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Hip and buttock pain due to occult pelvic fractures: a case report

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Pelvic fractures are a relatively uncommon presentation to a chiropractic office. A case is presented of pelvic fractures following a motor vehicle accident that initially went undetected despite a set of lumbar spine and pelvic radiographs. The condition was only discovered when the patient continued to suffer hip and buttock pain that was not improving in a reasonable period of time. Follow-up radiographs revealed well healing, stable pelvic fractures. The classification of pelvic fractures as well as the importance of a high index of suspicion in dealing with patients who have been involved in motor vehicle accidents is discussed. The importance of obtaining an accurate diagnosis and its relevance to duration of disability is highlighted.
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KEY WORDS: pelvic injuries, fracture, radiography, chiropractic.

Les cas de fractures pelviennes se présentent relativement peu fréquemment dans un cabinet de chiropractie. Cet article présente un cas de fractures pelviennes survenues après un accident automobile et qui n'ont pas été détectées à l'origine malgré la série de radiographies de la colonne lombaire et du pelvis. Le problème a été découvert lorsqu'on s'est aperçu que le patient continuait à souffrir de pygalgie et de coxalgie et que les douleurs ne s'étaient pas améliorées sur un laps de temps raisonnable. Des radiographies de suivi ont montré des fractures pelviennes stables en bonne voie de guérison. La classification des fractures pelviennes ainsi que l'importance du degré de suspicion en présence de patients impliqués dans des accidents automobiles sont décrites. L'importance d'un diagnostic précis et ses conséquences sur la durée de l'invalidité sont mises en relief.
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MOTS CLÉS : blessures pelviennes, fracture, radiographie, chiropractie.

Introduction

An occult fracture can be defined as one that is suspected clinically but is not seen on radiographic examination.[1] A follow up examination usually 7–10 days later will likely show the initially unseen fracture, typically due to the resorption of bone at the site of the injury. A high degree of suspicion needs to be maintained in all cases where a fracture may have occurred but is not yet visible.

A case is presented of occult pelvic fractures that occurred following a motor vehicle accident. An explanation for the patient's pattern of pain is offered. The importance of determining as yet unseen pathology is demonstrated and its relevance to temporary impairment and disability is discussed.

Case report

A 29-year-old female presented to a multi-disciplinary rehabilitation facility upon referral from her family physician for injuries sustained in a motor vehicle accident one week earlier. The patient was the driver in a vehicle that was struck over the passenger side while attempting to make a left hand turn. The force of the impact caused her car to collide with a third vehicle. A passenger in the front seat of her vehicle was thrown onto her due to the impact. The passenger was severely injured and remained in the

