Clinical Quiz

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Bennett's fracture dislocation

Clinical Presentation

A 22-year-old male patient was brought to the Orthopedic Emergency with complaints of swelling, and pain at the base of his right thumb following fall on his outstretched thumb while running. Examination revealed painful restriction of right thumb movements with deformity at the base of the thumb. There was no neurovascular compromise. Radiograph of the right hand was performed (**Figure 1**).

Figure 1 - The anteroposterior radiograph of the right hand shows an intra-articular oblique fracture through the base of the first metacarpal with lateral subluxation of the carpometacarpal joint (large arrow). Note that the proximal fragment (triangular chip) is maintaining its normal relationship with trapezium (small arrow).

Questions

1. What are the features seen on the radiograph?

2. What is the diagnosis?

3. What is the management?

Clinical Quiz

Answers

1. The anteroposterior radiograph of the right hand (**Figure 1**) shows an intra-articular oblique fracture through the base of first metacarpal with lateral subluxation of the carpometacarpal joint. Note that the proximal fragment (triangular chip) is maintaining its normal relationship with trapezium. Also, there is no intra-articular comminution of the base of the first metacarpal, differentiating this injury from Rolando fracture.

2. Clinic-radiological diagnosis of patient is Bennett's fracture dislocation. This injury was described by Dr. Edward Hallaran Bennett (1882),[1] who suffered a fracture dislocation of his thumb while horse riding, and is often referred to as "Bennett's fracture."

3. Closed manipulation and thumb spica cast immobilization are utilized in the treatment of Bennett fracture if the reduction can be held in cast.[2] The strong pull of the abductor pollicis longus muscle (APL) often leads to re-displacement, necessitating surgical intervention. More than 1 mm of articular incongruity, or constant carpometacarpal joint subluxation after closed reduction dictates the need for surgical intervention.[2-4] Generally, closed reduction, followed by percutaneous K-wire fixation is successful.[3] Maintaining thumb abduction is vital to preserve the first web space.[5] If acceptable reduction cannot be achieved utilizing percutaneous technique, open reduction, and internal fixation are performed. Fixation is achieved using either K-wires or screws.[3,4,6]

Discussion

A diversity of fractures and dislocations occur at the base of the first metacarpal. The extra-articular fractures are generally either transverse, or short oblique across the base of metacarpal and are usually stable and easily managed in plaster cast. The fracture described by Edward Hallaran Bennett in 1882,[1] is an unstable oblique fracture through the base of first metacarpal with lateral subluxation of the carpometacarpal joint. There is a tendency for the large distal fragment to be displaced dorsally, and radially due to pull of the abductor pollicis longus muscle.[2-4] The aim of treatment of this fracture dislocation should be the accurate reduction, and restoration of the articular surface to prevent early posttraumatic osteoarthritis. There are various recommended methods (closed manipulation, and thumb spica cast immobilization, percutaneous pinning, and open reduction, and internal fixation with wires, or screws) for achieving proper anatomic reduction.[3,4,6] Many methods of closed reduction and stabilization have been recommended but found disappointing due to resultant joint incongruity, which leads to posttraumatic osteoarthritis.

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