>> EMERGENCY IMAGING

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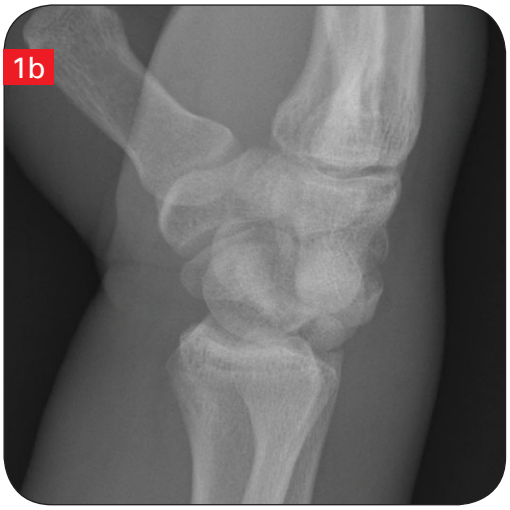
PROBLEM

Patient 1

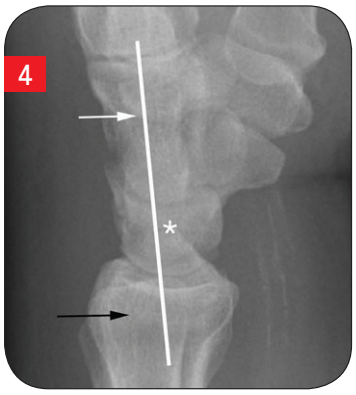


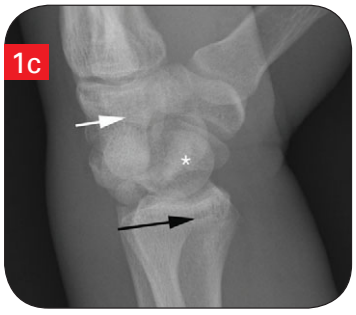
Patient 2

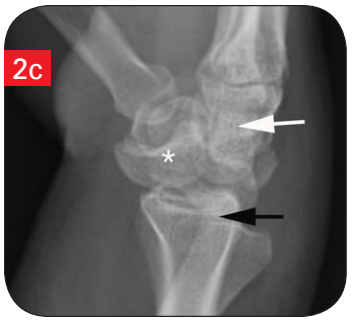
>> Two patients present to your emergency department with pain and wrist deformity after falling with outstretched arms. Based on these images, what is the diagnosis for each patient?

Turn page for answers >>

ANSWER







>> Both patients have carpal dislocations. The first patient has a perilunate dislocation (Figures 1a & 1b) and the second has a lunate dislocation (Figures 2a & 2b). These dislocations are part of a spectrum of injuries, ranging from dissociation to dislocation, that result in carpal instability. Patients frequently present with wrist pain, swelling, and deformity, and their fingers may be in a semiflexed position.[1]

The least severe of these injuries is *scapholunate dissociation*, which is due to disruption of the scapholunate ligament. Known as the *Terry-Thomas sign*, this is seen on x-ray as widening of the scapholunate interval to exceed 3 mm (white arrows, Figure 3). There may also be an abnormal trapezoidal appearance of the lunate or a ring-like appearance of the distal pole of the scaphoid (termed the *signet ring sign*) or both.

Perilunate dislocation, which represents the next degree of severity in this spectrum of injuries, results from rupture of the dorsal ligaments of the lunate. On a normal radiograph (Figure 4), one should be able to draw a straight line through the capitate (white arrow), lunate (asterisk), and distal radius (black arrow). With a perilunate dislocation (patient 1, Figure 1c), the capitate (white arrow) is dorsal relative to the lunate (asterisk) and distal radius (black arrow). On the anteroposterior view, the lunate will have an abnormal triangular appearance and there will frequently be overlap of the scaphoid and the capitate.

Midcarpal dislocation is the next stage of carpal instability and is secondary to disruption of the lunotriquetral interosseous ligament. This results in separation of the lunate and triquetrum.

The most severe form of unstable carpal injury is the *lunate dislocation*, which occurs when there is failure of the dorsal radiocarpal ligament. On the lateral radiograph (patient 2, Figure 2c) the lunate (asterisk) is dislocated in the volar direction with 90° rotation. There is proximal migration of the capitate (white arrow) which will then articulate with the radius (black arrow).

Careful examination of the scaphoid should be made, as there is a high incidence of fracture (ie, *transscaphoid fracture*) in patients with carpal dislocation.

REFERENCE

1. Kaewlai R, Avery LL, Asrani AV, et al. Multidetector CT of carpal injuries: anatomy, fractures, and fracture-dislocations. *Radiographics*. 2008;28(6):1771-1784.

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