

Femoral neck stress fracture presenting as low back pain

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Femoral neck stress fractures in young adults are uncommon and usually not considered in the differential diagnosis of low back pain. However, if the patient has groin and anterior thigh pain, it is important to thoroughly examine the hips. To illustrate this point, we present a patient with a femoral neck stress fracture who was misdiagnosed as having mechanical back pain.

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KEY WORDS: low back pain, femoral neck stress fracture.

Les fractures du col fémoral provoquées par un effort chez les jeunes adultes sont rares et ne sont généralement pas prises en considération lors du diagnostic différentiel de douleur du bas du dos. Néanmoins, si un patient ressent de la douleur au niveau de l'aîne et de la partie supérieure de la cuisse, un examen approfondi des hanches est recommandé. À titre d'exemple, nous présentons un patient avec une fracture du col fémoral provoquée par un effort à qui l'on avait diagnostiqué par erreur une douleur mécanique au dos.

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MOTS-CLÉS : douleur du bas du dos, fracture du col fémoral provoquée par un effort.

Introduction

Femoral neck stress fractures in young adults are uncommon, and usually cause groin or anterior thigh pain.¹ The symptoms are often mild, and may cause the patient to delay seeking treatment. In addition, the presence of low back pain may cause the clinician to overlook the hip pathology in favour of a lumbar spine diagnosis. Early recognition of this condition is important to prevent serious complications due to avascular necrosis. The following case demonstrates the clinical and radiographic features of femoral neck stress fractures.

Case presentation

A 39-year-old white female aerobics instructor was referred by her family physician for evaluation and treatment of low back pain and left anterior thigh pain.

Three months earlier, the patient awoke with intense low back pain for no apparent reason. She waited six weeks before seeing her family physician who detected costovertebral angle tenderness and mild pyuria. A urinary tract infection was suspected, and she was treated with Bactrim for ten days. Following this treatment, her urine cultures were normal. However, repeat urinalysis detected ten to twenty red blood cells. The patient continued to have persistent left flank pain, left lower back pain, and left lower quadrant pain. In an effort to rule out renal calculi, her physician obtained an intravenous pyelogram which showed a double ureter on the left. Following this procedure, the physician's examination revealed muscle spasm and tenderness in the left lumbosacral spine and left sacroiliac joint. There was mild wasting of the left thigh and calf muscles. No neurological impairment was detected. The physician referred the patient for chiropractic evaluation and treatment of possible lower back nerve root entrapment and sacroiliac joint syndrome.

The patient presented to the chiropractic clinic with sharp pain in her low back and a cramping ache in her left anterior thigh. The pain was constant, but varied in intensity depending

