



In each issue, *JUCM* will challenge your diagnostic acumen with a glimpse of x-rays, electrocardiograms, and photographs of conditions that real urgent care patients have presented with.

If you would like to submit a case for consideration, please email the relevant materials and presenting information to editor@jujm.com.

Foot Injury in a Weekend Warrior

Figure 1.



Case

A 46-year-old weekend warrior presents to an urgent care center 3 hours after injuring his right ankle and foot while playing basketball. He reports moderate to severe pain over the lateral side of the ankle and foot, which started after he jumped for a rebound and came down on the foot while it was in plantar flexion and inverted. However, he can walk. He reports no paresthesia or pain at the midfoot or proximal fibula, and there are no breaks in the skin of his right foot. He says that he did not experience any injury to his head or neck. He reports that he took over-the-counter ibuprofen but has not had adequate pain relief.

View the image taken (**Figure 1**) and consider what your diagnosis would be.

Resolution of the case is described on the next page.

THE RESOLUTION

Figure 2.

**Differential Diagnosis**

- Jones fracture
- Pathologic fracture
- Fracture of the proximal diaphysis of the fifth metatarsal bone
- Osteomyelitis
- Lisfranc dislocation

Physical Examination

On physical examination, the patient has a temperature of 98.4°F (37°C), a pulse rate of 92 beats/min, a respiration rate of 20 breaths/min, a blood pressure of 128/78 mm Hg, and an oxygen saturation of 97% on room air. He is

alert and oriented, is not in acute distress, and is breathing comfortably. He has a regular heart rate and rhythm without murmur, rub, or gallop. His abdomen has a normal appearance and is soft and nontender without rigidity, rebound, or guarding. His lungs are clear to auscultation.

The patient's right ankle does have swelling over the lateral malleolus, and there is pain with palpation of this site. There is pain with palpation over the proximal fifth metatarsal bone but no swelling in this area. There is no pain with palpation of the medial malleolus or over the midfoot. The ankle has a good range of motion with minimal pain in the anteroposterior distribution, but inversion is restricted because of pain. His dorsal pedal pulse is 2+. Sensation is grossly intact over the foot and toes.

Diagnosis

An x-ray is obtained (**Figure 2**) that shows a fracture of the proximal fifth metatarsal bone at the tuberosity (*arrow*). Note that the fracture line extends through the tuberosity but does *not* involve the metaphysis or proximal diaphysis.

Learnings

The fifth metatarsal bone approximates proximally with the cuboid bone and medially with the fourth metatarsal bone, bound in place by ligaments. These are the five aspects of the fifth metatarsal, from proximal to distal:

- Tuberosity (sometimes called the styloid)
- Metaphysis (a widened area of bone that articulates with the cuboid bone proximally and with the proximal fourth metatarsal bone medially)

- Proximal diaphysis (the long, narrow aspect of the bone ending in the distal fifth metatarsal)
- Neck
- Head

What to Look For

Patients may present with ankle pain from a strain but in fact may have a fracture of the proximal fifth metatarsal bone. This injury may be missed if it is not specifically evaluated. Classification of the fracture in the urgent care center is important because this may change treatment. A Jones fracture involves a specific location with fracture through the metaphysis; it is not an avulsion fracture of the tuberosity.

During the physical examination, do the following:

- Inspect for erythema, ecchymosis, and tenting of the skin.
- Palpate for the site of greatest pain, moving proximally, including the ankle, and distally.
- Gently check the range of motion.
- Use the Ottawa ankle rules, which have been validated. Their use can decrease orders for x-rays by 30% to 40% in both adults and children. The rules consist of these points:
 - The ability to walk four steps (to bear weight on the affected ankle twice)
 - A lack of tenderness at the posterior edge of either malleolus

Typically, the x-rays ordered are the anteroposterior, oblique, and lateral views. If findings are negative on foot x-rays but the findings from the medical history and physical examination are very suggestive of a fracture, consider obtaining an ankle x-ray. The primary differentiation in urgent care is between a fracture of the tuberosity (an avulsion fracture), which is treated symptomatically, and a Jones fracture or fracture of the proximal diaphysis, which may require orthopedic expertise and possibly surgery.

