Radiology Rounds

FOOSH!

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Case Presentation

The patient is a middle-aged man who came into the Emergency Department with complaints of left wrist pain. He had fallen from a height onto his left hand. His vitals were stable on presentation. On physical exam he had diffuse left wrist swelling with tenderness to palpation. Radial pulses were present. Sensation in his left hand was intact with range of motion decreased secondary to pain. AP and lateral views of his left wrist were obtained. What is your diagnosis?

Answer & Discussion

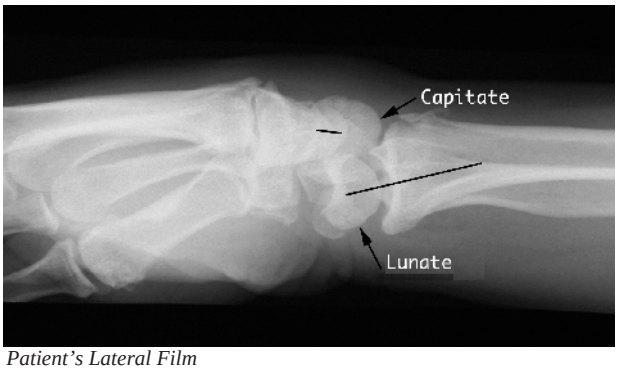
This patient has a type of carpal instability known as a perilunate dislocation or what is also known as a triquetral and scaphoid malrotation. This injury is caused by a fall on an outstretched hand (FOOSH) while the hand is hyperextended and the majority of the force falls onto the palm of the hand. This type of dislocation occurs when the lunate retains its normal position with respect to the distal radius and all the other carpal bones, including the triquetrum and scaphoid, are dislocated posteriorly. In the AP view, the perilunate dislocation is characterized by a disruption and loss of congruity of the three carpal arcs AND by an occasional triangular configuration of the lunate. However, in the lateral projection, the lunate appears normal while the other carpal bones are dislocated posteriorly (1). Illustrated below on the AP view is this patient's loss of arc congruity and overlap of the top two arcs. A normal AP view is provided for comparison. In addition, a normal lateral view is shown with a straight line drawn through and intersecting the radius, lunate, and capitate. Notice that the patient's lateral view shows a disruption of this intersecting straight line. Finally, it is important to note that a fall on the outstretched hand can also result in a number of injuries involving the

distal radius, as can be seen with this patient's radial styloid fracture.

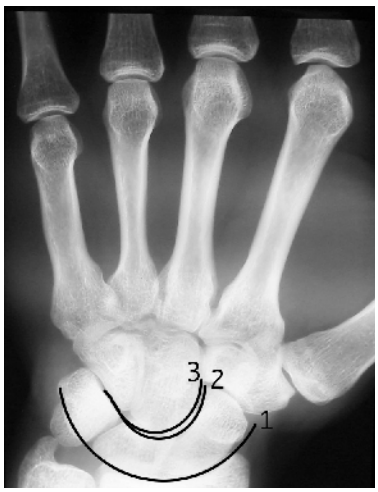
Recognition of carpal instabilities is extremely important. Failure to treat such injuries can lead to significant impairment of wrist function. In order to detect such an injury, correct AP and lateral views of the wrist must be obtained. A frontal radiograph of what is considered the "wrist" should examine the distal radius and ulna, the carpal bones, and the bases of the metacarpals so as to include the carpometacarpal articulations.

Carpal instabilities are classified according to the extent of ligamentous injury. Stage I is isolated rotary subluxation of the scaphoid bone resulting in a scapholunate dissociation and widening of the scapholunate space; stage II is isolated rotary subluxation of the capitate bone and is extremely rare; stage III is a perilunate dislocation (triquetral and scaphoid malrotation); and stage IV, the most severe, is a lunate dislocation which is visualized on the lateral radiograph as a complete volar rotation and displacement of the lunate with respect to the carpal bones and radius (2)... Signs of any type of carpal instability on AP radiograph include disruption of any or all of the three carpal arcs, alteration in the intercarpal joint spaces, and change in the contour of the individual carpal bones.

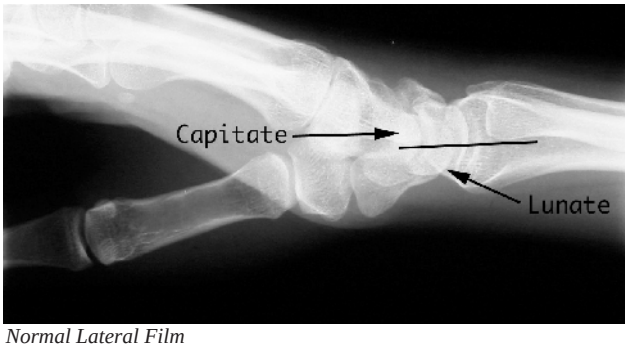
Patient's AP Film



Patient's Lateral Film



Normal AP Film



Normal Lateral Film

References

1. Harris Jr.JH. Wrist. In Harris Jr.JH, Harris WH. The Radiology of Emergency Medicine. Philadelphia, PE: Lippincott Williams & Wilkins; 2000: 371-412
2. Mayfield JK, Gilula LA, Totty WG. Carpal Fracture-Dislocations. In Gilula LA, ed. The traumatized hand and wrist. Philadelphia, PE: WB Saunders; 1992: 287-314