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Atraumatic diplaced bilateral femoral neck fracture in a patient with hypophosphatemic rickets in postpartum period: A missed diagnosis

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ABSTRACT

INTRODUCTION: Simultaneous bilateral femoral neck fracture is an uncommon condition. There are very few cases reported in the literature and most of these cases have underlying bone pathologies such as renal osteodystrophy and osteomalacia. In some cases bilateral femoral neck fractures occur due to generalized seizures or high-energy trauma.
PRESENTATION OF CASE: In this case report "atraumatic bilateral femoral neck fracture in a 26 year old woman in postpartum period with hypophosphatemic rickets disease" is presented.
DISCUSSION: Femoral neck fractures are more frequently seen in elderly because of the reduction of bone quality and developing osteoporosis. In the literature generalized epilepsy, osteomalacia, hypovitaminosis D and chronic renal failure are shown as facilitating causes of bilateral femoral neck fractures. In patients without any additional pathology electric shock, electroconvulsive therapy, and high-energy trauma can lead to femoral neck fractures. In our patient there was also an underlying pathology, she has been followed due to autosomal recessive hypophosphatemic rickets disease since she was one year old. In the treatment of bilateral femoral neck fractures open/closed reduction internal fixation or hip arthroplasty are applied.
CONCLUSION: For patients with bone metabolic diseases and/or the patients in pregnancy and postpartum period, preventive measures should be increased to reduce the risk of pathologic fracture. Admitting to the hospital physicians must be more careful about detecting fractures in these patients.
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1. Introduction

Simultaneous bilateral femoral neck fracture is an uncommon condition where femoral neck fractures are seen more frequently in elderly because of the reduction of bone quality and developing osteoporosis. There are very few cases reported in the literature and most of these cases have underlying bone pathologies such as generalized epilepsy [1], osteomalacia [2], chronic renal failure [3]. In patients without any additional pathology electric shock, electroconvulsive therapy, and high-energy trauma can lead to femoral neck fractures occur [4,5]. In the treatment for bilateral femoral neck fractures open/closed reduction internal fixation or hip arthroplasty are applied [2,6]. In this case report "atraumatic bilateral femoral neck fracture of a woman in postpartum period with hypophosphatemic rickets disease" is presented. The operation was managed in Department of Orthopaedics and Traumatology Clinic in University Hospital. Because of the delayed diagnose we considered total hip arthroplasty instead of fixation.

1.1. Case report

A 26 year old woman who gave birth 40 days ago refered to University Hospital because of both hip pain and difficulty of walking. In her history about 20 days after the birth, she was brought to emergency department because of the complaints of a sudden pain in both hips. She said while she was sitting and breastfeeding suddenly she felt extreme pain in both hips and couldn't move her legs. At the emergency department because of no history of trauma the patient didn't undergo X-ray imaging. The patient's calcium levels in the blood chemistry were measured as 4.9 mg/dL (8.6–10.2) and admitted to endocrinology service for treatment of hipocalcemia. Blood values at endocrinology service were as Parathormone (PTH): 178.3 pg/ml (15–65), Albumin: 4.08 g/dL (3.5–5.2), Inorganic Phosphate (P): 2.9 mg/dL (2.5–4.5), Alkaline Phosphatase (ALP): 258 u/L (35–105), 1–25OH D3: 10 mg/dL (20–50). In bone densitometry (DEXA) osteoporosis has been identified in the lumbar spine and osteopenia was identified in the femur. Any pathology in cranial magnetic resonance imaging (CrMR) and electroencephalogram (EEG) was not observed. After 17 days follow up her complaints didn't decline and she was consulted with orthopeadic.

