CLINICAL MANIFESTATION AND NURSING CARE CHALLENGES OF NEUROGENIC BOWEL DISORDER IN CLOSED-INTERTROCHANTERIC FRACTURE DEXTRA AN A 58-YEAR-OLD FEMALE WITH T2DM AND ATELECTASIS-TUBERCULOSIS: A CASE REPORT

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ABSTRACT

Intertrochanteric fractures, characterized by breaks in the proximal femur outside the joint capsule, present significant rehabilitation challenges, especially in older adult with comorbidities. These fractures disrupt the attachment points for major muscles and can lead to complications if not promptly and effectively treated. This case report explores the complex clinical scenario of a 58-year-old female patient with a history of Type 2 diabetes mellitus (T2DM) and tuberculosis, who suffered a closed intertrochanteric fracture dextra. The complications were exacerbated by neurogenic bowel disorder (NBD) due to prolonged immobility. The patient presented to the emergency department with severe hip pain following a fall at home, where she had been bedridden for two weeks. During this time, she developed a grade 2 decubitus ulcer. Despite her painful condition, initial treatment was delayed, leading to severe complications. A subsequent chest X-ray revealed infiltration along with atelectasis of the left superior lobe and left pleural effusion indicative of exacerbated pulmonary tuberculosis. Diagnostic imaging also identified an obstructive ileus. Immediate surgical intervention was indicated to manage the fracture. In addition to surgical care, the patient required specialized nursing care to address her acute and chronic medical needs, including blood glucose monitoring and management of her pulmonary condition. Prior to her surgery, Swadesh massage therapy was employed, resulting in minor relief indicated by the passage of a small amount of hard, mucous-like feces. Effective management of closed intertrochanteric fractures in patients with significant comorbidities requires a multidisciplinary approach. Early surgical intervention, combined with tailored nursing care and continuous monitoring of associated complications, is crucial for restoring functionality and preventing further health deterioration.

Keywords: Intertrochanteric Fracture, Neurogenic Bowel Disorder, Type 2 Diabetes Mellitus, Pulmonary Tuberculosis, Multidisciplinary Care.

INTRODUCTION

Intertrochanteric fractures refer to breaks in the proximal femur that occur outside the joint capsule, specifically between the greater and lesser trochanters (Attum & Pilson, 2023). This part of the femur, known as the intertrochanteric region, consists of dense trabecular bone. The greater trochanter acts as an attachment point for several

muscles, including the gluteus medius, gluteus minimus, obturator internus, and piriformis, and it also serves as the origin for the vastus lateralis muscle (Attum & Pilson, 2023; Ziegler et al., 2024).

The aim of treating fractures in older aduls is to enable early movement and ultimately restore functionality. Extended immobility raises the risk of deep vein thrombosis (DVT), pulmonary embolism, pressure sores, pneumonia, and joint stiffness (Metzger & Lombardi, 2014). When surgery is required, it should ideally be done within 48 hours post-injury, provided the patient is medically stable (Metzger & Lombardi, 2014). It is crucial for the patient, their family, the orthopedic surgeon, and all support service providers to recognize that healing capacity is often reduced in geriatric patients and other health problem or comorbidities, such as inflamatory factors (Metzger & Lombardi, 2014; Molitoris et al., 2024).

Management of closed-intertrochanteric fractures often presents complex challenges, particularly when compounded by concurrent systemic illnesses. This study details a multifaceted clinical scenario in which a patient with type 2 diabetes mellitus (T2DM) and tuberculosis-related atelectasis experienced severe complications stemming from neurogenic bowel disorder (NBD) following a closed-intertrochanteric fracture dextra. These complications underline the critical need for a holistic approach to patient care, encompassing vigilant monitoring and proactive management of all comorbidities.

According the background above, we aim to explore the interactions between orthopedic trauma, chronic systemic diseases, and acute complications such as NBD, offering a comprehensive view of the care strategies required for such intricate cases. This discussion is intended to contribute to the broader understanding of how to effectively taking care patients with similar complex health profiles.

