

Emergency Imaging

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Figure 1



Figure 2

A 32-year-old man presents to the ED with pain and local tenderness along the medial side of his thumb following a hyperflexion injury while resisting arrest. Representative images are shown above (Figures 1 and 2).

What is the diagnosis?
Is additional imaging necessary, and if so, why?

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ANSWER



Figure 3



Figure 4



Figure 5



Figure 6

The frontal and oblique radiographs (Figures 3 and 4) demonstrate a focal defect in the cortex of the base of the proximal phalanx of the thumb (white arrows) with a small avulsion fracture (black arrows) visualized proximal to the distal end of the first metatarsal. This tiny fracture fragment is discrete from the adjacent sesamoid bone (black asterisk, Figure 3) and represents a small fragment of cortex that has been pulled off from the base of the proximal phalanx. These findings indicate an injury to the ulnar collateral ligament (UCL) of the thumb, commonly referred to as gamekeeper's thumb.

As the name suggests, this injury was first described in Scottish gamekeepers, who killed rabbits by twisting the animal's neck between their thumb and forefinger; the repetitive hyperabduction of this action often resulted in trauma to the UCL of the thumb.¹ Today, the injury more commonly occurs in skiers when a thumb catches in a pole strap and causes a forced hyperabduction.

UCL tears can be partial or full thickness. Clinical signs of a full-thickness tear include increased valgus joint laxity greater than 30 degrees or laxity 15 to 20 degrees greater than that of the uninjured thumb. In full-thickness tears, the UCL becomes entrapped under the aponeurosis of the adductor pollicis (Stener lesion). Stener lesions do not usually heal or scar-down

completely and can cause chronic instability and pain at the metacarpophalangeal joint. Surgical management is typically indicated to prevent long-term morbidity. Minimally displaced avulsion fractures of the thumb UCL may also require surgical intervention as significant rotation at the site can prevent proper healing.³

Magnetic resonance imaging (MRI) is the preferred modality to both characterize the severity of a UCL injury and determine the presence of a Stener lesion.² In this patient, a coronal proton-density MRI of the thumb (Figure 5) reveals UCL (white arrow) with a gap (black arrow) where the ligament should attach to the proximal phalanx, indicating a full-thickness tear. The ligament remains beneath and separate from the aponeurosis of the adductor pollicis (red arrow, Figure 5). (Note that the small avulsion fracture is not visible and is often difficult to detect on MRI.) The patient was treated surgically to re-implant the avulsed ligament to the proximal phalanx (Figure 6).

REFERENCES

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2. Fricker R, Hintermann B. Skier's thumb. Treatment, prevention and recommendations. *Sports Med.* 1995;19(1):73-79.
3. Dinowitz M, Trumble T, Hanel D, Vedder NB, Gilbert M. Failure of cast immobilization for thumb ulnar collateral ligament avulsion fractures. *J Hand Surg Am.* 1997;22(6):1057-1063.