

EM CASE OF THE WEEK

BROWARD HEALTH MEDICAL CENTER DEPARTMENT OF EMERGENCY MEDICINE



Ankle injuries are common in the ED. Being familiar with the Ottawa Rules can prevent unnecessary radiation exposure and cost.

EM CASE OF THE MONTH

EM Case of the Month is a monthly “pop quiz” for ED staff. The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.



Ankle Sprains

An 18 year old male presents to the ED after injuring his ankle when a teammate stepped on him at football practice. He reports being able to limp off the field. In the ED now he is in pain but was able to limp from the waiting room to his bed. On exam he has tenderness to palpation at the posterior edge of the lateral malleolus and has pain with dorsiflexion and plantarflexion. He has no other symptoms and is otherwise healthy.

Which of the following is true?

- A. He should have foot and ankle x-rays because he was limping at the time of injury and in the ED.
- B. He should have foot x-rays because he has pain with dorsiflexion.
- C. He needs x-rays of the foot, ankle and knee to rule out occult knee injury.
- D. He should have an ankle series because he has pain at the posterior edge of the lateral malleolus.
- E. He should have foot and ankle x-rays because his mom is worried.



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Ankle Sprains

The correct answer is D. According to the Ottawa Ankle Rules: an ankle series is indicated in patients with

- Pain in the malleolar zone AND
- Tenderness at the posterior edge of either malleolus OR
- Are unable to bear weight immediately after the injury and for four steps in the ED.

A foot series is indicated only in patients who have

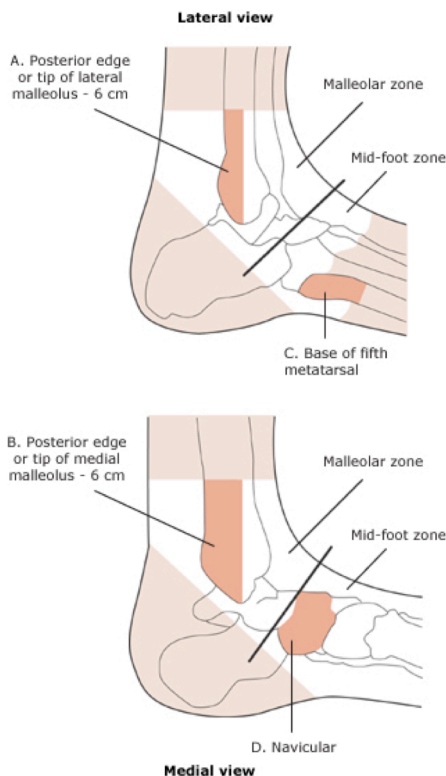
- Pain in the mid-foot zone AND
- Bone tenderness at the base of the fifth metatarsal or navicular OR
- Are unable to bear weight immediately after the injury and for four steps in the ED

When assessing for Ottawa ankle rules, palpate the distal 6 cm of the posterior edge of the fibula. If the patient can transfer weight twice to each foot or limbs they are considered to be able to walk.

Introduction: Ankle sprains common ankle injuries in primary care offices and the ED. A sprain is a stretching, tearing or rupture of the ligaments of the ankle.

History: Determine what the mechanism of injury was, whether the patient could walk after injury and whether that ankle has been previously injured.

Physical Exam: Examination of a patient with suspected ankle sprain consists of inspection, palpation and application of Ottawa rules as listed above. Look for swelling and echymosis.



For a list of educational lectures, grand rounds, workshops, and didactics please visit

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and click on the "Conference" link. All are welcome to attend!

Physical Exam (continued):

- Eversion or dorsiflexion injuries associated with tenderness at the distal tibiofibular joint may be associated with syndesmosis sprains.
- Check for pain with passive eversion and inversion as the pain of a medial sprain may become accentuated by eversion.

You may also use the following special tests:

- Squeeze test: Compression of the fibula against the tibia at mid calf. Elicits pain in the area of the anterior tibiofibular ligament.
- Anterior drawer test: Detects excessive anterior displacement of the talus on the tibia. Usefulness may be limited by swelling in the acute setting.
- Talar tilt test: Gentle inversion is applied from the neutral position. Suggestive of lateral ligament tear.

Grading of sprains:

- Grade I sprains result from stretching with minimal or microscopic tearing of the ligaments. Patients have minimal pain and can bear weight.
- Grade II sprains result from incomplete tear of a ligament. Patients have moderate pain and swelling with some joint instability and some loss of function. Weight bearing and ambulating are painful.
- Grade III sprains result from complete tear of the ligament with severe pain and swelling.

Radiography:

Ankle fractures can usually be diagnosed by x-ray. Less than 15% of patients presenting with ankle sprain have an ankle fracture. The Ottawa ankle rules are 96.4-99.6% sensitive for excluding fracture, therefore radiographs are rarely needed if patients do not meet Ottawa criteria.

Treatment: Early treatment consists of RICE therapy:

- Rest – limit weight bearing, use crutches
- Ice: apply cold or immerse in cold water for 15-20 minutes every 2-3 hours for the first 48 hours.
- Compression with an elastic bandage
- Elevate above the heart to minimize swelling.
- NSAIS may also be helpful to minimize swelling and provide analgesia.

Patients with grade I sprains can generally be treated with an elastic bandage for several days. Patients with grade II sprains should be immobilized with an Aircast or similar splint for a few weeks.

Patients with tendon rupture, fracture, dislocation, subluxation, syndesmosis injury, wounds penetrating to the joint, or with uncertain diagnosis should be referred to an orthopedic surgeon.

All patients may benefit from rehabilitation exercises.