LITERATURE REVIEW

Neurogenic Bowel Disorder and Its Clinical Manifestations

Neurogenic bowel disorder (NBD) is a dysfunction of the colon and rectum due to central or peripheral nervous system impairment, commonly resulting in constipation, fecal incontinence, or both. This condition is frequently observed in patients with spinal cord injury, multiple sclerosis, diabetes mellitus, and other neurological or systemic diseases (Emmanuel et al., 2019). In individuals with diabetes, autonomic neuropathy may affect the enteric nervous system, leading to impaired bowel motility and coordination (Emmanuel et al., 2019). The clinical manifestations of NBD may vary but often include abdominal distention, infrequent bowel movements, straining, and incomplete evacuation. These symptoms significantly impact the quality of life and require thorough assessment and individualized management strategies (Emmanuel et al., 2019).

Nursing Care Challenges in Patients with Complex Comorbidities

Providing nursing care to patients with multiple comorbidities—such as T2DM, tuberculosis-related atelectasis, and orthopedic trauma—presents unique challenges (Rayman G, et al 2022). These include prioritizing care, preventing complications, coordinating multidisciplinary interventions, and ensuring holistic management. In patients with NBD, nurses must assess bowel function

regularly, administer bowel regimens, and educate the patient and family on self-management practices (Rayman G, et al 2022). Additionally, the presence of a closed intertrochanteric fracture further limits mobility, exacerbating bowel dysfunction. Pulmonary issues such as atelectasis due to tuberculosis can further complicate care by increasing the risk of respiratory compromise during procedures such as bedpan use or repositioning (Rayman G, et al 2022). Nurses play a critical role in early recognition of complications, maintaining bowel regularity, preventing skin breakdown, and supporting both physical and psychological aspects of recovery.

RESEARCH METHODS

This study employed a case report design. A case report is a detailed account of the symptoms, signs, diagnosis, treatment, and follow-up of an individual patient (Alsaywid & Abdulhaq, 2019). Case reports often describe rare or novel occurrences and remain a cornerstone of medical advancement, offering new insights into clinical practice (Ortega-Loubon et al., 2017). In this case report, the authors present the case of a 58-year-old female patient with a closed intertrochanteric fracture on the right side, accompanied by neurogenic bowel disorder, type 2 diabetes mellitus (T2DM), and atelectasis due to tuberculosis. Data for this report were collected from a hospital in West Java Province in 2021. Informed consent for publication was obtained from the patient and her family. Ethical considerations were strictly observed throughout the report, including respect for patient and family autonomy, the principles of beneficence, nonmaleficence, and other relevant ethical standards.

Data collection was carried out through interviews and direct observation by the third author. The data were analyzed qualitatively using a nursing care approach, with a focus on assessment findings. The aim of this case report is to enhance healthcare providers'—especially nurses'—ability to conduct accurate and timely assessments, particularly in managing patients with neurogenic bowel disorder and multiple chronic comorbidities.

Clinical Presentation

A 58-year-old female, presented to the emergency department on May 14, 2024, with severe pain in her right hip following an accidental fall in her bathroom two weeks prior, during which she was confined to bed rest at home. During this period of immobility, the patient developed a grade 2 decubitus ulcer on her gluteus (see Figure 1). Initially, the patient did not seek immediate medical attention; instead, she opted for traditional massage treatments, which did not alleviate her discomfort. By May 13, due to unrelenting pain, she visited secondary hospital and was subsequently referred to the present hospital.

Figure 1. Decubitus Ulcer On A-58-Years Old Female With Closed Fracture With Multiple Comorbidities

Upon admission, the patient reported a pain intensity of 6/10 on the face scale, described as sharp and burning, localized to her right hip, and radiating to the right leg and lower abdomen. This discomfort severely impaired her mobility and daily activities and was unresponsive to over-the-counter pain medication such as mefenamic acid. The patient has a significant medical history of type 2 diabetes mellitus (T2DM), diagnosed six years ago and managed with insulin injections (3 x 8 units daily). She also has a history of tuberculosis treated nine months prior, although she discontinued her medications seven months into treatment and did not follow up. Her highest recorded blood sugar level was 600mg/dL. She has no history of hypertension but is known for obesity with a highest body weight of 70 kg (BMI 30).

