Sciatic Nerve Palsy After Operative Treatment of Subtrochanteric Femur Fracture Resulting from Postoperative Hematoma: A Case Report

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Abstract

Treatment of subtrochanteric femur fractures can be difficult owing to high risk of complications. No cases of sciatic nerve palsy after hematoma following open reduction and intramedullary nailing of a subtrochanteric femur fracture have been reported. We describe a 28-year-old man who presented with a subtrochanteric fracture in the left femur after a motor-vehicle collision, in whom open reduction and intramedullary nailing led to an immediate postoperative hematoma and sciatic nerve palsy. Prompt diagnosis and early wound exploration resulted in complete resolution of the palsy at 1 month postoperatively. Our findings reinforce the importance of prompt diagnosis and treatment in limiting long-term complications for patients who develop postoperative sciatic nerve palsy associated with hematoma after undergoing operative treatment of subtrochanteric femur fractures.

Introduction

Subtrochanteric fractures of the femur occur at the proximal aspect of the bone, between the lesser trochanter to 5 cm distally, with possible proximal or distal extension.[1,2] The mechanism of injury, location, and unopposed muscle forces can make closed reduction difficult. Often, open reduction is performed, and complications can include increased blood loss, malreduction, and loss of fixation.[1,2] A fracture table is often required for fracture fixation, with risks such as pudendal nerve injuries related to traction and sciatic nerve injuries of the uninjured side owing to positioning.[3]

Sciatic nerve injury after fixation of femur fractures is rare, with only a few reported cases. Lhowe and Hansen[4] reported a single case of injury to the sciatic nerve after intramedullary nailing for treating a femoral shaft fracture. Britton and Dunkerley[5] noted sciatic nerve palsy after entrapment of the nerve during closed reduction. Sciatic nerve injuries have been associated with traction during hip arthroscopy.[6] Sciatic nerve palsy with postoperative hematoma has been described after total hip arthroplasty.[7] No study has reported sciatic nerve palsy in relation to postoperative hematoma resulting from open reduction.

We describe a transient sciatic nerve palsy in the immediate postoperative period owing to postoperative hematoma after open reduction and intramedullary nailing for treating a subtrochanteric femur fracture. The patient was informed that the data concerning the case would be submitted for publication, and he provided verbal consent.

Case Report

A 28-year-old man presented to the emergency department as the restrained passenger in a motor-vehicle collision. He had multiple facial fractures and a closed left subtrochanteric femur fracture, classified in the AO/OTA[8] system as type 32-C1.1 (Figures 1A and 1B). On initial and secondary examinations, his left ankle could dorsiflex and plantarflex and his toe could flex and extend. Sensation to light touch was noted along the medial, lateral, dorsum, plantar, and first web space of the left foot, indicating intact function of the sciatic nerve. A proximal tibia traction pin was placed and approximately 6.75 kg (15 lb) of skeletal traction was initiated. The patient was admitted to the trauma surgical service for further resuscitation.

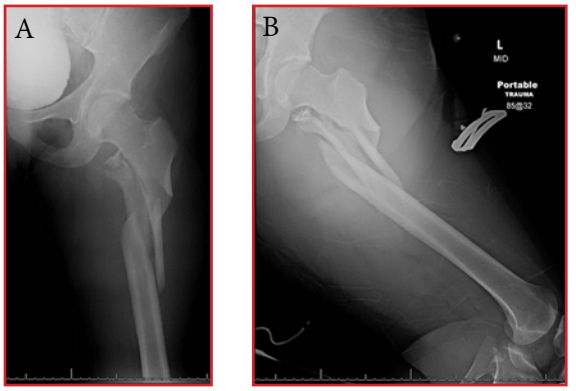

Figure 1. Preoperative radiographs of the left femur, revealing a closed subtrochanteric fracture. A) Anterior-posterior view. B) Lateral view.

On hospital day 1, the patient was taken for operative treatment under general anesthesia. He was positioned on a fracture table with a well padded peroneal and underwent open reduction and intramedullary nailing of the fracture with antegrade greater trochanteric entry nail (Figures 2A and 2B). Open reduction was achieved by direct manipulation and clamping of the fracture, using a direct lateral approach. Meticulous hemostasis was obtained with compression and electrocautery. Before closing the wound, no active bleeding was noted. Closure included the fascia of the iliotibial band, subcutaneous tissue, and skin. The operating time was 3 hours and 38 minutes, with 680 cc of estimated blood loss. Preoperative and immediate postoperative hematocrit volumes were 40% and 18%, respectively. The patient received 2 units of packed red blood cells postoperatively, and results of a second assessment for hematocrit volume was noted at 29%.