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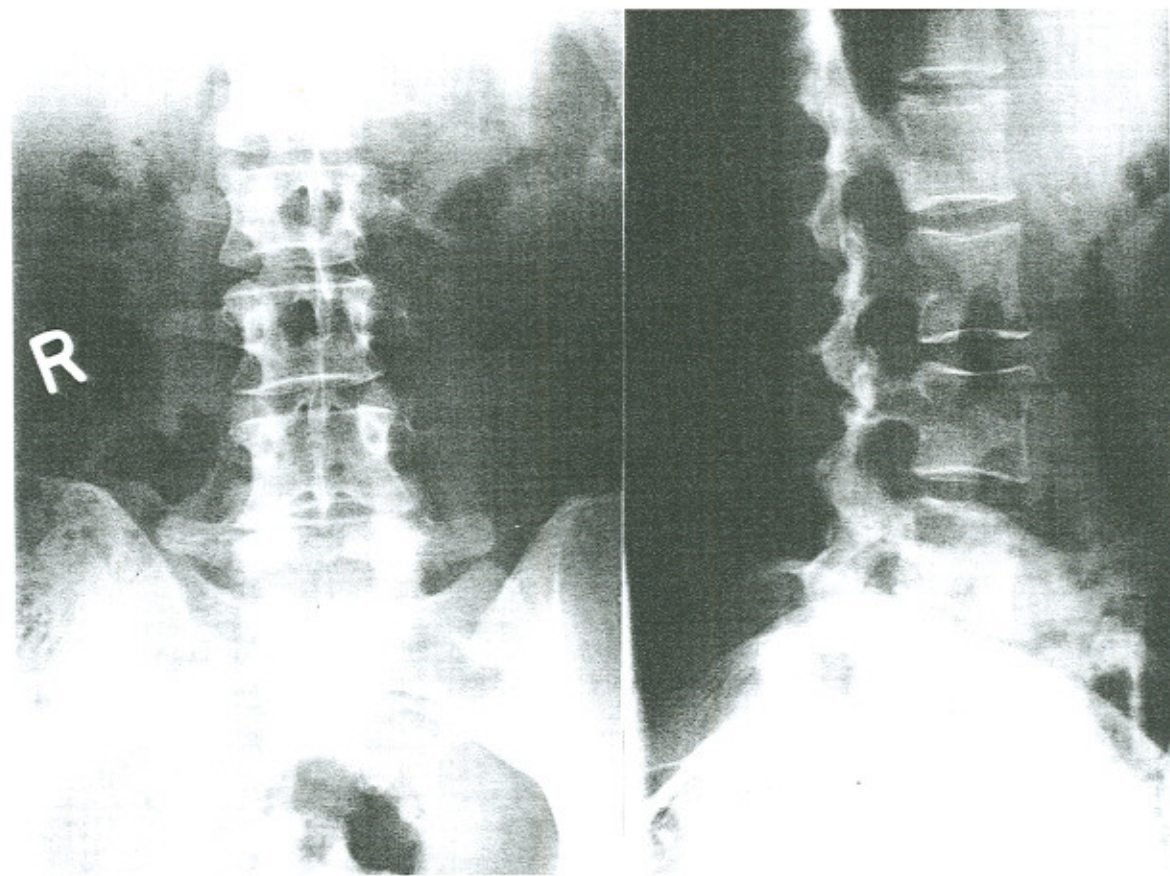


Figure 1
Anteroposterior (AP) and lateral lumbar radiographs show an L5 spina bifida occulta and mild dysplasia of the L5-S1 posterior elements. There is mild disc space narrowing and associated degenerative changes at L4-5.

on activity. Her pain was aggravated by prolonged standing, walking, and lying on her left side or in the prone position, and was relieved by lying supine with her hips and knees flexed. Surprisingly, she obtained temporary relief by teaching two hours of aerobic exercises daily. However, the pain always returned shortly after stopping the exercise.

The patient looked ill and stated that she had lost five pounds over the last month, which she attributed to stress. She had no prior history of low back pain. Her past health was good and there was no family history of similar complaints.

On examination, the patient was thin and fit, standing 5'5" tall and weighing 115 pounds. Lumbar flexion produced a painful pulling sensation in the left buttock. There was tenderness over the left lumbosacral spine. Faber Patrick, Yeoman's, and Gaenslen's tests on the left produced left anterior thigh and left buttock pain. The straight leg raise was ninety degrees bilaterally and produced anterior thigh and back pain on the left side. Passive internal and external rotation of the left hip produced left trochanteric pain, but all other hip movements were normal. The lower extremities were neurologically intact.

Lumbar radiographs revealed a L5 spina bifida occulta and

dysplasia of the L5-S1 posterior elements (Figure 1).

A diagnosis of mechanical low back pain with left sacroiliac joint syndrome was made. She was treated daily for one and a half weeks with lumbar interferential current therapy and manipulation of the left lumbosacral and sacroiliac joints. The patient failed to improve and continued to have left sided low back pain and left anterior thigh pain. She was sent back to her family physician for further evaluation and management.

The patient's family physician obtained radiographs of the left hip that demonstrated a subcapital stress fracture of the left femur (Figures 2 and 3). The patient was referred for orthopaedic consultation.

On examination, there was an antalgic gait. Passive motion of the left hip was only slightly limited, however, pain was produced at the extremes of all movement. Additional radiographs and tomograms confirmed the subcapital stress fracture. The patient underwent internal fixation of the fracture four and one-half months after the onset of her symptoms.