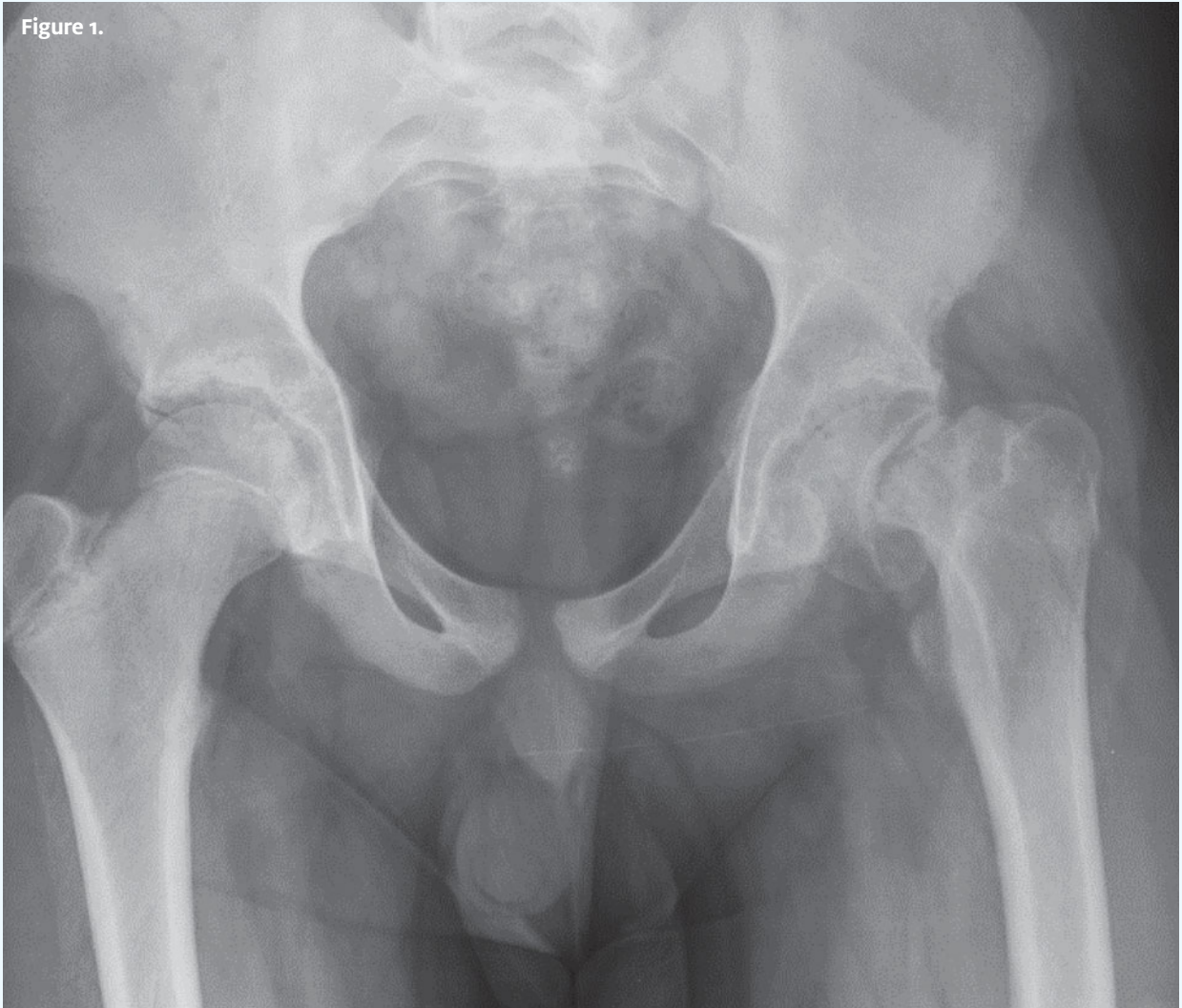
Transfer the patient to an emergency department in the presence of the following:

- Associated major trauma
- The possibility of neurovascular compromise
- Compartment syndrome (the "5 P's")
 - Pain
 - Paresthesia
 - Pallor
 - Pulselessness
 - Paralysis
- Uncontrolled pain
- Lisfranc or other dislocation in need of emergency reduction ■



Knee Pain in an 8-Year-Old Boy

Figure 1.



