectrum antibiotics and multiple surgical debridements were administered, followed by the application of a negative pressure wound therapy device. After intensive care and skin grafting, the patient experienced significant improvement (Bowring, Bouwman, van Putten, & Blok, 2025). In advanced wound care, nursing interventions such as routine wound assessments, cross-contamination prevention, optimal positioning, and pain management are vital (Ernstmeyer & Christman, 2021). Similarly, VAC therapy was applied to our patient following debridement.

In another study, a 53-year-old Fournier's gangrene patient was assessed using Marjory Gordon's functional health patterns model (Lorenzo-Ruiz, 2024). The study emphasized the importance of early diagnosis, surgical intervention, and broad-spectrum antibiotic use. While that case demonstrated effective management through systematic nursing evaluation and individualized care, our case presented greater complexity due to the patient's immunosuppressive status, which heightened infection and complication risks. In both cases, nursing care was central to infection control, wound care, and patient monitoring.

A review by Creta *et al.* noted that patients with hematologic malignancies face elevated risk for Fournier's gangrene due to immunosuppression, with acute leukemia being the most common underlying disease and scrotal involvement being frequent (Creta *et al.*, 2021). Our case, involving multiple myeloma, represents a rare occurrence of Fournier's gangrene with similar scrotal localization. The literature contains very few such reports. Despite intensive antibiotic therapy, repeated surgical debridements, and VAC treatment, the patient unfortunately died, underscoring the rapid progression and high severity of Fournier's gangrene in immunocompromised individuals.

In conclusion, early diagnosis, surgical intervention, broad-spectrum antibiotic therapy, and advanced wound care methods are essential for managing Fournier's gangrene in patients with multiple myeloma. This case highlights the critical role of nursing in infection prevention, wound care, pain control, and support of the multidisciplinary care process.

This case report has several limitations. As it describes a single patient, the findings cannot be generalized to all individuals with multiple myeloma who develop Fournier's gangrene. The causal relationship between the disease progression and the nursing interventions cannot be established due to the observational nature of the report. Additionally, objective measurement tools for evaluating the effectiveness of nursing care were not used, and long-term follow-up data were unavailable due to the patient's death. Despite these limitations, this case provides valuable insight into the complexity of managing Fournier's gangrene in patients with hematologic malignancies and highlights the critical role of nursing care in multidisciplinary management.

CONCLUSION

In this case, despite comprehensive nursing interventions and a multidisciplinary treatment approach, the patient's condition rapidly deteriorated due to the progression of Fournier's gangrene, ultimately resulting in death following cardiac arrest in the intensive care unit. This outcome highlights the high mortality risk associated with necrotizing infections in immunocompromised patients and underscores the need for early recognition, prompt interventions, and continuous monitoring in nursing care. For nurses managing similar clinical situations, it is recommended to implement individualized and structured nursing interventions focusing on wound care, fluid-electrolyte balance, nutritional support, and psychosocial care. Studies focusing on nursing care for patients

diagnosed with multiple myeloma who develop Fournier's gangrene are rare. Therefore, further research is needed to enrich the literature and to guide evidence-based nursing practices in similar complex cases.

Author Contributions: Concept and design: G.Y., G.U., H.C.A., D.A., Data Collection: G.Y., G.U., H.C.A., D.A., Data analysis and interpretation: G.Y., G.U., H.C.A., D.A., Writing manuscript: G.Y., G.U., H.C.A., D.A., Critical review: G.Y., G.U., H.C.A., D.A.

Conflict of Interest: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study has received no financial support

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