

# Ulnar Diaphyseal Stress Fracture in a Bowler

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Stress fractures are common in athletes. Most stress fractures occur in runners, with the majority being in the lower extremities. In one review of 320 stress fractures in athletes, all occurred at or below the level of the lumbar spine.<sup>7</sup>

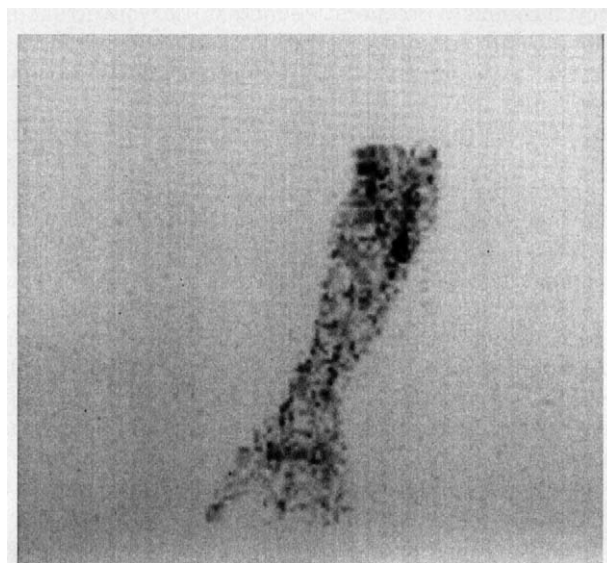
Stress fractures of the olecranon of the ulna have been noted in baseball pitchers and javelin throwers.<sup>6,9</sup> Stress fractures of the ulnar diaphysis have been described in softball pitchers, tennis players with two-handed backhands, weightlifters, and volleyball players.<sup>1-5,8,10-14</sup> This report is the first described case of an ulnar diaphyseal stress fracture in a bowler.

## CASE REPORT

A 16-year-old right-handed male bowler reported a history of 3 weeks of increasing pain in the proximal right ulna. He noted this pain while bowling. He bowled 3 to 8 games per day using a 16-pound, fingertip ball.

Significant physical findings included relative hypertrophy of the right upper extremity and tenderness to palpation along the ulna at the junction of the proximal and middle third of the ulna. The pain was reproduced with resisted flexion and extension of the elbow as well as resisted wrist extension.

Radiographs were unremarkable. Because the patient was contemplating entering a tournament in 2 weeks, a bone scan was obtained. The scan showed increased uptake in the ulna in the area of his pain (Figs. 1 and 2). Consequently, the patient did not bowl in the tournament, but he did well with conservative management. This management consisted of stretching the forearm musculature and 5 weeks of bowling cessation with a gradual return to activity. No followup radiographs or bone scans were obtained.



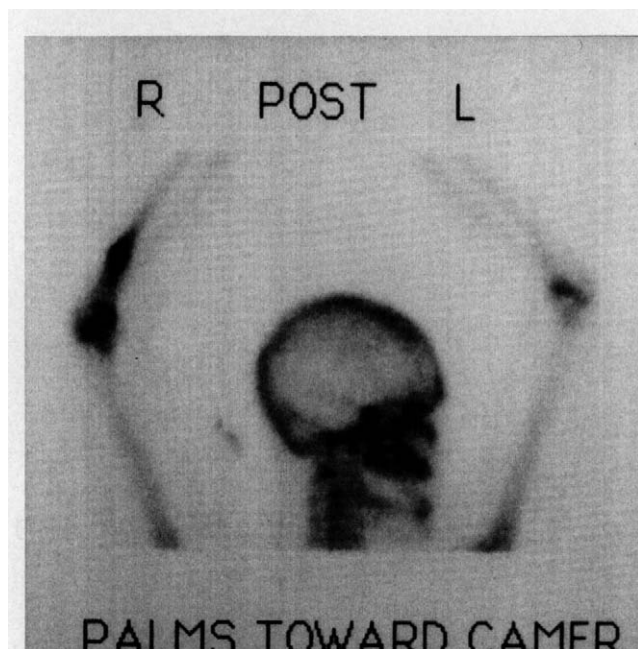
**Figure 1.** Vascular phase of bone scan showing increased blood flow in the proximal ulna. Anteroposterior view of the forearm.

## DISCUSSION

The mechanism of this patient's injury is not entirely clear. Some authors believe ulnar diaphyseal stress fractures are caused by torsional forces.<sup>2,13</sup> Pascale and Grana<sup>10</sup> stated that these fractures were caused by "repeated flexor muscle activity." Although this patient's mechanism of injury may have simply been the continued stress of holding a 16-pound bowling ball, more likely it was caused by stress on the ulna from the origin of the flexor profundus muscle during repeatedly grasping the ball with fingertip grip.<sup>9</sup> With a fingertip grip, the distal interphalangeal joints of the third and fourth digits are flexed to hold the bowling ball, along with the thumb (Fig. 3). The usual bowling ball grip involves flexion at the proximal interphalangeal joint of the third and fourth digits. The fingertip grip places the stress of holding the ball on the distal interphalangeal joint, the joint across which the flexor profundus muscle exerts force.

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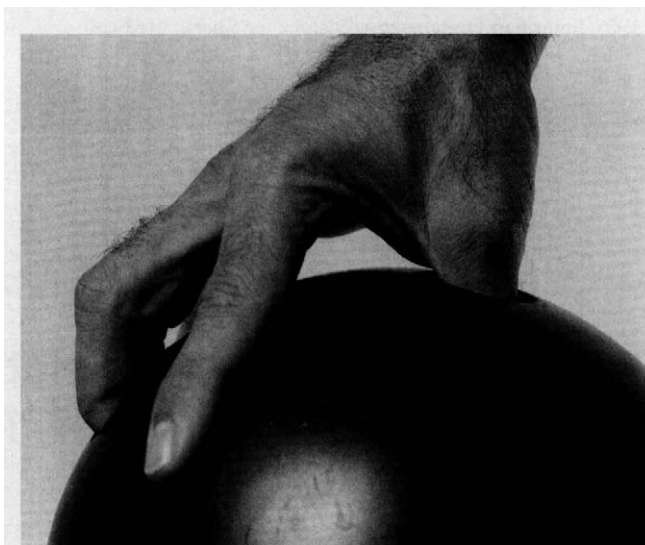
Neither the author nor any related institution has received any financial benefit from research in this study.



**Figure 2.** Delayed phase of bone scan showing increased uptake at the junction of the proximal and middle third of the ulna.

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**Figure 3.** During the fingertip grip the distal interphalangeal joints of the third and fourth digits are flexed to hold the bowling ball.

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