A follow-up examination two months later revealed that the patient could walk without pain or a limp. Hip movement was full and only slightly painful at the extreme of external rotation.

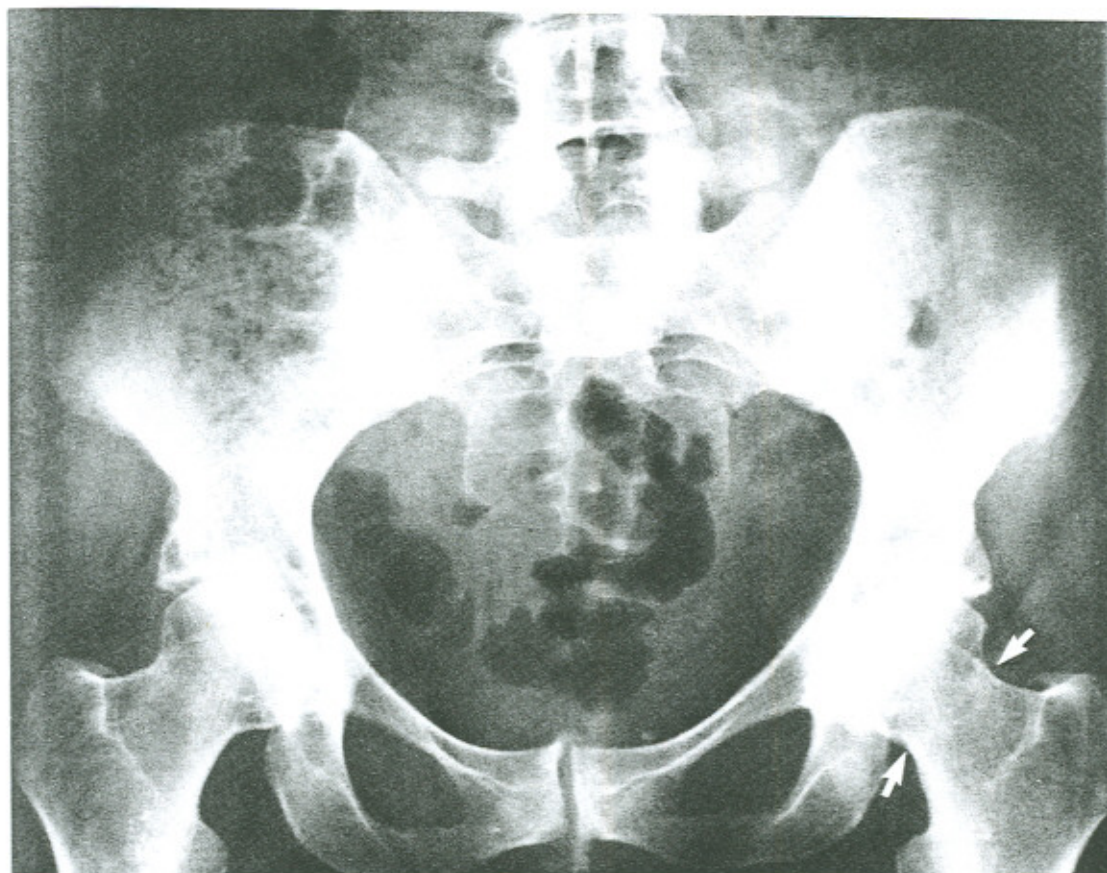


Figure 2 An AP pelvic radiograph reveals a linear, ill-defined sclerotic zone in the subcapital region of the left femur. (arrows)

There was radiographic evidence of fracture healing without complication (Figure 4).

Discussion

Femoral neck stress fractures in young adults are uncommon. In a group of military recruits, who had sustained 257 femoral stress fractures, only 9 were located in the neck.² Although most femoral stress fractures in young patients are located in the diaphysis, those located in the neck are more worrisome because of the greater risk of avascular necrosis. The reported incidence of avascular necrosis is at least 11% and may be as high as 84% in displaced fractures.³⁻⁵

Avascular necrosis is the actual death of bone, secondary to ischemia. This condition often leads to articular cartilage and subchondral bone collapse, joint degeneration, pain and disability.⁵⁻⁷ Patients with avascular necrosis may require total hip replacement. However, this serious complication can be avoided with early recognition and proper management of these fractures.

