Radiology Rounds: The Shifting Shoulder

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Case History

A 25-year-old man was playing volleyball attempting a "spike" when he developed an abrupt onset of severe pain in his right shoulder and total loss of range of motion. After massaging it for a few minutes, he suddenly felt a "pop" and was able to move it. The pain persisted, but diminished in intensity. On presentation to the ED, he appeared to be in mild distress and complained of pain over the anterior glenohumerus joint margin and the lateral superior margin of the humerus head. Range of motion of the shoulder was mildly reduced, but movement caused an increase in pain. There was no neurovascular deficit. The patient stated he had twice before experienced a similar episode, but "not this bad". He was in good health and had otherwise never experienced a significant injury or illness. He had no prior history of joint pain, swelling or decreased range of motion. No lab tests were performed. The patient underwent a complete plain film radiographic examination consisting of anterior-posterior (AP), 30 degree oblique (Grashey), lateral Y and axillary views. The AP view is presented for your perusal.

Fig. 1: AP shoulder radiograph

What is your diagnosis?

Diagnisus and Discussion

The patient had an anterior dislocation of the shoulder (glenohumerus joint), which was reduced ("relocated") by his manipulations. There is no dislocation visible on his radiographs. So, how do we know that he had a dislocation?

There is a sclerotic (white) line just medial to the lateral margin of the humerus head. This vertical line is not an anatomic structure. It represents a subtle, although fairly typical and common, fracture of the superior lateral humerus head, called a Hill-Sachs deformity or fracture. It occurs in anterior shoulder dislocations when the dislocating humerus head strikes the anterior inferior margin of the glenoid labrum. It is the most common fracture related to anterior shoulder dislocations. Many are obvious impacted deformities, but this case shows the fairly common subtle type. Some are even radiographically occult, but are easily seen on MRI.

A less common fracture is of the glenoid labrum, where the humerus head strikes, and is called a Bankart lesion.

The third fracture associated with anterior shoulder dislocations is of the greater tubercle of the humerus, but it is much less common than the other two.

Shoulder dislocations are among the most common joint dislocations, and so are frequently seen in emergency departments. About 95% are anterior, 4 % posterior and 1% inferior. Anterior dislocations are most common in the 20-30 year old age group, and are usually sports related. However, they are not rare in 60-80 year olds from falls on the shoulder. Anterior dislocations are caused by the head being levered out of the shallow glenoid during extension, abduction and external rotation, tearing the joint capsule in the process. Most are obvious on physical examination and radiography and are easily reduced. Brachial plexus or axillary vessel injuries may occur, but are not common. However, neurovascular compromise should be carefully evaluated in all cases as the consequences can be severe, especially with vascular injuries. Nerve injuries, which are more common than vascular insults, can be severe, but can also be mild and spontaneously resolve. The associated fractures are common, but usually do not affect management unless large or displaced.

The initial treatment is reduction of the dislocation, followed by shoulder immobilization to allow the injured bone and soft tissues to heal. The patient should then have follow-up orthopedic consultation. If reduction cannot be achieved or maintained, then urgent orthopedic consultation is indicated. Anterior dislocations are very frequently recurrent and, in these cases, elective orthopedic surgery, open or arthroscopic, should be performed as the shoulder is considered unstable.

Conclusion

So, why is this case important? A small percentage of patients with anterior dislocations present already reduced, and, therefore, the fact that they did sustain a dislocation is not obvious. In these cases, the diagnosis can be made by the identification of the Hill-Sachs or Bankart fractures on radiography, as they are both pathognomonic. The patient can then have the affected shoulder immobilized and an orthopedic appointment arranged.

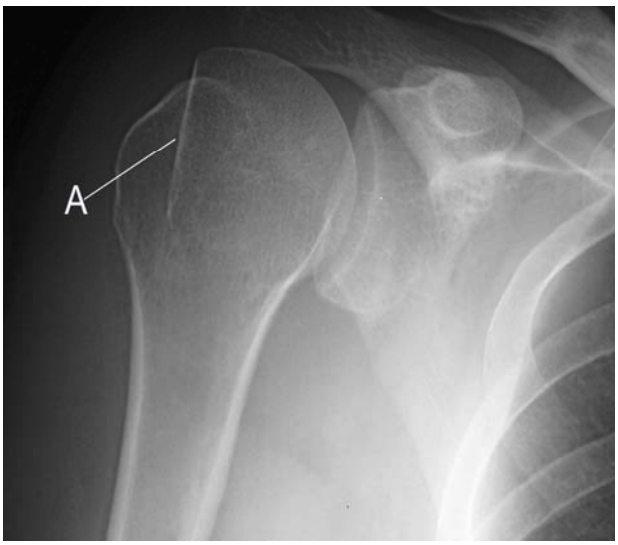

Fig 2: Arrow A points to the dense line of the Hill-Sachs lesion.

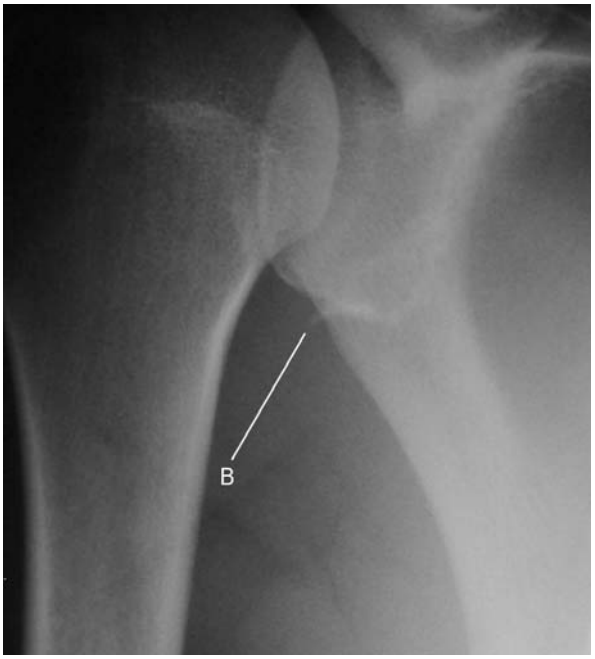

Fig. 3: Arrow B indicates a Bankart lesion.

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