During the physical examination on her first day at the present hopital, the patient appeared weak and in pain. Her vital signs were stable with a blood pressure of 130/80 mmHg, heart rate of 88 beats per minute, respiratory rate of 18 breaths per minute, and body temperature of 36.7°C. Her anthropometric measurements showed a significant loss in weight with a current weight of 40 kg and height of 150 cm, classifying her as underweight (BMI 17.7).

On the second day of hospitalization, the patient complained of abdominal discomfort and inability to have a bowel movement, accompanied by clinical signs of abdominal distension. A CT scan of the abdomen revealed an ileus, likely obstructive in nature (See Figure 2). To address this, a Hartmann's procedure was scheduled. Prior to surgery, Swadesh massage therapy was administered twice daily. This intervention resulted in the passage of approximately 5 cc of thick, mucous-like, dark yellow feces, providing some relief and indicating a partial response to the obstruction management. Additionally, for decubitus ulcer, we have implemented early rehabilitation, mostizer, and minimizing diaper to prevent pressure ulcers grade.

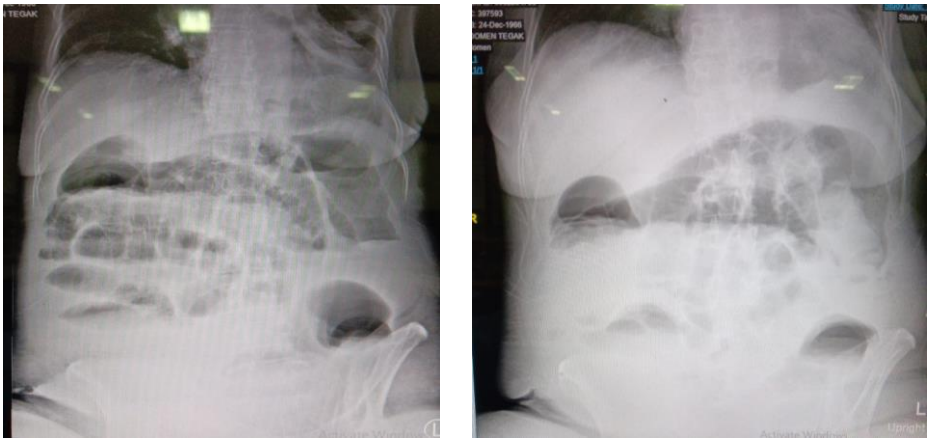

Figure 2. X-Ray Abdomen On A-58-Years Old Female With Closed Fracture With Multiple Comorbidities

Further respiratory complications were identified when a chest X-ray showed infiltration along with atelectasis of the left superior lobe and left pleural effusion, indicative of exacerbated pulmonary tuberculosis. To effectively manage the left pleural effusion, a left thoracostomy tube (LTT) was inserted on May 25, 2024 (See Figure 3).

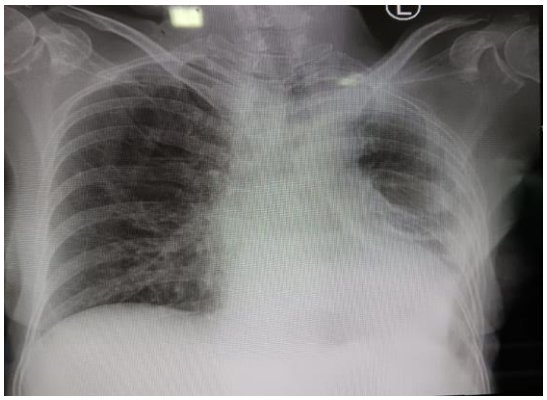

Figure 3. Chest X-Ray of a-58-year old female with closed interthrochhanteric fracture with multiple comorbidities

Based on the blood glucose trend depicted in the Figure 4, the patient experienced significant fluctuations in her blood glucose levels throughout her hospital stay. The glucose levels peaked on May 23, 2024, reaching the highest point of 350 mg/dL. The graph shows a notable initial increase from May 16 to May 23, with a slight decrease around May 22. Following the peak on May 23, there was a sharp decline to 242 mg/dL on May 24, which suggests that interventions to manage her blood sugar may have been effective or that her acute stressor was beginning to resolve. After May 24, her blood glucose levels show another rise on May 25 and 26 before a steady decline from May 27 to May 28, ending at 152 mg/dL.

