



Case Report

Bilateral spontaneous fracturing of the femoral neck in a patient with renal osteodystrophy^{☆,☆☆}



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ABSTRACT

We report a case of bilateral fracturing of the femoral neck in a patient with renal osteodystrophy who was treated by means of osteosynthesis. In this type of patient, there is a need to remain watchful for the possibility of occurrences of spontaneous fracturing of the femoral neck, even if the initial radiographic examination is normal.

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Fratura espontânea bilateral do colo femoral em paciente com osteodistrofia renal

RESUMO

Relatamos um caso de fratura bilateral do colo femoral em paciente com osteodistrofia renal tratada com osteossíntese. Nesse tipo de paciente, é necessário estar atento à possibilidade de ocorrência de fraturas espontâneas do colo femoral, mesmo com exame radiográfico inicial normal.

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Introduction

Pathological bilateral fractures of the femoral neck have already been well described in the literature,^{1,2} but cases relating specifically to renal osteodystrophy are rare.³ We report a case of an adult patient with chronic kidney failure and renal osteodystrophy who presented spontaneous bilateral fracturing of the femoral neck, which was treated by means of internal fixation. The patient's initial radiographs were normal.

Case report

The patient was a 43-year-old woman who was admitted to hospital for a second kidney transplantation. She had a history of chronic renal failure that had occurred 9 years earlier, of unknown etiology, and she underwent her first kidney transplantation 8 years before the present case. This transplanted kidney failed because of stenosis of the renal artery. It was removed 4 months afterwards and, since then, the patient had been living under hemodialysis. She also presented congestive heart failure, which was being treated with antihypertensives and diuretics. During the month before hospital admission, she was also diagnosed as presenting secondary hyperparathyroidism, with hypocalcemia (7.1 mg/dL; normal range: 8.4–10.5 mg/dL) and extremely high parathormone levels (>2500 pg/mL; normal range: 10–69 pg/mL). Oral calcitriol therapy was started: three doses of 7 µg per week).

Three weeks after the second kidney transplantation, while still at the hospital, the patient complained of sudden continuous pain in her left hip, without any trauma, which prevented her from walking. She presented a complete range of motion, albeit painful in that hip, but without requiring painkillers. The physical examination on her right hip showed that it was completely normal. Radiographs produced at that time showed that there was a reduction in the main group of tensioned trabecular bone in the proximal femur (Singh index grade 4), diffuse bone rarefaction, thickening of the periosteum in the femoral cortical bone and acetabular protrusion. These findings related to renal osteodystrophy, but no fracture lines were present (Fig. 1). We suspected that there might be an occult fracture in the left femoral neck, and magnetic resonance imaging (MRI) was requested. The patient was advised to remain resting in bed until the examination.

Five days after this first evaluation, the patient presented pain in her right hip and worsening of the pain in her left hip. New radiographs were requested and these demonstrated an incomplete fracture of the upper surface of the femoral neck, bilaterally (Fig. 2). The MRI was then canceled.

Two days after this diagnosis was made, the patient underwent osteosynthesis. She was positioned in horizontal dorsal decubitus on a radiotransparent table and images of the hips were obtained by means of an image intensifier. We made a straight incision of length 4 cm in the lateral face of each hip, immediately distal to the most prominent region of the greater trochanter. Guidewires were introduced and the fractures were fixed using cannulated screws. We only used two 7 mm cannulated screws in each hip, as had been planned preoperatively, given that the femoral neck was very narrow.



Fig. 1 – Initial anteroposterior radiograph on the pelvis. No fracture was identified.

The patient was discharged from hospital two weeks after the osteosynthesis, without pain and with an almost complete range of hip motion. She was kept without bearing weight on her lower limbs, and was evaluated clinically and radiographically once a month on an outpatient basis, until the fifth month after osteosynthesis, when the radiographs demonstrated that complete bone consolidation had been attained (Fig. 3). At this evaluation, 5 months after the operation, the patient was advised to use a walking frame, and in the subsequent evaluation, she was authorized to walk bearing her own full weight, without external support. She was seen for the last time 1 year after the osteosynthesis, and did not present any complaints.

Discussion

Renal osteodystrophy is a relatively common condition and is one of the biggest causes of morbidity in patients undergoing dialysis treatment for kidney failure or even after kidney transplantation.

Chronic azotemia has a marked effect on vitamin D, calcium and phosphorus metabolism and on parathormone



Fig. 2 – Anteroposterior radiograph on the pelvis, 5 days after the initial examination, showing incomplete bilateral fracturing of the femoral neck (arrows).



Fig. 3 – Anteroposterior radiograph on the pelvis, 5 months after the osteosynthesis, showing consolidation of the fractures.

secretion, and all these metabolic alterations lead to the pathological bone remodeling that is observed in renal osteodystrophy.⁴ Contrary to the osteopenia and osteoporosis observed in these patients, pathological fractures of the femoral neck are generally symptomatic.⁵ Several cases of femoral neck fractures in patients with renal osteodystrophy have now been reported,^{1,3,6,7} but bilateral cases are rare.³

Although incomplete fractures of the femoral neck can be treated conservatively, we chose to use osteosynthesis in order to reduce the possibility of displacement of these fractures. This consequently reduced the need for more extensive and more complex surgery, given that several authors have reported high rates of complications, and even deaths, among patients who require hip arthroplasty while they are under dialysis treatment for chronic kidney failure.^{8,9} The prolonged time taken to achieve bone consolidation in the present case (5 months) was possibly consequent to the deficient bone mineralization that patients with renal osteodystrophy present.¹⁰

There are very few reports in the literature on bilateral osteosynthesis of the femoral neck in patients with renal osteodystrophy.¹⁰ Our intention is that the case reported here might serve to alert orthopedists to the possibility of bilateral fractures of the femoral neck in patients with renal

osteodystrophy who present sudden spontaneous pain, even if the initial radiographs were normal. A high degree of suspicion is necessary among these patients, so that non-deviated fractures can be identified and treated early on, thus avoiding surgery of greater complexity and expense, and reducing the risk of complications.

Conflicts of interest

The authors declare no conflicts of interest.

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