



## Case report

# Bilateral stress fracture of femoral neck in non-athlete – case report<sup>☆</sup>



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## ABSTRACT

Bilateral stress fracture of femoral neck in healthy young patients is an extremely rare entity, whose diagnostic and treatment represent a major challenge. Patients with history of hip pain, even non-athletes or military recruits, should be analyzed to achieve an early diagnosis and prevent possible complications from the surgical treatment. This report describes a 43-year-old male patient, non-athlete, without previous diseases, who developed bilateral stress fracture of femoral neck without displacement. He had a late diagnosis; bilateral osteosynthesis was made using cannulated screws. Although the diagnosis was delayed in this case, the study highlights the importance of the diagnosis of stress fracture, regardless of the activity level of the patients, for the success of the treatment.

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## Fratura de estresse bilateral do colo do fêmur em não atleta – relato de caso

## RESUMO

A fratura de estresse bilateral do colo do fêmur em pacientes adultos saudáveis é uma entidade extremamente rara, cujo diagnóstico e tratamento representam um grande desafio. Pacientes com história de dor no quadril, mesmo se não forem atletas ou militares, devem ser analisados para se obter um diagnóstico precoce e prevenir possíveis complicações provenientes do tratamento cirúrgico. Este relato descreve um paciente de 43 anos, não atleta,

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do gênero masculino, sem doenças prévias, que desenvolveu fratura de estresse do colo do fêmur bilateral sem desvio, diagnosticado e tratado tardiamente com osteossíntese bilateral com parafusos canulados. Apesar de o diagnóstico ter sido tardio nesse caso, enfatiza-se a importância de se obter diagnóstico de fratura de estresse, independentemente do nível de atividade dos pacientes, para o sucesso do tratamento.

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## Introduction

Femoral neck stress fracture is an uncommon injury, and bilateral fractures are even rarer. This location corresponds to 5% of all stress fractures, and are more common among athletes (11%), military personnel, the elderly, and individuals with metabolic disorders, being rarely found in healthy individuals.<sup>1,2</sup>

The homeostasis of bone tissue requires continuous synthesis and absorption of bone components. Under normal conditions, there is a balance between osteoblastic reconstruction and osteoclastic resorption.<sup>3-5</sup> Osteoclastic activity reaches a peak at three weeks after the beginning of the repetitive stress on the bone.<sup>3,6,7</sup> The accumulation of abnormal mechanical load on a given area of the bone may alter the equilibrium in favor of catabolic osteoclast activity and pathologically increase bone resorption, producing microfractures in the bone.<sup>4,8</sup>

Etiologically, stress fractures can be divided into two types: (1) fatigue, which is secondary to an abnormal stress applied on a bone with normal structure and elasticity<sup>9-11</sup> (in the femoral neck these fractures are often observed in military personnel and long-distance runners)<sup>12,13</sup>; (2) by the impairment of normal muscular force applied to the bone with poor structure and elasticity<sup>9,10,13</sup> (occurs more frequently in older patients and is often associated with postmenopausal osteoporosis or other types of osteoporosis caused by rheumatoid osteoporosis, diabetes mellitus, or use of corticosteroids).<sup>9,10,14,15</sup>

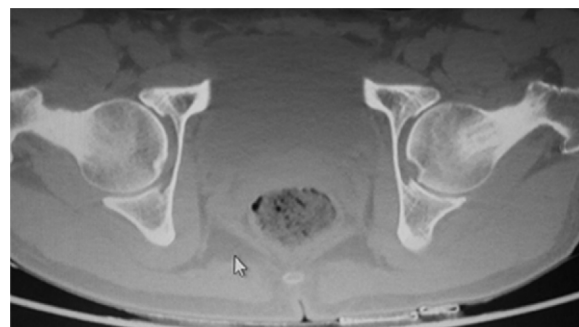
This report presents a rare case of bilateral stress fracture of the femoral neck in a young, healthy, non-athlete patient.

## Case report

Male patient, 43, electrician, non-athlete, smoker, with no history of metabolic disease, diabetes, impaired renal function, or use of corticosteroids. He reported pain in both hips for a year when in professional activity, which reduced at rest. During this period, he was seen in various outpatient clinics and diagnosed with tendinitis or pain due to overload of the hip joint, and was treated with non-steroidal anti-inflammatory drugs. Physical examination revealed discrete limping with painful facies, functional impairment, especially in internal rotation. Radiographic examination showed a bilateral coxa vara with cortical interruption and a sclerotic area in both femoral necks (Fig. 1). CT scan confirmed the diagnosis and narrow femoral necks were observed (Fig. 2). As the diagnosis



**Fig. 1 – Panoramic anteroposterior radiograph of the pelvis disclosing bilateral cortical interruption of the femoral neck.**



**Fig. 2 – CT scan image in axial section of the femoral neck region of both hips, showing a narrow and sclerotic femoral neck.**

had already been determined by radiography, further examinations, such as magnetic resonance imaging (MRI) or bone scan, were not necessary. The treatment was fixation with two 7-mm cannulated screws, as the femoral neck was too narrow for the placement of three screws or a sliding hip screw (Fig. 3). As fixation was performed in both hips, the patient was oriented to not bear weight for six weeks; thereafter, assisted loading with crutches was authorized.

## Discussion

An epidemiological review revealed numerous risk factors for the development of stress fractures, including female gender, age, low bone density and bone strength, low aerobic conditioning, low level of physical activity in the past, smoking, and excessive running.<sup>16</sup> Apulia et al.<sup>17</sup> found a correlation between low bone mineral density in the femur

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