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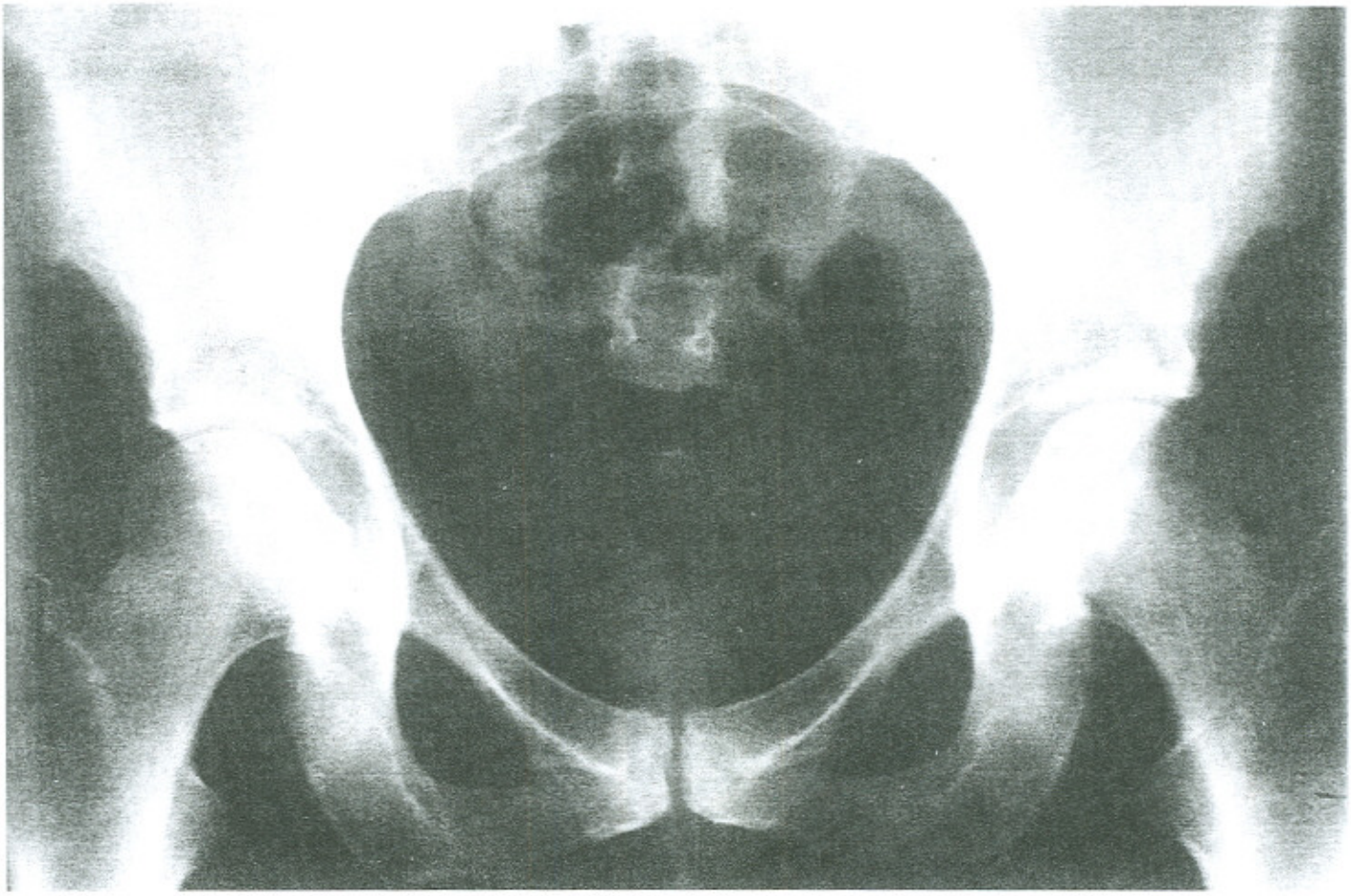

Figure 1 Pelvic radiograph taken 8 days after the patient's accident which was read as normal.

hospital for 10 days following the accident with a variety of injuries including multiple pelvic fractures. The patient was taken to hospital where she was assessed and released with instructions to see her family doctor. No radiographs were taken at that time. She went to see her family doctor who ordered radiographs of her lumbar spine and pelvis, prescribed medication, and referred her for treatment.

During the history-taking, the patient complained of bitemporal headaches, local left-sided cervical spine pain, as well as lumbosacral spine and right-sided hip pain. The low back and hip pain was intermittent in nature, aggravated by sitting, and referred into the right buttock and medial thigh. Weakness was also being experienced in the right leg.

Examination revealed a 29-year-old female with multiple injuries. She walked with a coxalgic limp favoring her right leg. Significant bruising was noted over the entire lateral thigh on the right. Trendelenburg's sign was positive on the right. Range of motion of the lumbar spine was reduced by approximately 50% in flexion and extension. Lateral flexion was within normal limits. The neurological examination was within normal limits in the lower extremities. With regards to the right hip, there was significant guarding of all movements. Her straight leg raise could be slowly brought to approximately 70 degrees. There was tenderness to touch of the gluteal musculature and over the right greater trochanter.