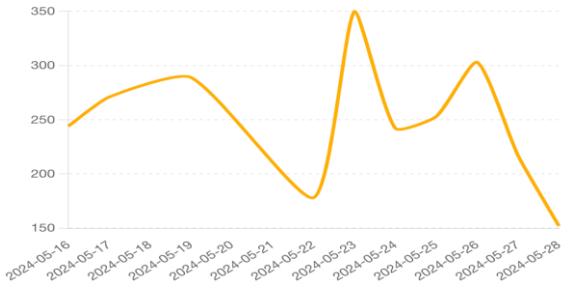

Figure 4. Blood Glucose Level Trend Of A-58-Year Old Female With Closed-Interthrochhanteric Fracture With Multiple Comorbidities

The diagnosis upon hospital admission was a closed intertrochanteric fracture dextra complicated by her pre-existing conditions of T2DM and pulmonary tuberculosis, which caused atelectasis of the left superior lobe and pleural effusion, further complicated by the development of a decubitus ulcer, an obstructive

At the first and second day patient admited in the interna woud from emergency department, the patient exhibited signs of acute distress, vocalizing her pain loudly and displaying restlessness in her room, indicative of significant psychological stress in addition to her physical discomfort. This behavior prompted the nurse to implement psychosocial interventions alongside medical treatment. Guided mindfulness meditation was introduced as a therapeutic modality to alleviate her anxiety, enhance her pain management, and provide spiritual comfort in alignment with her personal beliefs. This approach helped in calming her immediate distress and facilitated a more receptive attitude towards medical interventions. Additionally, the involvement of her family, particularly the support from her husband, played a crucial role in her care. The presence of her family provided emotional reassurance and further alleviated her psychological

ileus identified through diagnostic imaging, and pleural effusion managed surgically. This complex presentation underscores the interplay of acute traumatic injury with chronic systemic diseases and the complications of immobility, each complicating both the clinical management and recovery trajectory.

burden, enhancing her overall responsiveness to treatment.

While the surgical repair of the patient's fracture was delayed due to the urgent need to manage life-threatening conditions such as obstructive ileus and pleural effusion, hospital-acquired pneumonia (HAS) may exacerbated by prolonged hospital stays. The patient had already been in the hospital for two weeks without an opportunity for fracture surgery, increasing her risk for HAP due to extended immobility. We implemented a rigorous regimen of chest physiotherapy aimed not just at managing existing pulmonary complications but also at preventing further respiratory decline. This physiotherapy was tailored to promote pulmonary clearance and enhance lung capacity, thereby not only addressing issues of ineffective airway clearance due to her atelectasis and pleural effusion but also actively working to prevent the onset of pneumonia.

DISCUSSION

The management of a-58-years old female with closed intertrochanteric fracture was significantly complicated by her pre-existing conditions and the development of additional severe complications, which necessitated prioritizing life-threatening conditions over immediate fracture repair. This situation illustrates the challenges faced when managing older adult with multiple health issues and highlights the need for a highly adaptive treatment strategy.

Typically, orthopedic protocol dictates that surgical repair of intertrochanteric fractures should be conducted within 48 hours to minimize complications and hasten recovery. However, the patient case was complicated by the presence of an obstructive ileus and pleural effusion, both of which posed immediate risks to her life and overall stability. The obstructive ileus, if left untreated, could lead to bowel necrosis, sepsis, and potentially fatal outcomes. Similarly, the pleural effusion associated with her underlying tuberculosis and atelectasis required urgent attention to prevent respiratory failure. The consensus is to operate on intertrochanteric fractures within 48 hours of injury (Liu et al., 2022; Merloz P, 2018). Early surgery benefits older patients, even with preoperative comorbidities or medications (Rozenfeld et al., 2021). Most countries aim for surgery within 48 hours (Carretta et al., 2011; Leer-Salvesen et al., 2019; Liu et al., 2018; Sobolev et al., 2018). For patients with complicating conditions, the preoperative wait should be minimized, as delays over 24 hours increase mortality risk (Liu et al., 2018; Pincus et al., 2017).

