Thrower's Fracture of the Humerus

Alberto Perez, MD; Christian Zoeller, MD; Hanan Atia, MD

Case

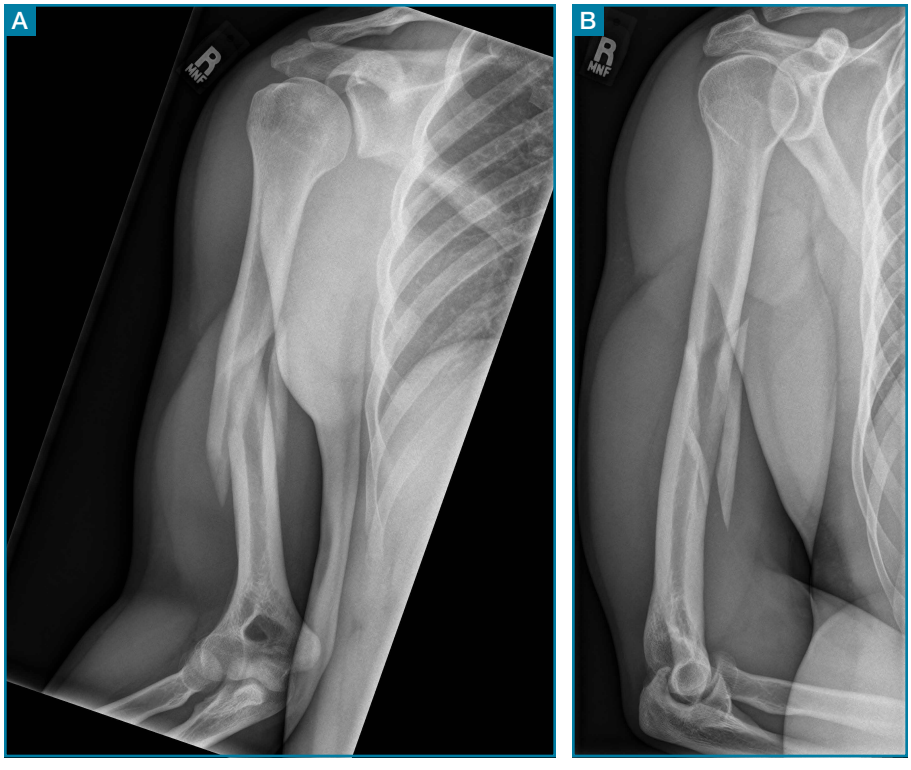
An otherwise healthy 29-year-old man presented to the ED for evaluation of right arm pain. He had been throwing a baseball when he felt acute onset of severe pain in his right shoulder and became unable to use his arm. Radiographs of the humerus were obtained (**Figure a and b**).

Fracture of the Humerus

A thrower's fracture is a rare fracture pattern characterized by a spontaneous fracture of the mid to distal third of the humeral diaphysis during an attempted throwing motion. It was first described by Wilmoth in a case report published in 1930.[1] Understanding the proposed mechanism and complications of injury are important for proper work-up and management in the ED.

Fractures of the humerus in young adults are typically the result of high-energy direct trauma. So how does the humerus fracture from throwing a baseball? The most commonly proposed mechanism is an excessive torque during the cocking and acceleration phases of the throwing motion.[2-5] This can be visualized as a pitcher's arm maximally cocked back prior to forward acceleration. During the transition into the acceleration phase, internal rotation is abruptly initiated by the subscapularis, pectoralis major, and latissimus dorsi.[6,7] The distal humerus continues to externally rotate due to the momentum generated by the cocking phase, while the proximal humerus violently internally rotates, creating a torsional force on the humerus at the insertion of these muscles and a fulcrum for potential fracture.[8] Spiral fractures are the most commonly seen fracture pattern, which correlates with this proposed mechanism.[9]

Thrower's fractures are most commonly reported in men in their 20s and 30s who are less seasoned athletes.[10,11] These individuals are potentially at greater risk due to the lack of compensatory humeral cortical



Figure

Dr Perez is an associate director of emergency medicine at the University of Connecticut Health Center, Farmington. **Dr Zoeller** is a resident in the department of emergency medicine, University of Connecticut Health Center, Farmington. **Dr Atia** is a resident in the department of emergency medicine, University of Connecticut Health Center, Farmington.

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hypertrophy from repetitive throwing[10,12] coupled with a less refined throwing motion.[13] Additionally, up to 75% of patients experience prodromal throwing pain at the impending fracture site,[11] which suggests that a primary insult such as a stress fracture may also predispose patients to this fracture pattern.

Once a fracture is suspected, a neurovascular assessment should immediately be performed, because concurrent radial nerve injuries have been reported in an average of 11.8% of mid-distal humeral fractures.[14] Fractures with associated radial nerve deficits should not be reduced without an orthopedic consultation. Most radial nerve injuries are the result of neuropraxia, which usually resolves spontaneously, and attempted reduction may result in worsening nerve damage.[14,15] Additionally, the orthopedist may consider late exploration if no spontaneous nerve recovery occurs within 3 to 6 months.[16] Thrower's fractures with or without associated radial nerve palsies are typically treated conservatively with a hanging cast, which has shown similar results to orthopedic fixation.[10,17] The emergency physician should feel comfortable not ordering additional imaging to search for a pathological fracture, unless plain films suggest otherwise.

References

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