Her x-ray report from the radiology clinic was made available for review. No fracture, dislocation, or other bony abnormality in the pelvis, hips, or lumbar spine was reported by the examining radiologist (Figure 1). Given the results of her physical exam and the radiographic report, a diagnosis of sprain and strain injuries to the low back and

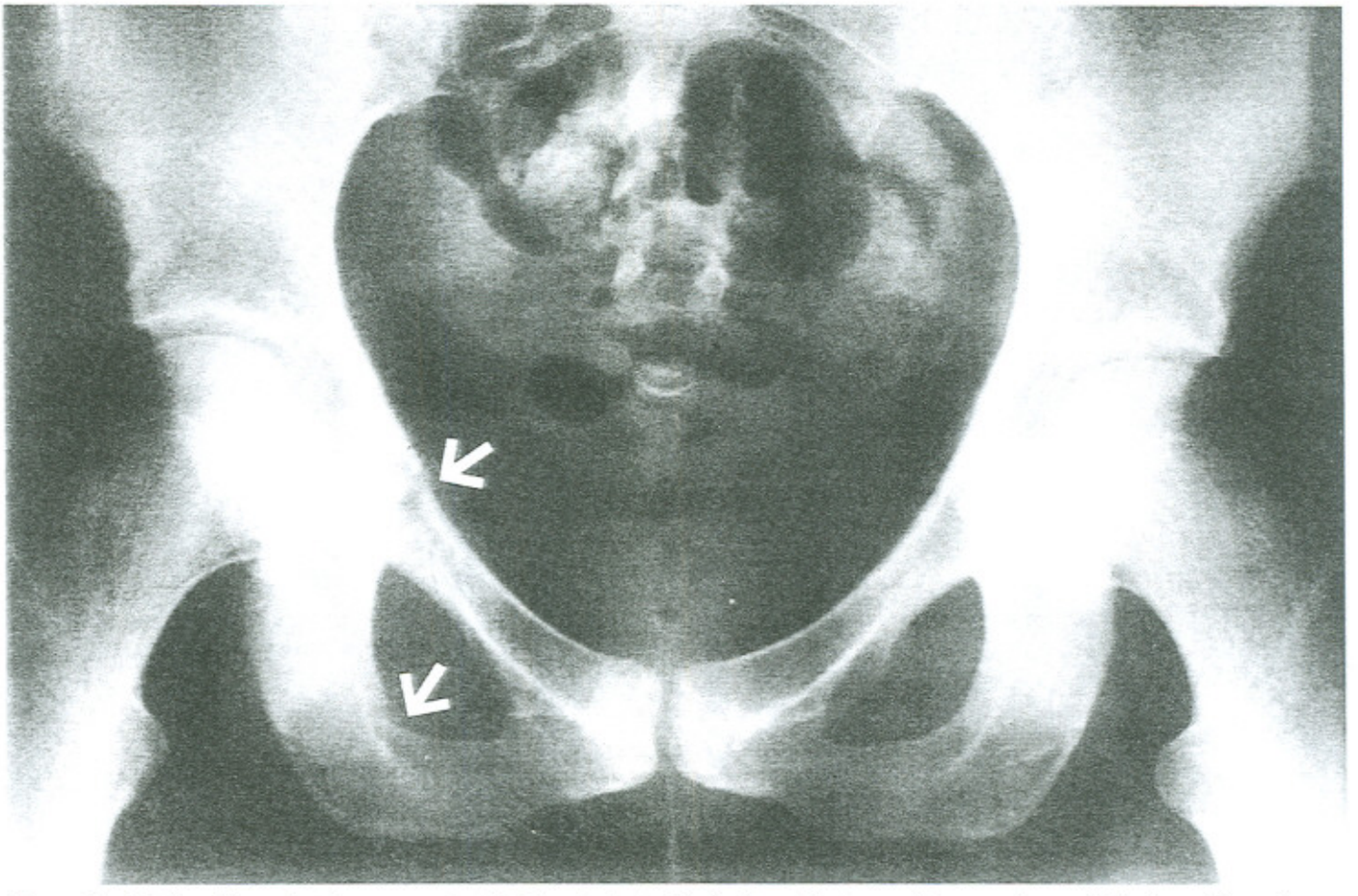

Figure 2 Pelvic radiograph taken approximately 3 weeks later. Undisplaced fractures of the superior and inferior pubic rami (arrows) are seen.

