

Acute Sesamoid Fracture in a Collegiate Women's Sprinter

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Background: Acute injuries to the great toe include turf toe from a forced hyperextension or fractures resulting from direct blows or forceful impacts. Injuries to the sesamoids often occur chronically from repetitive overuse and can contribute to cases of sesamoiditis or stress fractures. Less commonly reported, acute fractures of the sesamoid bones occur on the medial side and have a MOI of a forceful landing.

Case Presentation: A 20-year-old female sprinter walked off the track after completing a sprint. After accelerating out of the start position, she experienced acute pain on the ball of her foot. Her reported symptoms include pain and pressure around her great toe with weight-bearing and extension. She displayed normal ambulation. Upon initial evaluation there was point tender palpation of the sesamoid bones and the 1st MTP joint. She was unable to toe-raise due to pain. The patient was treated with ice and placed in a tall walking boot and asked to return the next day. On follow-up exam there was swelling and tenderness over the sesamoid bones, and difficulty when attempting to ambulate without the boot. The patient was referred to the physician and on x-ray, a medial sesamoid fracture was present. She was put into a tall boot and instructed to ambulate non-weight bearing. After 1 month of activity restriction, no significant healing was observed through follow up x-ray. With 2 more weeks of rest, the patient reported improvement in her pain, and was cleared to ambulate in a short walking boot without crutches. At 8 weeks, x-ray revealed complete healing and the patient was removed from the boot and progressed into elliptical use and walking. At 3 months she started a jogging progression, and at 4 months, the patient was progressed into a running training regime. The patient reported feelings of fear initially with running, but found that shoe orthotics and compression socks provide her confidence. At five months the patient is back to full sports participation with the track team and will be competing this season. Typically with injuries to the sesamoids, it takes time and repetitive stress for the signs and symptoms to develop that would lead a clinician to recognize the need for radiography. With an unknown MOI and insidious pain, most sesamoid fractures have prolonged recognition and diagnostic periods averaging 3-4 months. Due to the early recognition of symptoms and credence given to the patient's reported pain levels, an early diagnosis allowed immediate intervention and activity restrictions. This led to a fast and uneventful return to sport. Otherwise, patients may continue to participate leading to risk of further injury and longer recovery periods. **Conclusion:** With this patient reporting a MOI that did not involve a forceful impact or direct blow, the clinicians were initially suspicious of a turf toe injury, due to the amount of hyperextension with acceleration. On follow up the patient's increased pain that localized to the sesamoid bone heightened the suspicion for possible fracture. Research has indicated that at toe off, a significant amount of body weight is put solely on the medial sesamoid bone. With sprinters, these forces increase with intensity and power and when starting

out of the gate with explosive acceleration, the significant forces and toe extension of the first metatarsal can cause stress reactions, and in this case acutely fracture the relevant bone. **Clinical Bottom Line:** Clinicians evaluating track athletes with acute onset of foot pain, should be suspicious of injury to the sesamoid bones. Point tenderness over the area, and difficulty ambulating should be seen as an indication to rule out potential acute fracture. **Word Count:** 593

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