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Bilateral intertrochanteric and femoral diaphyseal fractures with unilateral proximal tibial fracture: A case report and review of the literature

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ABSTRACT

INTRODUCTION: Bilateral intertrochanteric femur fractures are relatively rare injuries. This study aims to present a case of a patient with simultaneous bilateral intertrochanteric femur fractures and femoral diaphyseal fractures and proximal tibial fracture with his twelve years follow-up.
PRESENTATION OF CASE: A 44-year-old man presented to emergency department after a motor vehicle accident. Bilateral intertrochanteric femur fractures (OTA classification – 31A.1.2) and bilateral femoral diaphyseal fractures (OTA classification – 32A.2) and nondisplaced right proximal tibial fracture (OTA classification – 41B.1) were determined in radiographs. Following closed reduction, fractures were fixed with intramedullary nails bilaterally. Proximal tibial fracture was fixed with cannulated screws following open reduction. At twelfth year follow-up he was able to do his daily activities with minimal limitation.
DISCUSSION: High energy traumas, stress fractures, systemic disorders (osteomalacia, chronic renal failure), steroid treatments, seizures and electric injuries are possible causes for bilateral hip factures. However bilateral femoral diaphyseal fractures are mostly due to high energy traumas. Long-term biphosphonate use may also cause bilateral fractures. Single-stage surgery should be performed in order to avoid secondary damages of surgical interventions. All fractures of our patient were fixed in a single session. This prevented further deterioration of patient's status and made rehabilitation easy.
CONCLUSION: Careful evaluation of all systems should be performed in multi-trauma patients to find out concomitant injuries. Single staged surgical treatment may decrease morbidities.

1. Introduction

Intertrochanteric femur fractures and femoral diaphyseal fractures are frequently seen in emergency departments in daily practice. Simple falls are main causes of these fractures in elderly patients but high energy traumas are leading causes in young population.[1] Although bilateral femoral diaphyseal fractures are relatively common problem, bilateral intertrochanteric fractures are rare.

This article aims to report a patient with simultaneous bilateral intertrochanteric femur fractures with bilateral femoral diaphyseal fractures and unilateral proximal tibial fracture and his 12 years follow-up. To our knowledge there is no such a case in literature.

2. Presentation of case

A 44-year-old man was presented to emergency department after a motor vehicle accident. On physical examination local tenderness and swelling was present over both thighs and right knee. His vital signs were 90/60 mmHg blood pressure and 130/min pulse rate. The hemoglobin level was 10.2 g/dl initially. Bilateral intertrochanteric femur fractures (OTA classification – 31A.1.2) and bilateral femoral diaphyseal fractures (OTA classification – 32A.2) and nondisplaced right proximal tibial fracture (OTA classification – 41B.1) were determined in radiographs (Fig. 1). He was operated on the fifth day of admission after hemodynamic stabilization. Transtibial skeletal tractions were applied for both sides up to surgery. In a single session, locked intramedullary nails were used for the fixation of intertrochanteric and diaphyseal femoral fractures after closed reduction for both extremities. Open reduction and internal fixation with cannulated screws were performed for right proximal tibial fracture. Four units of packed red blood

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Fig. 1. Radiographs show fractures of both femur.

cells and two units of fresh frozen plasma were given to the patient totally. A rehabilitation program was started immediately after surgery. One week after surgery seropurulent discharge was observed from the incision of right tibia. *Staphylococcus aureus* was cultivated. Infection was treated with oral antibiotics. Patient was discharged 12 days after operation. Weightbearing was allowed 6 weeks after surgery for both sides. Dynamization of both nails were performed at 4th month due to delayed union. (Fig. 2) Complete union of fractures were showed with radiographs at 8th month follow up. Implants were removed three years later. Patient had mild pain, especially in his right hip, and limp at 12th year control. Degenerative changes were observed at right hip on radiographs. (Fig. 3) Although movements of right hip were restricted, he was able to do his daily activities with minimal limitation and without medication (Fig. 4).

3. Discussion

Although proximal femoral fractures are frequently seen in daily practice, bilateral fractures are rare. Case reports in literature are mostly related with bilateral femoral neck fractures or fractures

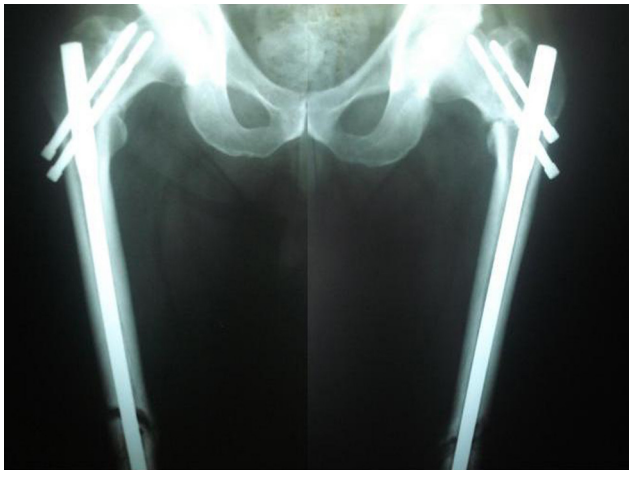

Fig. 2. At postoperative 4th month complete union was not achieved and dynamization of nails were performed bilaterally.

Fig. 3. Degenerative changes were observed in right hip at 12th year control radiograph.

with mixed patterns. Only few papers are reporting simultaneous bilateral intertrochanteric femur fractures. Our case is the first for simultaneous bilateral intertrochanteric and femoral diaphyseal fractures.

High energy traumas, stress fractures, systemic disorders (osteomalacia, chronic renal failure), steroid treatments, seizures and electric injuries are possible causes for bilateral hip factures.[2–7] However bilateral femoral diaphyseal fractures are mostly due to high energy traumas. Long-term biphosphonate use may also cause bilateral fractures.[8]

Grisoni et al.[1] reported 8 bilateral cases (0.3%) in 2426 hip fractures and only two patients had simultaneous bilateral intertrochanteric fractures. The mechanism of injury was motor vehicle accident for a patient and simple fall for the other. First patient was a 53-year-old male and had additional tibia and patella fractures. Second patient was a 88-year-old woman without additional injury. Both patients were operated in a single session and dynamic hip screws (DHS) were preferred for fixation. Younger patient was discharged to home but elder one was dead at postoperative seventh day.

Dendrinos et al.[9] reported three cases with simultaneous bilateral hip fractures. One of these patients was a 53-year-old guy with bilateral comminuted pertrochanteric fractures. Mechanism of injury was a motor vehicle accident. Due to the visceral injuries both hips were fixed with sliding screw-plate system five days after laparatomy. Mild pain in right hip and slight limp was noted at the 26th month follow-up. Other two patients had bilateral subtrochanteric fractures.

Panagopoulos et al.[2] reported a 44-year-old patient with bilateral intertrochanteric femur fractures. He had additional left acetabular and left distal radius fractures. Patient was treated with proximal femoral nailing in single session. Distal radius fracture was operated at the same time. Conservative treatment was chosen for acetabular fracture. Authors gave 18 months follow-up with good results.