An Easy-to-miss Displacement

Merril Pauls, MD, CCFP(EM), MHSc

A 73-year-old man is brought to the emergency department after a single vehicle accident. The car he was driving slid off the road and down a 30-foot embankment. Your patient required extrication from the vehicle because of damage to the driver's side of the car. The patient is alert and oriented. He denies losing consciousness and his only complaints are of a laceration over his left eye, left shoulder pain, and difficulty moving his left arm.

On exam, his vital signs are:

- Heart rate: 86 beats per minute
- Respiratory rate: 20 breaths per minute
- Blood pressure: 190/110 mmHg
- Oxygen saturation: 99% on oxygen by face mask

A complete clinical exam and radiographs of the chest and cervical spine reveal no evidence of other injuries. A careful exam of the shoulder reveals no obvious deformity. He is holding the arm in adduction and complaining of significant pain with any attempts to move it. His area of maximal tenderness is around the superior aspect of the scapula. The neurovascular status of the arm is normal. Radiographs were obtained (Figures 1 and 2).

Questions:

1. What is the diagnosis?
2. What features of the X-ray are typical of this diagnosis?
3. What are the most common causes of this problem?
4. What is the most common complication of this problem?
5. How would you treat the patient?

Figure 1. Radiograph of the shoulder.

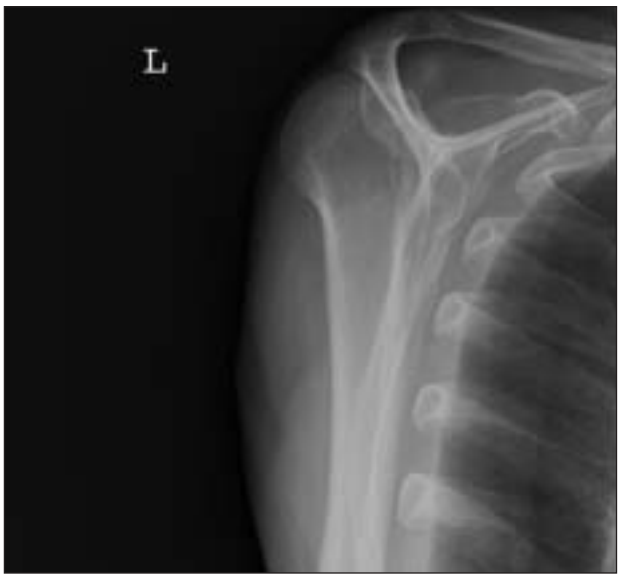

Figure 2. Radiograph of the shoulder.

Answers:

1. What is the diagnosis?

This patient has a posterior dislocation of his shoulder. Due to the anatomy of the shoulder girdle, the vast

majority of glenohumeral dislocations are anterior. Posterior dislocations account for only 2% of all shoulder dislocations.

2. What features of the X-ray are typical of this diagnosis?

Standard anteroposterior (AP) radiographs are often deceptively normal with posterior dislocations. Being aware of some subtle X-ray signs on the AP view will minimize the chance of this problem being missed. In the case of a posterior dislocation, the half-moon elliptical overlap of the humeral head and the glenoid fossa is lost. The distance between the anterior glenoid rim and the articular surface of the humeral head is increased (the "rim" sign). The humeral head is profiled in internal rotation so it looks like a light bulb or a drumstick. While most posterior dislocations should be visible on a properly aligned transcapular view, axillary lateral or apical oblique views are the best ways to confirm diagnosis. These views also allow for accurate diagnosis of associated fractures.

3. What are the most common causes of this problem?

Posterior dislocations are most commonly associated with seizures or electrical shock injuries—where the larger, stronger internal rotators of the shoulder overpower the weaker external rotators. The posterior dislocation can also occur after a fall onto the outstretched hand with the arm held in flexion, adduction, and internal rotation. In this patient's case, it was likely caused by a direct blow to the anterior aspect of the shoulder when the car rolled over.

4. What is the most common complication of this problem?

The most common "complication" is that the diagnosis is missed. It is estimated that over 50% of posterior dislocations are missed on initial evaluation, as clinical presentation can be very subtle and either X-rays are not obtained, incorrectly interpreted, or the views are inadequate. Associated fractures of the glenoid rim, greater tuberosity, lesser tuberosity, or the humeral head are the most common orthopedic complications. While neurovascular injury is a concern with anterior dislocations, it is rare with posterior dislocations.

5. How would you treat this patient?

His shoulder should be reduced as soon as it is safe to do so. This requires appropriate analgesia and procedural sedation. Once he is adequately relaxed, axial traction is exerted in line with the humerus. An assistant then places gentle pressure on the posteriorly displaced humeral head, and slow external rotation should reduce the head. If this fails, the patient will require reduction under general anesthetic.

Once reduction is achieved and confirmed by post-reduction radiographs, the shoulder should be immobilized for three weeks. If the shoulder is stable, immobilization can be accomplished with a sling. However, any concern about stability indicates immobilization in a shoulder spica or brace with the amount of external rotation necessary to provide stability ("handshake" cast). Orthopedic consultation should be obtained in all cases of posterior dislocation. Dx

This department covers selected points to avoid pitfalls and improve patient care by family physicians in the ED. Submissions and feedback can be sent to diagnosis@sta.ca.

Dr. Pauls is an ED physician, Queen Elizabeth II Health Sciences Centre, Halifax, Nova Scotia.