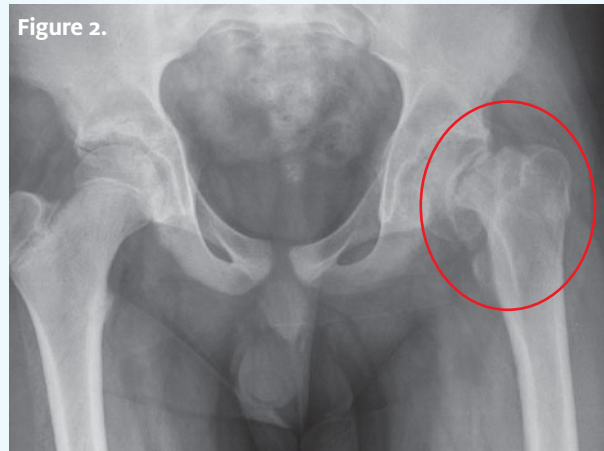
Case

An 8-year-old boy presents to an urgent care center with left knee pain that he has had for 3 days. The pain is worse with walking, and his mother says that he has been limping and will not put full weight on the leg. He reports no trauma, fever, vomiting, or numbness. His mother reports that she has given him ibuprofen but that this has not relieved his pain.

View the image taken (**Figure 1**) and consider what your diagnosis would be.

Resolution of the case is described on the next page.

THE RESOLUTION

**Differential Diagnosis**

- Hip dislocation
- Hip fracture—subcapital
- Hip fracture—intertrochanteric
- Osteolytic lesion of the hip
- Pelvic fracture

Physical Examination

On physical examination, the patient has a temperature of 98.4°F (37°C), a pulse rate of 100 beats/min, a respiration rate of 20 breaths/min, a blood pressure of 108/72 mm Hg, and an oxygen saturation of 99% on room air. He is alert and oriented, not in acute distress, and is breathing comfortably. The boy's pelvis is stable upon palpation. He has pain upon palpation of the left knee and upon passive movement of the left hip through the range of motion. He has no leg-length discrepancy. He has no history of fractures, and he takes no prescribed medications.

Diagnosis

An x-ray is obtained (**Figure 2**) that shows a left-sided slipped subcapital femoral epiphysis (SCFE).

Learnings

SCFE is the most common hip condition in children between the ages of 9 and 16 years, with a prevalence of 10.8 cases per 100,000 children. It most commonly occurs in males, blacks, and Hispanics. SCFE usually occurs during the adolescent growth spurt and is often associated with obesity, but it can have an endocrinologic etiology. SCFE is defined as a slippage (usually posterior and inferior) of the femoral head (femoral epiphysis) relative to the femoral neck (metaphysis) that occurs through the epiphyseal plate (the growth plate). SCFE occurs bilaterally in 18% to 50% of cases.

SCFE can be either stable or unstable. In the stable type,

which occurs in 90% of cases, the patient can ambulate, even with a limp. In the unstable type, the patient cannot ambulate or bear any weight at all on the affected leg. Unstable SCFE has a worse prognosis and a higher risk of complications than stable SCFE does, resulting in osteonecrosis in 20% to 50% of cases and in avascular necrosis in 60%.

What to Look For

Inquire about the mechanism of injury; the symptoms typically begin gradually and rarely occur because of trauma. Patients typically have pain localized to the hip but may report pain only at the groin, medial thigh, or knee. In patients younger than 10 years, check for the presence of these risk factors:

- Endocrine or metabolic abnormalities, including
 - Hypothyroidism
 - Panhypopituitarism
 - Renal rickets
 - Hypogonadism
 - Growth hormone abnormalities
- Obesity
- Specific demographic characteristics: male, black, Pacific Islander
- History of previous SCFE; there is a significant risk for a second occurrence

On physical examination, do the following:

- Document the patient's general appearance, position, and ability to ambulate.
- Inspect and palpate for skin changes such as erythema, ecchymosis, abrasions, lacerations, fluctuance, necrosis, and crepitus.
- Determine the location of pain.
- Determine exacerbators of pain, such as movement through the range of motion.
- Look for shortening of the affected leg.
- Check for swelling over the hip.
- Watch to see whether the patient involuntarily rotates the hip *externally* when you flex the hip.
- Watch for limited internal rotation of the hip.

Obtain the following x-rays: anteroposterior views of the hip and pelvis (to look for bilateral SCFE and to compare hips) and frog-leg views. Most patients with SCFE will be transferred to an emergency department because of the following indications:

- The possibility of a hip fracture or SCFE that is not evident on x-rays
- An inability to exclude septic arthritis
- The presence of intractable pain
- The presence of unstable SCFE ■