

Bilateral Intracapsular Hip Fracture in a Patient With Low Functional Demand Treated With a One-stage Bilateral Hemiarthroplasties. A Case Report and Literature Review.

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Abstract

Bilateral femoral neck fracture is a rare injury. While they may be of traumatic origin, they are generally associated with some underlying condition that predisposes to this pathology, such as neurological disorders or bone metabolism diseases. We present an 83-year-old woman with severe osteoporosis who had a simultaneous bilateral intracapsular hip fracture.

Introduction

Elderly patients suffer 1.6 million hip fractures annually worldwide and this number will even tends to increase in the coming decades (1). However, the occurrence of a simultaneous bilateral femoral neck fracture (FNF) is an extremely rare injury. They are usually associated with renal osteodystrophy, chronic use of corticosteroids, osteoporosis and vitamin D deficiency (2). It has also being reported in epileptic patients or with cerebral palsy (3/4).

Mortality in elderly patients with bilateral FNF can reach up to 50% per year (5). The rapid resolution of the FNF and consequently their immediate rehabilitation is mandatory.

There is evidence reported in favor of the resolution of FNF with hemiarthroplasty, being unipolar hemiarthroplasty the best option for patients with short life expectancy (6/7). We present an atypical case of bilateral FNF in an 83-year-old patient secondary to a low-energy trauma and resolved in a single-stage.

Case Report

An 83-year-old female patient, with a low functional demand, Alzheimer's disease and a history of pelvic and proximal humeral fractures due to osteopenia. She was referred to our Emergency ward after a fall from her own height secondary to an episode of "shaking" reported by the nursing staff of the geriatric clinic where she was living. Physical examination revealed swelling in both thighs and both lower limbs in an external rotation attitude. The anteroposterior pelvic radiograph showed a displaced intracapsular fracture of both hips (Fig. 1). Both fractures were classified as Garden type 4 (8), and a single-stage bilateral hemiarthroplasty was indicated. The surgery was carried out within the first 24 hours of her arrival at the hospital. The patient was operated under spinal anesthesia through a posterolateral approach. The right-sided fracture was first resolved, implanting an Austin Moore-type uncemented unipolar hemiarthroplasty to prevent bone cement implantation syndrome (BCIS) (9). Immediately, left fracture was treated with the same technique and implant selection as the contralateral side (Fig. 2). The total surgical time was 70 minutes. Blood loss from the aspiration canister accounted for 300 ml.

The patient did not present any complications during surgery. 48 after surgery she began gait rehabilitation assisted with a walker and strict supervision, and at 72 hours, she was discharged from the Hospital. 1 year after surgery, the patient was painless, walking with assistance, and no evidence of prosthetic loosening on the control x-ray.

Discussion

Bilateral FNF is rare, and it is necessary to look for an associated condition that predisposes to this injury. As described in the 1960s, seizures can be a risk factor for bilateral FNF. This is due to the muscular tensions received by the proximal segment of the femur, secondary to these crises (10). Kimura et al. also described a case of bilateral femoral fracture secondary to tonic-clonic seizures, which was resolved with a bilateral hip arthroplasty using an anterior approach (3). Diaz Dilernia et al. described a case of bilateral femoral neck injury in a patient with a history of seizures and chronic use of corticosteroids as part of a brain tumor treatment. Both fractures were resolved with a one-staged total hip arthroplasty (11). In our case, similar to the findings reported by these authors, we can infer that the “shakings” reported by the nursing staff corresponded to a seizure episode, predisposing to bilateral hip injury. Continuing with neurological disorders, bilateral FNF was also documented in a patient with cerebral palsy mimicking abdominal pain that was resolved with a bilateral uncemented total hip arthroplasty due to his young age (4). In our case, unipolar uncemented hemiarthroplasties were chosen due to the low functional demand, the short life expectancy and the possibility of BCIS in this group of patients (9).

Eating disorders are another predisposing factor for bilateral FNF. There are reports that associate anorexia nerviosa with stress fractures. This pathology can decrease bone density through two mechanisms: alteration in body composition and hormonal changes. This combination, added to an intensification of sports activity, can predispose an occult bilateral femoral neck fracture (12). Endocrinological disorders and more precisely, alterations in phospho-calcium metabolism, can lead to a bilateral hip fracture. This injury can occur in patients with renal osteodystrophy, osteomalacia, and primary hyperparathyroidism (13). Reports of cases have also been described in young patients with osteoporosis and Vitamin D deficiency (2/14). Elderly patients with severe osteoporosis may also suffer a bilateral hip fracture secondary to low-energy trauma. A lesion of these characteristics has double morbidity and mortality compared to patients with a unilateral fracture, since bedtime can be prolonged with the subsequent complications that this entails (urinary infection, pneumonia and deep vein thrombosis) (15). In the last two years, our patient suffered low-energy fractures in two different bones (pelvis and proximal humerus) being able to infer that the mineral density of the patient's bone was suboptimal.

Additionally, Csotye et al. reported a case of bilateral femoral neck fracture during pregnancy. This was secondary to transient osteoporosis in the third trimester of pregnancy. This suggests that in the face of bilateral hip pain in a pregnant patient, protecting the weight load can prevent catastrophic consequences in a transitory disease (16).

Finally, as is known, bilateral hip arthroplasty is used around the world with excellent results (17), and it is a safe option in appropriately selected patients (18). To guarantee the successfulness of the bilateral hip surgery, it is mandatory to perform an expeditious surgery, to have a strict and well-controlled prophylaxis for thromboembolic diseases, and have an aggressive postoperative rehabilitation(19). Communication

and co-working with anesthesiologists and physical therapist's team is a key part of the success of bilateral hip surgery.

We presented a patient with severe osteopenia, who suffered a suspected seizure episode and this led her to present a bilateral FNF. Due to the general condition and low functional demand, a bilateral one-stage uncemented hemiarthroplasty was indicated. Despite being a rare injury, bilateral femoral neck fracture may occur in elderly patients, especially in those with severe osteoporosis who have low-energy trauma. Early diagnosis and surgical intervention are extremely important, allowing early recovery and mobilization.

Declarations

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Consent to participate: Informed consent was obtained from all individual participants included in the study to participate.

Consent for publication:Informed consent was obtained from all individual participants included in the study to publication.

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Figures



Figure 1

Anteroposterior pelvic radiograph showing a Garden IV (8) bilateral femur neck fracture.



Figure 2

Anteroposterior postoperative pelvic radiograph depicting bilateral uncemented Austin-Moore hemiarthroplasties.