

Case Report

Management of Intertrochanteric Fractures in the Geriatric Population with Concurrent Proximal Femoral Locking Plate and Simple Femoral Head Replacement

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Abstract

Intertrochanteric and periprosthetic fractures are common osteoporotic injuries recognized for their therapeutic complexity and heightened risk of complications. These fractures typically manifest along the continuum from the base of the femoral neck to the level of the lesser trochanter [1]. Intertrochanteric fractures are classified into two primary types: adducted and abducted, with the abducted variant being more frequently observed. Peritrochanteric fractures include a spectrum of injuries within the peritrochanteric region of the femur [2], comprising fractures at the greater and lesser trochanters as well as along the intertrochanteric line.

Keywords: Intertrochanteric fractures with subtrochanteric fractures; Isolated femoral head replacement; Proximal femoral locking plate; Osteoporosis; Elderly patients

Introduction

Traditional therapeutic modalities often prove insufficient for the effective restoration of hip function and are associated with various complications, including nonunion of fractures and impaired hip function. The integration of straightforward femoral head replacement with a proximal femoral locking plate in the management of intertrochanteric fractures involving periprosthetic structures presents several distinct advantages. This approach is minimally invasive, entails a shorter surgical duration, and facilitates the rapid and efficient restoration of hip functionality, thereby reducing the incidence of hip-related complications. Moreover, it is particularly well-suited for the elderly patient demographic. The use of a proximal femoral locking plate offers strong biomechanical stability, effectively stabilizing the fracture site and promoting the healing process [3].

Case Report

The patient, a 74-year-old female, was hospitalized for a duration of 26 days due to right hip pain, swelling, and impaired mobility. She reported an incident occurring two hours prior to her admission, where she was struck by a bicycle, leading to trauma of the right hip for which she had received oral analgesics. Upon physical examination, notable findings included swelling of the right hip, significant tenderness, and deformities of the right lower limb characterized by flexion, shortening,

and external rotation. Palpation of the right lower limb revealed a pronounced presence of a strong dorsalis pedis pulse. Diagnostic imaging, which included X-ray, Computed Tomography (CT) scans, and three-dimensional reconstructions, indicated the presence of a right intertrochanteric fracture with associated periprosthetic involvement and displaced fractures (Figure 1a-d). Upon admission, the patient underwent a comprehensive assessment of the right hip, followed by surgical intervention involving right femoral head replacement and fixation of the right femoral greater trochanter, performed under general anesthesia. Intraoperative findings confirmed an intertrochanteric fracture of the right femur, along with fractures of both the greater and lesser trochanters. Careful removal of blood clots surrounding the fractured femoral head was conducted, with the surgical site being thoroughly irrigated using normal saline and iodophor solution to minimize the potential risk of infection. An appropriately sized femoral stem was selected based on the dimensions of the femoral canal, and a corresponding femoral head was chosen based on the size of the acetabulum. The femoral stem was implanted first, followed by the insertion of the femoral head, which led to the successful reduction of the prosthetic femoral head (refer to Figure 1e-g). To prevent dislocation of the stem, the fractured greater trochanter (Figure 1h-i) was subsequently stabilized using a proximal femo-



Figure 1: a-d) X-ray, CT scan and three-dimensional reconstruction show intertrochanteric fracture of the right femur with peritrochanteric fracture and fracture displacement. e-g) The selection of the appropriate femoral stem is determined based on the dimensions of the femoral canal. Subsequently, the femoral head is chosen in accordance with the size of the acetabulum. The surgical procedure commences with the implantation of the femoral stem, followed by the installation of the femoral head. Finally, the artificial femoral head is reduced into its proper position. h-i) To prevent dislocation of the stem, the already fractured greater trochanter is then fixed with a proximal femoral locking plate. j-l) Post-op x-rays show hardware in good position.

ral locking plate. The patient commenced gradual ambulation three days postoperatively. Follow-up X-rays confirmed that the surgical hardware was appropriately positioned (Figure j-l). The patient's recovery was closely monitored during subsequent follow-up appointments.

Discussion

Management of intertrochanteric fractures characterized by periprosthetic involvement encompasses both conserva-

tive and surgical approaches. Conservative management typically includes immobilization through casting, the application of traction, and pharmacological interventions aimed at pain relief and inflammation reduction. Nevertheless, surgical intervention is frequently deemed the preferential method, particularly in cases exhibiting significant fracture displacement, associated soft tissue damage, or additional systemic injuries. Surgical options include open reduction with internal fixation and various joint replacement procedures. In the case analyzed, a combination of femoral head replacement and fixation of the greater trochanter utilizing a locking plate was skillfully employed. This strategy not only resulted in a notable reduction in operative duration relative to total hip arthroplasty, but it also effectively restored hip joint functionality, minimized the likelihood of postoperative complications, and provided enhanced biomechanical stability.

The chosen method thus effectively stabilized the fracture and facilitated the healing process. Subsequent to the surgical intervention, the incorporation of rehabilitation therapy and management of osteoporosis was implemented, thereby augmenting the overall efficacy of treatment.

Author Statements

Conflict of Interest

The authors have no financial disclosures or other conflicts of interest to report related to the content of this article.

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