The symptoms of femoral stress fractures are often subtle and may cause the patient to delay seeking treatment. Patients may

think they have simply strained a muscle, since they can still walk with only a slight limp.⁷ Pain is usually experienced in the groin and anterior thigh, and may be referred to the medial knee, buttock, or even the low back.⁶ Typically, pain is aggravated by weightbearing, walking, running, or other hip movement.¹ Our patient was unusual in this regard because her pain was temporarily relieved by teaching aerobic exercises.

On examination, these patients usually have no obvious deformity, aside from an antalgic limp. Hip motion produces minor discomfort and muscle splinting at the end range.¹ Percussion over the greater trochanter may be painful.⁶

Initial radiographs may be unremarkable; however, follow-up radiographs, 10 to 14 days later, often reveal endosteal or subperiosteal callus.⁸ If the initial radiographs are normal, but the pain persists, one should still suspect a stress fracture and place the patient on crutches or strict bed rest. Repeat radiographs should be taken 10 to 14 days later. In some cases, bone scans and tomograms are necessary to make the diagnosis. These studies are usually abnormal before the radiographic changes.⁹ Bilateral hip fracture is possible, and therefore, it is important to thoroughly examine both hips.¹⁰

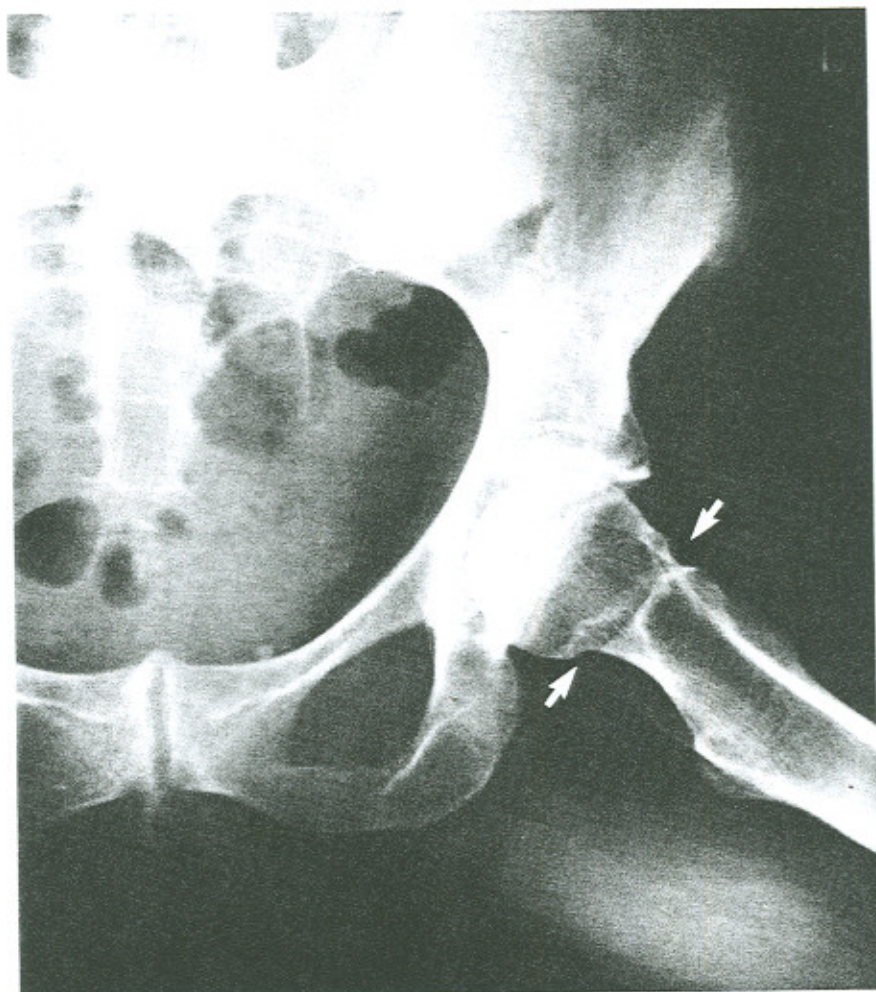


Figure 3 An oblique view of the left hip shows discontinuity in the cortex and a linear density across the femoral neck. (arrows)

Femoral stress fractures occur in two groups of people: young individuals with normal bone exposed to sustained strenuous activity and older individuals with osteopenic bone exposed to repeated minimal stress.⁶ Femoral stress fractures should be seriously considered in the differential diagnosis of any patient with hip or knee pain with exertion, limited hip motion, or localized hip tenderness, in spite of normal radiographs.