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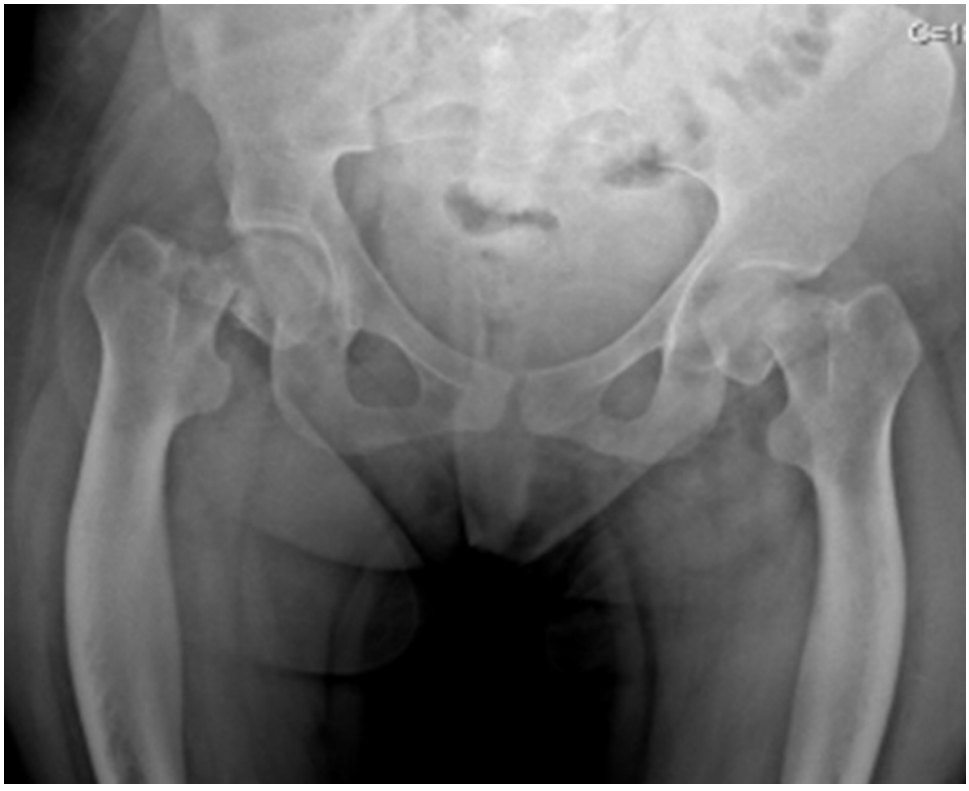


Fig. 1. Pelvic anteroposterior radiograph, showing delayed femoral neck fracture and deformity of the both femur.

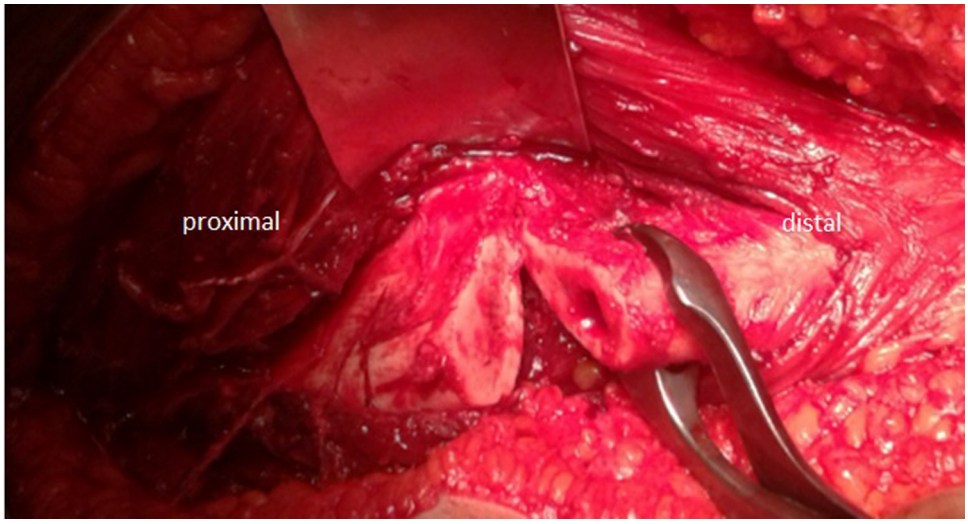


Fig. 2. Intraoperative view of the femoral deformity and performed osteotomy.