hip was made. She was started on a program of passive modalities, mobilization/manipulation, and soft tissue therapy. She continued on this regimen for a period of 1 week at which time she was re-assessed and placed into a comprehensive rehabilitation program. This program consists of a stretch and strengthening class, cardiovascular conditioning, as well as resistance training using isotonic equipment. An educational component is incorporated into the program which includes a neck and back school, as well as pain management sessions. Details of programs similar to this are described elsewhere.[2,3]

Initially, the patient began with the stretch and strengthen class to within the limits of her pain. She continued on this program for a period of 1 week during which time she reported improvement in all areas except her right hip.

One week following her entry into the rehabilitation program she stated that she continued to experience persistent right hip and right buttock pain. On examination, tenderness was noted over the right ischium. Her hip movements were improved but still caused pain with flexion and internal rotation. Resisted testing of the hamstring musculature also recreated her pain. It was felt that the pain was still soft tissue in nature and treatment, consisting of ultrasound and stretching techniques was directed at the hamstring origin. After 1 week of treatment, when she continued to complain of persistent pain she was referred back to her family physician. A second set of radiographs was ordered at that time. These radiographs, taken 3 weeks after the initial set, revealed undisplaced fractures of the superior and inferior rami of the right hemipelvis (Figure 2). Given this new information, the

patient was advised to discontinue all therapy and to rest for a period of 2–3 weeks. She was instructed to limit all weight-bearing activity as much as possible. After resting for 3 weeks she returned for further therapy. She continued with her active rehabilitation program and returned to working half days. A third set of radiographs was taken at this point which showed that the fractures were continuing to heal well. Her rehabilitation program was increased as she continued to improve, both subjectively on a numerical pain rating scale and disability questionnaire, as well as objectively in her range of motion and strength. She was eventually discharged from active care approximately 2 months later. At this point she was working approximately 6 hours per day. The remainder of her recovery was unremarkable.

Discussion

Historically, pelvic fractures were a relatively rare clinical entity and lacked a standardized classification system. However, their incidence has increased in the last 2 decades mostly due to what Young and Resnick[4] have termed the 'high speed era', with its associated increase in high velocity automobile accidents. This fact has led to new methods of radiological evaluation and classification.

The bony pelvis is a ring shaped structure that is made up of 3 components: the paired ossa coxae, each composed of ilium, ischium, and pubis, which form the anterolateral components, and the sacrum and coccyx posteriorly. It has four articulations, namely the paired sacroiliac joints which are synovial in nature, and two symphyses, the symphyses pubis and the sacrococcygeal joint.[5] The bony pelvis has no inherent stability and relies on several dense ligaments to provide stabilizing forces. These include the anterior and posterior sacroiliac, iliolumbar, sacrotuberous, and sacrospinous ligaments.

In the past, pelvic fractures were classified according to whether there was pelvic stability or instability. In clinical practice, this classification is somewhat limited in its use. It indicates that surgical stabilization is necessary, without defining the type of stabilization necessary.[3] Pelvic ring disruption is defined as traumatic interruption of the pelvic ring by osseous injury, ligamentous injury, or a combination of both.[6] Early attempts at pelvic fracture classification separated the injuries into two classes: major and minor. Major fractures signified potential pelvic instability, significant hemorrhage or other serious complications. These included straddle, double vertical and acetabular fractures. Minor fractures included avulsions, undisplaced sacral fractures, and simple bone disruptions.[7]

With the advent of newer methods of surgical stabilization the need for more descriptive classifications became necessary. Newer classification methods now focus on describing pelvic injuries relative to the force vector causing them. This approach allows pelvic stability to be judged by combining information about the fracture pattern, direction of force, and ligamentous anatomy to each case.[4] Pennal and Tile,[8] and more recently Young et al.[9] have offered new classification systems based on force vectors. Thus pelvic fractures are now classified as one of four main groups: lateral compression, anteroposterior compression, vertical shear, or combined mechanical injury.[4] These systems give the orthopedic surgeon descriptive information that can be used when a decision regarding treatment is to be made.

