

Fracture of the Ulnar Sesamoid Bone in the Thumb of a Collegiate Basketball Player: A Case Report

Andrew M. Hyden, MD*; Christopher A. McGrew, MD^{†‡}; Deana Mercer, MD[‡]

*Department of Emergency Medicine, The University of New Mexico Health Sciences Center, Albuquerque, New Mexico

[†]Department of Family & Community Medicine, The University of New Mexico Health Sciences Center, Albuquerque, New Mexico

[‡]Department of Orthopaedics & Rehabilitation, The University of New Mexico Health Sciences Center, Albuquerque, New Mexico

Corresponding Author Christopher A. McGrew, MD. Department of Family & Community Medicine, MSC09 5040, 1 University of New Mexico, Albuquerque, NM, 87131 (email: cmcgrew@salud.unm.edu).

Funding The authors received no financial support for the research, authorship, and publication of this article.

Conflict of Interest The authors report no conflicts of interest.

Informed Consent The patient was informed that the data concerning the case would be submitted for publication, and she provided verbal consent.

ABSTRACT

Sesamoid fractures of the hand are uncommon occurrences that can lead to prolonged pain and swelling if delayed in diagnosis. This is particularly problematic in competitive athletes. We describe an ulnar sesamoid fracture of the thumb due to a blunt traumatic injury in a Division I collegiate basketball player. The 22-year-old woman injured her left thumb when kicked during a game. The patient was treated nonoperatively with promising outcomes. Sesamoid fractures of the hand can be difficult to diagnose, and any delay can lengthen the amount of time before the athlete returns to play. Radiographic findings may help healthcare providers accurately diagnose sesamoid fractures in this patient population, resulting in timely return to activity.

Keywords: Ulnar, Sesamoid, Fracture, Athlete

INTRODUCTION

In adults, there are typically 4 to 5 sesamoid bones in the hand. Two sesamoid bones are located in the metacarpophalangeal (MCP) joint of the thumb, and it is suggested that the bones stabilize and protect the flexor tendons of the joint and intrinsic muscles.^{1,2} Sesamoid fractures are occasionally associated with direct traumatic injuries, but more frequently with hyperextension of the MCP joint in young and active patients.³ Studies are limited regarding the diagnosis and management of sesamoid fractures. Delays in diagnosis become particularly problematic for high-level competitive athletes and can result in sequelae, including avascular necrosis due to poor blood supply. Thus, it is extremely important to make the correct diagnosis early.⁴ Diagnosis is typically made after

evaluating posteroanterior radiographs of the hand; however, Pracon et al⁴ reported using ultrasound findings to confirm fractures when radiographs were negative.

We describe an ulnar sesamoid fracture of the thumb in a Division I collegiate basketball player. Because current studies regarding this injury are limited, our purpose is to provide further diagnostic information that may help patients quickly return to play.

CASE REPORT

A 22-year-old female basketball player (right-hand dominant) presented to the Lobos Training Room after being kicked in the left hand with subsequent bending of her left thumb. The patient was initially evaluated 1 day before presentation, during the end of her basketball game. The swelling on her left hand had worsened, and she reported no previous injuries. When asked to locate her pain, she pointed to the palmar aspect of the first MCP joint. On physical examination, the patient had tenderness to palpation over the volar aspect of the MCP joint and mild pain over the ulnar side. She had decreased pincer grasp and no gross instability of the joint. Capillary refill and sensation were intact distally. There was edema over the thenar eminence. At this time, it was suspected that the patient had an MCP joint sprain.

Immediately after the appointment, a radiograph of the left hand was obtained to confirm that there was no fracture. Findings of radiographs showed a mildly displaced fracture through the sesamoid over the first metacarpal head (Figures 1A and 1B). She was then referred to an orthopaedic physician and saw a hand surgeon 3 days later. During physical examination, she showed both edema and bruising with tenderness to

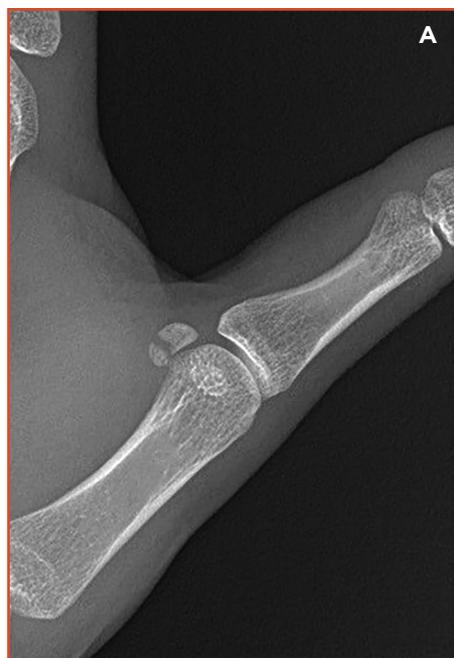


Figure 1. Radiographs obtained 1 day after injury, showing a minimally distracted fracture through the sesamoid over the first metacarpal head. A) Posteroanterior view. B) Oblique view.

palpation over the MCP joint of the thumb. The patient was reassured that the fracture was minimally displaced and encased within the flexor pollicis brevis tendon. She was informed that she could continue to play and advised to splint and tape as needed for comfort.