From her past medical history; she has been followed with hypophosphatemic rickets since she was one year old, using 0.25 mcg calcitriol with calcium phosphate; and has no other diseases (epilepsy, etc.). The patient had never broke any part of her body previously and there was no similar family history.

In clinical examination; the patient's general condition was good, her lower extremities were externally rotated with deformed appearance of both thigh and there was severe pain when she stood up. Patient was unable to walk because of the pain. Both neurovascular examinations of lower extremities were normal. There was no difference between the diameter and length of limbs. Subcapital bilateral displaced femoral neck fractures were detected by radiography (Fig. 1). Because of the delayed diagnosis about 3 weeks after the fracture, we didn't consider primary fixation. Because both fractured ends were resorbed and the patient had proximal femoral deformity due to the hypophosphatemic rickets; bilateral total hip arthroplasty following corrective osteotomy was planned. Because of the high risk of morbidity and mortality surgical intervention was decided to perform in two sessions.

At first the patient underwent cementless total hip replacement surgery for her left hip and two weeks later the same procedure performed to the right hip. The operation time for both surgeries was nearly 2 h. The patient was operated in the lateral decubitus position and corrective closing wedge osteotomy was applied to the deformed femur (Fig. 2). Intraoperatively when we saw that the medullary cavity was narrow and sclerotic we used the ream-