Treatment of this condition consists of surgical internal fixation using pins or cannulated screws.¹¹ Internal fixation is a relatively simple operation that permits early ambulation and prevents fracture displacement.^{11,12} There is no increased risk of aseptic necrosis with a properly performed internal fixation.¹³ Non-operative treatment is only considered in young patients with impacted fractures that are walking without pain, or if the patient is medically unfit for surgery.⁶

Conclusion

The presence of groin, thigh, and trochanteric pain, with or

without low back pain, should alert the clinician to the possibility of hip pathology. If the pain is aggravated by weight bearing or hip movement, then a thorough clinical and radiographic examination of both hips is necessary. Young adults undergoing sustained physical activity and older patients with an innocuous injury are at risk for a femoral stress fracture. Careful examination of the hips should be part of every low back examination.

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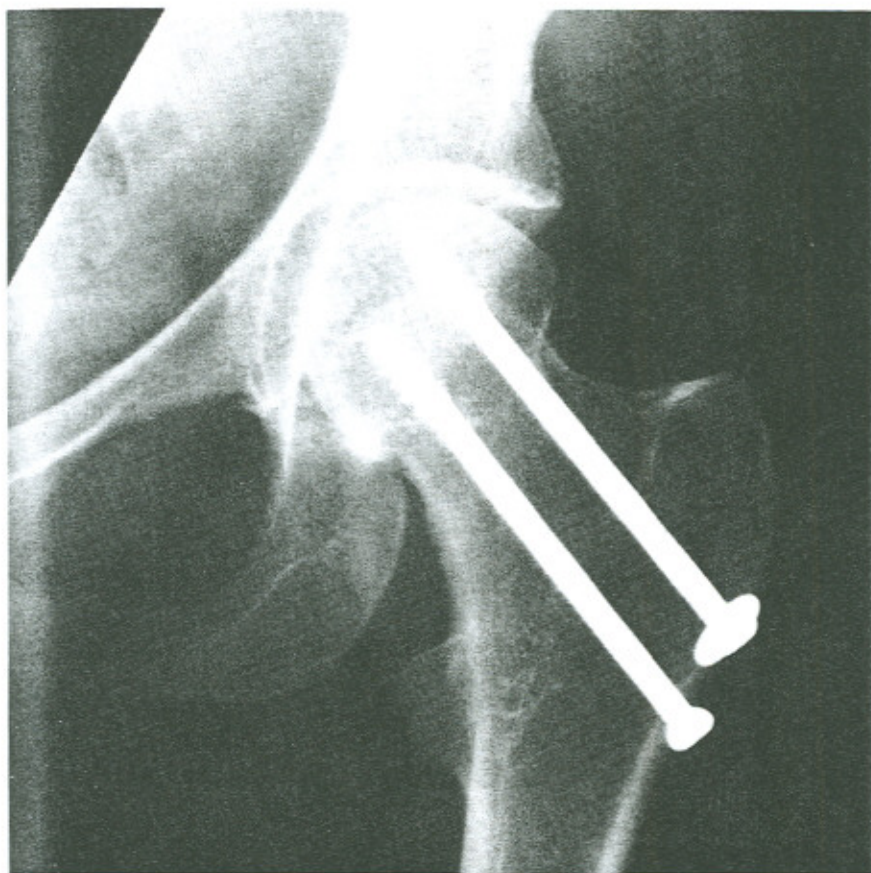


Figure 4 A post-operative view of the hip shows the cannulated screw fixation of femoral neck stress fracture.

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