In this case, the patient complained not only of buttock pain but pain referring to the hip as well. In a series of case reports, Gertzbein and Chenoweth[10] reported on a series of patients who presented with minor trauma involving fractures to the pubic rami. In these cases, follow up bone scans revealed increased uptake in sites distant to the original facture. These sites included the acetabulum and sacroiliac region. They speculated that this may be the reason some patients complain of hip or sacral pain during weight bearing following fractures of the pubic rami. What may initially appear to be an isolated injury, can have an associated injury elsewhere in the pelvis due to its ringlike structure. While a bone scan was not done in this case, it does seem plausible that an injury in either of these areas may have been a factor in this patient's symptomatology.

In this case, the patient presented to the office following evaluation both at a hospital and by her family physician who had ordered radiographs of her pelvis. These radiographs were reported as unremarkable, making the initial clinical suspicion of a more ominous cause to her pain less likely. Following evaluation, she was placed on a schedule to treat the soft tissue injuries that were sustained in the accident. After 3 weeks, the patient continued to complain of poorly localized hip and buttock pain, an inability to sit for extended periods, as well as pain with walking. These symptoms pointed to another cause for her pain and prompted the referral that led to the second set of radiographs.

An occult fracture is the presentation of a fracture that is suspected due to clinical signs but is unseen on radiographic examination.[1] The diagnosis of occult fracture is most commonly found in scaphoid fractures of the wrist, where a high index of suspicion is maintained despite a 'normal' set of radiographs.[1] It is a relatively common occurrence to find a previously undetected fracture on follow-up films. This finding on the second examination is due to the widening of the fracture line as resorption takes place along the margins of the fracture.[1] This case demonstrates that clinicians should always be alerted to undetected causes of a patient's pain and be prepared to re-evaluate when symptoms either worsen or do not resolve in a reasonable period of time. In this case, the patient presented with significant bruising, a coxalgic limp and restricted hip motion. As well, a detailed history of the accident revealed that the passenger in her vehicle had suffered severe trauma, including multiple pelvic fractures and was hospitalized for approximately 10 days. These facts underscore the severity of this particular accident. In all cases of trauma it is important for the clinician to attempt to ascertain severity. In the case of a motor vehicle accident, this may be more difficult if the patient cannot give details such as speed of impact, size of the other vehicle, or the exact mechanism of injury. Thus it becomes even more important for the clinician to constantly re-evaluate the patient's progress from both a subjective and objective standpoint at regular intervals while under their care.

Impairment is defined as deviation from normal in a body part or organ system and its functioning.[11] Disability may be defined as an alteration of an individual's capacity to meet personal, social, or occupational demands, or statutory or regulatory requirements, because of an impairment.[11] When providing treatment, the goal of the intervention is to shorten the natural history of the disease or injury. When dealing with an injury due to a motor vehicle accident, the goal is to eliminate the impairment and return the patient to 'pre-accident status'. In this case, what was initially thought would be a relatively short recovery time, was in fact prolonged when the true extent of her injuries was discovered. Her *disability* was prolonged when her true *impairment* was determined.

Summary

A case of occult pelvic fractures following a motor vehicle accident was presented. An explanation for the patient's pattern of pain was offered. This case emphasizes the need for clinicians to maintain objectivity while treating a patient. Further evaluation is advised when recovery does not seem to be forthcoming. The importance of this fact is especially critical when the degree of impairment is to be measured for the purposes of remuneration and prognosis following trauma such as a motor vehicle accident.

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