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Intertrochanteric fracture under an arthrodesed hip

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Patient: Female, 30
Primary Diagnosis: Intertrochanteric fracture under an arthrodesed hip
Co-existing Diseases: Developmental dysplasia of the hip
Medication: Pain • inability to walk
Clinical Procedure: Open reduction and internal fixation
Specialty: Orthopedics and traumatology

Objective: Rare disease, Unusual setting of medical care
Background: An intertrochanteric fracture among elderly people is common, but it is rare to see such a fracture under a long-standing hip arthrodesis. Its surgical management represents a real challenge to orthopedic surgeons.
Case Report: A 30-year-old female teacher with long-standing hip arthrodesis was involved in a traffic accident. Clinical and radiological examination revealed the presence of a displaced intertrochanteric fracture under an arthrodesed hip and high neck shaft angle.
Before embarking on surgery, we have to consider many factors such as patient personality (a young active and ambitious woman) and the nature of the fracture (a displaced fracture, coxa valga, and atrophied muscles). After a deep discussion and evaluation of the available devices, we selected a heavy duty locked plate and cannulated screws to fix the fracture.
Conclusions: Because of the rarity of intertrochanteric fracture under an arthrodesis hip, the proper surgical treatment is controversial. Nevertheless, we were fortunate in successfully treating this unusual fracture using a locked plate and cannulated screws, which are implants that can be useful in treatment of such fractures.

Key words: hip • arthrodesis • intertrochanteric fracture

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Background

Very few cases of ipsilateral femoral fractures below an arthrodesed hip have been reported [1–6], and only 3 of them are intertrochanteric fracture [1–3]. Surgical treatment of these fractures is a real challenge to orthopedic surgeons. Bhandari et al found that intertrochanteric fracture is common and represents half of all hip fractures in elderly people [7]. To relieve pain and avoid the complications of immobility, orthopedic surgeons treat the vast majority of patients with intertrochanteric fracture by open reduction and internal fixation.

The great success of total hip replacement [8] and the numerous disadvantages of hip arthrodesis [9] limited the indications of hip arthrodesis to end-stage arthritis in young patients, where it provides pain relief, allows an active life, and spares the patient the repeated surgeries of total hip replacement [10]. However, it is important to note that the main disadvantages of hip arthrodesis are back pain, scoliosis, knee problems, and lower limb discrepancy.

To the best of our knowledge, the literature reports 3 cases of intertrochanteric fracture under an arthrodesed hip [1–3], 2 of them are patients in their seventies and the third is in his fifties. The surgical treatment offered to them was in the form of double plating [1], gamma nailing, and [3] retrograde intramedullary nailing [2]. Our patient was only 30 years old, so we believe that she is the youngest reported patient with intertrochanteric fracture under an arthrodesed hip. We used a single heavy duty locked plate and cannulated screws to treat her fracture successfully.

Case Report

A 30-year-old female teacher presented to the emergency department in our hospital because she was involved in a motor vehicle collision in which she was the driver. She complained of severe pain in the right hip area and inability to walk. Her past medical history revealed that when she was child she underwent multiple surgeries for treatment of bilateral developmental dysplasia of the hip, which resulted in arthrodesis of the right hip. On clinical examination the right lower limb was in neutral position (not externally rotated) and longer than the left lower limb, the knee was in 20 degrees of valgus, gluteal muscles were wasted, her lumbar spine was scoliotic, and her pelvis was tilted. Plain x-rays showed successful arthrodesis of the right hip joint, very high coxa valga, and a severely displaced intertrochanteric fracture and neglected left hip dislocation (Figure 1). Because of the patient's characteristics (young female, ambitious teacher, and untreated left DDH), the nature of the fracture (widely displaced, and coxa valga), and after long discussion, we decided that the best treatment was to perform open reduction and internal fixation using a heavy

Figure 1. Anteroposterior radiograph showing the arthrodesed hip, right intertrochanteric fracture, and the neglected left hip congenital dislocation.

Figure 2. Anteroposterior radiograph of the right hip showing the fracture fixation.

duty locked plate and cannulated screws (Figure 2). Surgery was done through the lateral approach. Postoperatively, she had an uneventful course, she started walking on the first postoperative day using crutches, and she was discharged home 1 week after the operation. She was followed up regularly at the clinic, and after 4 months she showed signs of fracture healing.

Discussion

This young female teacher sustained an intertrochanteric fracture under a long-standing solid hip arthrodesis. She was active and contented with her situation until she was injured in the car accident. Long-standing hip arthrodesis is usually associated with atrophy of the muscles around the hip, coxa valga, and abnormal lower limb biomechanics, which are changes that influence choice of surgical treatment of such a fracture. Options for treatment of intertrochanteric fracture include: dynamic hip screw, short intramedullary nail, cannulated screws, AO proximal femoral plate, and sliding plates. The rarity of such fractures and the lack of clinical experience in treating them are reflected in the scant literature on the topic. However, the high neck shaft angle precluded using DHS and any other angled plates, and the displacement and nature of the fracture excluded the use of IMN. Total hip replacement was excluded because the patient was young, there was possibility of atrophied gluteal muscles, and the procedure is technically demanding and has a high rate of failure [11]. Cannulated screws do not offer rigid fixation, so we decided to use a heavy-duty locked plate. Anatomical reduction

and severe coxa valga made it easy to apply the plate on the anterior surface of the femur.

Conclusions

Because of the rarity of intertrochanteric fracture under an arthrodesis hip, the proper surgical treatment becomes controversial. Nevertheless, we were fortunate in successfully treating this unusual fracture using a locked plate, an implant that can be useful in treatment of such fractures.

Consent

The patient gave a written informed consent for publication of this case report and the radiographs belonging to it. It will be available for review by the editor of this journal.

Conflict of interest

The authors certify that there is no commercial association with this case report, so there is no conflict of interest to declare.

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