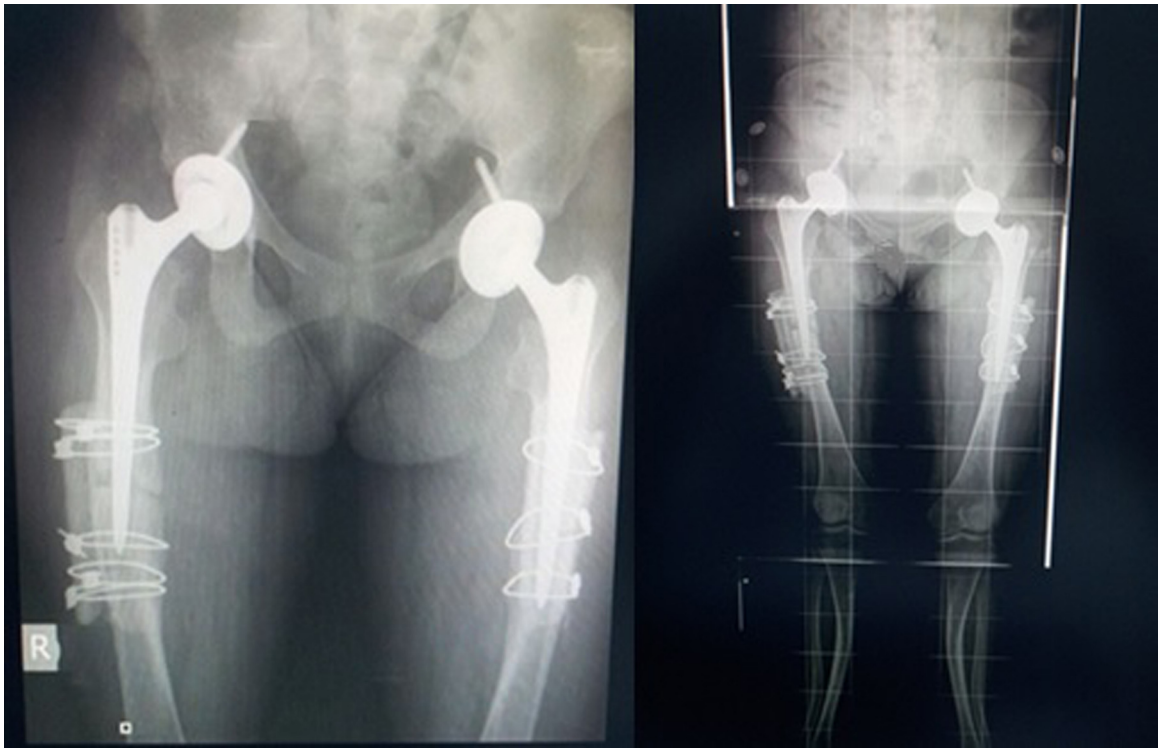


Fig. 3. Postoperative anteroposterior radiograph of the pelvis. Correction could be managed using shaft grafts and cables after osteotomy.

ers to extend the medulla. Also to ensure the stability of the distal osteotomy, revision femoral stem was used and supported with the femoral shaft graft (Fig. 3). There was no complication during both operations or early postoperative period as wound complications, infection, dislocations, revision surgeries, but after 12 months follow up delayed union was observed at the right femoral osteotomy side. At the last time follow up the patient did not complain of any pain and also didn't make any complaints during her daily activities with satisfaction. Informed consent was taken from the patient for publication.

2. Discussion

Femoral neck fractures are more frequently seen in elderly because of the reduction of bone quality and developing osteoporosis. In the literature generalized epilepsy [1], osteomalacia [2,7], hypovitaminosis D [8] and chronic renal failure [3,9] are shown as the causes of bilateral femoral neck fractures. In patients without an additional pathology electric shock, electroconvulsive therapy [4], and high-energy trauma can lead to femoral neck fractures [5]. In our patient there was also an underlying pathology, she has been followed with hypophosphatemic rickets since she was one year old. Without any trauma while she was sitting, suddenly she felt pain and had syncope.

Rickets disease prevalence is 1:20,000. Underlying etiology of the hypophosphatemic rickets is down-regulation of SLC34A1 CYP27B1 and FGF23 gene expression. Renal tubular calcitriol synthesis is suppressed; intestinal absorption of calcium and inorganic phosphate is reduced. In generally, calcium and PTH levels seen as normal [10]. In our case; calcium levels was low and PTH levels were high but the blood phosphat levels were in normal limits. We thought that the normal level of phosphate was related with effect of drugs used by patient.

During pregnancy and also in the lactation period, baby's vitamin D and calcium needs are supplied from mother. This can cause mineral loss from the women bone. There are similar studies associated pregnancy and lactation with atraumatic bilateral femoral neck fracture in the literature [2,11,12]. But there was no additional underlying disease in these patients but our patient had hypophosphatemic rickets. The presence of hypocalcemia and occuring time of the fracture (in postpartum period) suggest that rickets induced hypocalcemia and lactation were probable underlying etiology of the fracture.

In the treatment of bilateral femoral neck fractures open/closed reduction internal fixation or hip arthroplasty are applied [2,6]. In our case, because of the acute period had past, fractured ends were resorbed and also the patient had proximal femoral deformity, we applied total hip arthroplasty following corrective osteotomy. Because of the high risk of surgical mortality and morbidity surgery was done in two sessions.

3. Conclusion

Our patient had a bone metabolic disease and she was in postpartum period so we thought that the cause of fracture was the mineral loss. Because of the delayed diagnosis we had to perform THA instead of internal fixation. For patients with bone metabolic diseases and/or the patients in pregnancy and postpartum period, preventive measures should be increased to reduce the risk of pathologic fracture. Admitting to the hospital we must be more careful about detecting fractures in these patients. This study has been reported in line with the SCARE criteria [13].

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Conflicts of interest

There is no conflict of interest.

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Ethical approval

No.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author contribution

Erdal uzun—all steps.
Ali Eray Günay—data analysis or interpretation, writing the paper.
Turan Bilge Kızkapan—data collection.
Mahmut Mutlu—all steps.

Registration of research studies

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Guarantor

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