Delaying the surgical management of the patient with fracture increased the risk of several complications, including deep vein thrombosis, pulmonary embolism, and further deterioration of muscle and bone condition due to prolonged immobility (Metzger & Lombardi, 2014). However, the immediate risk of death from complications such as obstructive ileus and respiratory failure from pleural effusion necessitated these delays. This prioritization underscores the complexity of managing patients who present with multiple acute and chronic conditions. While the surgical repair of the patient fracture was delayed due to the urgent need to manage life-threatening conditions like obstructive ileus and pleural effusion, careful attention was also directed towards mitigating the risks associated with potential secondary infections, notably hospital-acquired pneumonia (HAP) (Zhao et al., 2020). HAP was identified as a most complication among patients with hip fractures, with a rate of 8.9% (Yao et al., 2024). Additionally, advanced age as a single indication to predict pneumonia (Yu & Zheng, 2020). Given her prolonged immobility and the associated risk factors, our approach included proactive measures to prevent pulmonary complications.

As a nursing care implementation to prevent HAP and minimize pulmonary statis resulting from immobility, a targeted chest physiotherapy regimen was implemented. This intervention served dual purposes: it aided in airway clearance, thereby addressing the immediate concerns related to her ineffective airway clearance, and it also played a crucial role in reducing her risk of developing infections. By enhancing pulmonary ventilation and preventing the accumulation of

secretions, chest physiotherapy not only helped maintain airway outcome but also significantly reduced the likelihood of infection, which is critical in a patient with compromised respiratory function due to atelectasis and pleural effusion (Stahl & Westerdahl, 2020).

Effective management required coordinated care involving multiple specialties. Surgeons, internists, endocrinologists, and pulmonologists had to collaboratively decide the sequence of interventions, balancing the urgency and risks associated with each condition. The nursing staff also played a crucial role in monitoring her condition, managing her pain, and preventing further complications through vigilant care. Amidst these complex medical decisions, the importance of psychological and supportive care cannot be overstated. Psychological distress of the patient needed to be managed alongside her physical health issues. Interventions such as guided mindfulness meditation not only provided psychological relief but also likely contributed to a better overall response to physical treatments by reducing stress-related hyperglycemia and improving patient cooperation (Hamasaki H, 2023; Marino et al., 2021). Glucose variability has been identified as an independent predictor of diabetic complications, consistent management of blood glucose fluctuations could potentially lower the risk of these complications (Chen et al., 2018).

Pressure ulcer is common complication among patient with acute hospitalization. Immobility, moisture, and prolonged pressure are primary factors in the development of pressure ulcers (Galivanche et al., 2020). Preventative strategies focus on reducing exposure to moisture and pressure. Implementing early rehabilitation, using bed railings, and minimizing diaper use can help prevent pressure ulcers. Regularly repositioning immobile patients every two hours has proven effective (Galivanche et al., 2020). Diabetes is a risk factor for pressure ulcer development following a hip fracture and acts as an independent predictor when controlling for other demographics and comorbidities (Chiari et al., 2017). The impact of advanced diabetes on wound development is multifactorial, involving poor microvascular circulation, impaired healing of injured tissue, and reduced protective sensation (Galivanche et al., 2020).

CONCLUSION

This case serves as an example of the complexities involved in treating elderly patients with multiple comorbidities. It stresses the importance of a holistic, patient-centered approach that encompasses comprehensive management of potential complications and psychosocial factors. Additionally, prolonged length of stay (LOS) in the hospital increased the risks of HAP and decubitus ulcers, emphasizing the need for rigorous infection control measures and regular mobility assessments to prevent immobility-related complications. Implementing targeted interventions such as chest physiotherapy and meticulous wound care were crucial in managing and preventing these risks. This case contributes valuable insights into the strategies required to effectively manage similar complex cases, emphasizing the need for flexibility, comprehensive planning, and integration of multidisciplinary care pathways to

optimize patient outcomes and enhance quality of life.

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