Six weeks later, the patient had a follow-up appointment and obtained a second radiograph. Findings showed similar alignment with ongoing healing along the mildly displaced fracture through the sesamoid of the first MCP joint (Figures 2A and 2B). At her appointment that same day, she no longer had any

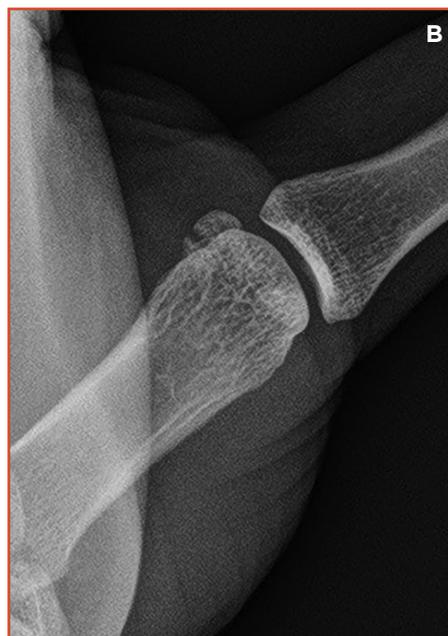


Figure 2. At 6-week follow-up, radiographs show minimally displaced sesamoid fracture with similar alignment and ongoing healing of the first metacarpophalangeal joint. A) Posteroanterior view. B) Oblique view.

remaining symptoms. On physical examination, she had intact sensation and range of motion, with appropriate strength. She was encouraged to follow-up only as needed.

DISCUSSION

Sesamoid fractures are uncommon and challenging to diagnose, especially when not clearly seen on the initial radiograph. Differential diagnosis includes rupture of the joint collateral ligament, rupture of the palmar plate (results in debility of flexing the MCP joint of the pollex), fractures near the joint, and a bipartite sesamoid.¹ They are often associated with sports-related injuries and may result from direct traumatic injuries or hyperextension.⁵ In the current case, the

injury occurred due to blunt trauma, however, there may have also been a hyperextension injury that resulted. The initial diagnosis was MCP sprain, but radiographic findings showed a sesamoid fracture. Nonoperative treatment resulted in promising outcomes, which corresponds with findings of other studies.⁶ In most cases without evidence of hyperextension instability of the MCP joint, treatment is successful with analgesia and immobilization. Immobilization with the MCP joint in 30° of flexion in a splint or cast should be short—2 to 3 weeks. Thereafter, mobilization is encouraged. Usually, surgical management is only recommended for cases of open fracture with palmar plate rupture and cases of hyperextension instability.⁶

To help illuminate the steps necessary for successful and timely diagnosis of sesamoid fractures, further studies could compare ultrasound and radiographic findings. Becciolini and Bonacchi⁷ reported a case in which sesamoid fracture diagnosis was not identified on radiographs obtained 1 week after traumatic injury. The authors suggested that musculoskeletal ultrasound findings may help show injuries to the ligaments, tendons, or volar plate that are not apparent on radiographs. A study comparing the sensitivity and specificity of radiographs to ultrasound would be useful. Accurate diagnosis is vital, as it will allow the provider to initiate proper treatment to facilitate prompt return of full functionality of the hand in non-athletes and swift return to play for competitive athletes.

REFERENCES

1. Fotiadis E, Samoladas E, Akritopoulos P, Chatzisimeon A, Akritopoulou K. Ulnar sesamoid's fracture of the thumb: an unusual injury and review of the literature. *Hippokratia*. 2007;11(3):154-156.
2. Jan D, Frédéric VC, Luc S. Case report: oblique fracture of the ulnar sesamoid bone of the metacarpophalangeal joint, a rare pathology. *J Orthop Case Rep*. 2017;7(2):29-32. doi: 10.13107/jocr.2250-0685.736.
3. Deabate L, Garavaglia G, Lucchina S, Fusetti C. Fracture of the radial sesamoid bone of the thumb: an unusual fracture. *Chin J Traumatol*. 2011;14(5):309-311.
4. Pracoń G, Walentowska-Janowicz M, Nowicki P, Płaza M, Sudoł-Szopińska I. Radial sesamoid fracture of the second MCP joint - a case report. *J Ultrason*. 2015;15(60):96-101. doi: 10.15557/JoU.2015.0008.
5. Altun M, Erdil H, Aras H, Gumusburun E. Fracture of the ulnar sesamoid of the thumb in a handball player. *Clin J Sport Med*. 2000;10(4):300-301.
6. Shaw M, Lyburn ID, Torreggiani WC, Watura R. Comminuted fracture of the ulnar sesamoid of the metacarpophalangeal joint of the thumb: an uncommon injury. *J Emerg Med*. 2003;24(4):437-439.
7. Becciolini M, Bonacchi G. Fracture of the sesamoid bones of the thumb associated with volar plate injury: ultrasound diagnosis. *J Ultrasound*. 2015;18(4):395-398. doi: 10.1007/s40477-015-0166-1.