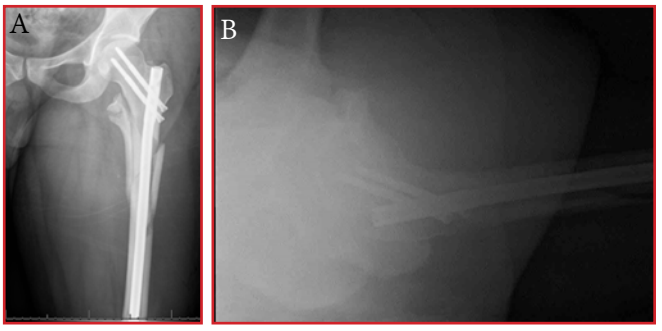

Figure 2. Intraoperative radiographs of the left femur, showing placement of the intramedullary nail at the greater-trochanteric entry site. A) Anteroposterior view. B) Lateral view.

At 12 hours postoperatively, the patient described a moderate increase in pain, fullness in his thigh at the site of the incision, and paresthesias in his foot. This progressed to a loss of sensation at the dorsum and plantar aspect of the left foot, with complete inability to dorsiflex or plantarflex the ankle or move the great toe. The patient rated his pain at 7 out of 10 on the visual analog scale. He described this pain level similar to that of preoperative time, with no notable increase.

Owing to the persistence of pain and loss of sensation in the patient, the decision was made to return him to the operating room immediately for exploration of the wound. He returned to the operating room approximately 13 hours after completion of the initial procedure. He was placed under general anesthesia. Intraoperatively, the previous incision was reopened without any extension of exposure. A large hematoma (100 cc) was noted and evacuated. The visualized musculature was well perfused and contractile. No abnormal active bleeding was noted. After irrigation, the wound was packed using damp gauze dressings.

On postoperative day 1, the patient had no sensation or motor function below the left knee in a sciatic nerve distribution. He could flex and extend the knee with some pain limitations. The pain level was described similarly as that experienced throughout his presentation. He was placed in an ankle-foot orthosis and observed for return of nerve function. At 5 days postoperatively, motor and sensory function returned throughout the lower extremity, with only subtle decreases in strength and sensation compared with the uninjured side. At 1-month follow-up, the patient was noted to have complete resolution of the sciatic nerve palsy. At 8-week follow-up, the patient had discontinued using his ankle foot orthosis and showed no residual neurological symptoms to the left lower extremity (Figures 3A and 3B). He was subsequently lost to follow-up, and efforts to contact the patient for a 6-month visit were unsuccessful.

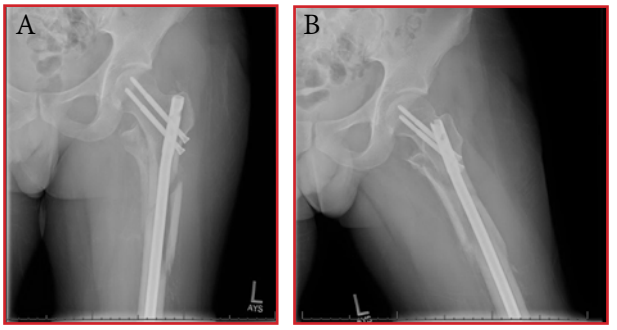

Figure 3. Postoperative radiographs of the left femur at 8-week follow-up. A) Anteroposterior view. B) Lateral view.

Discussion

Subtrochanteric femur fractures are frequently the result of a high-energy mechanism. Assessment of the initial injury, definitive fixation, and postoperative treatment course provide unique challenges for orthopaedic surgeons, with numerous reported complications.[1-3] Although sciatic nerve palsy is a well-documented complication after total hip arthroplasty and hip arthroscopy, it is a rare occurence after operative treatment of subtrochanteric femur fractures.[6,7,9] Our patient developed sciatic nerve palsy after such treatment, which resolved after evacuation of a large hematoma.

Femur-shaft fractures can be associated with acute compartment syndrome and sciatic nerve injuries. However, sciatic nerve injuries are typically acute and unassociated with fixation procedures.[10] In the current case, the presence of compartment syndrome in the patient was felt to be unlikely owing to his moderate pain level that did not increase, initial presentation of neurological symptoms rather than pain, and intraoperative finding of a

large hematoma. Furthermore, we attribute the successful treatment of the palsy to an early diagnosis and evacuation of the hematoma (within 6 hours of onset of symptoms). This notion is consistent with the findings of a similar study by Butt et al[7] on six patients who underwent total hip arthroplasty, in which early diagnosis and evacuation of the hematoma in three patients resulted in complete resolution of symptoms. Sciatic palsy in the other three patients was described as delayed diagnosis, and none had complete resolution of symptoms at 4 years postoperatively.

Sciatic nerve palsy, regardless of the cause, can be a devastating injury. In the short term, it can compromise a patient's ability to participate in rehabilitation[5,7]; in the long term, it may severely affect activities of daily living and return to previous levels of function.[7,9] Our experience supports the existing literature on sciatic nerve palsy and highlights the importance of prompt recognition and treatment in limiting the long-term sequel for patients. Thorough documentation of nerve function in the perioperative period is crucial to guide appropriate treatment. A preexisting palsy or a deficit present immediately upon awakening from anesthesia are unlikely to benefit from exploration of the wound and may expose patients to increased risks associated with further surgical procedures. Conversely, progressive neurologic deficits require consideration for urgent surgical decompression to ensure the best possible outcome.

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Conflict of Interest

The authors report no conflicts of interest.

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