Bilateral anterior shoulder dislocation

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ABSTRACT

Shoulders are the most common major joint to become disarticulated, and shoulder dislocation is a frequent patient presentation to the ED. Bilateral shoulder dislocations, however, are rare and typically caused by seizure activity or electrocution. Posterior disarticulation is most common following seizure activity. This article describes an adolescent girl who dislocated both shoulders anteriorly following seizure activity.

Keywords: bilateral, dislocation, Hill-Sachs lesion, shoulder, seizure, subdural empyema

CASE

A 16-year-old girl presented to the ED following a 1-minute seizure with spontaneous resolution that was witnessed by her father. The patient was postictal when emergency medical services arrived at the scene, and her seizure had almost resolved before she arrived in the ED.

History The patient reported that she was sitting at home watching a movie when the seizure occurred. Her past medical history included an idiopathic single seizure 3 years ago that occurred 5 days after surgery for a subdural empyema. She fully recovered from the surgery and returned to a normal, physically active lifestyle with no further seizure activity until the case incident. She has had no previous shoulder trauma or injuries.

Physical examination The patient's vital signs were within normal limits. Her Glasgow Coma Scale score was 15 and cranial nerves II through XII were normal. She complained of shoulder pain following the witnessed seizure but had normal range of motion in both shoulders. A pain intensity rating was not obtained.

Laboratory results Results were significant for normal prehospital glucose level (obtained by EMS) and an elevated ED serologic prolactin level consistent with seizure activity.

Diagnostic imaging Because of the patient's previous subdural empyema, a CT scan was obtained; results were normal. While in the CT scanner, the patient experienced a second, self-limited seizure lasting less than 1 minute. She

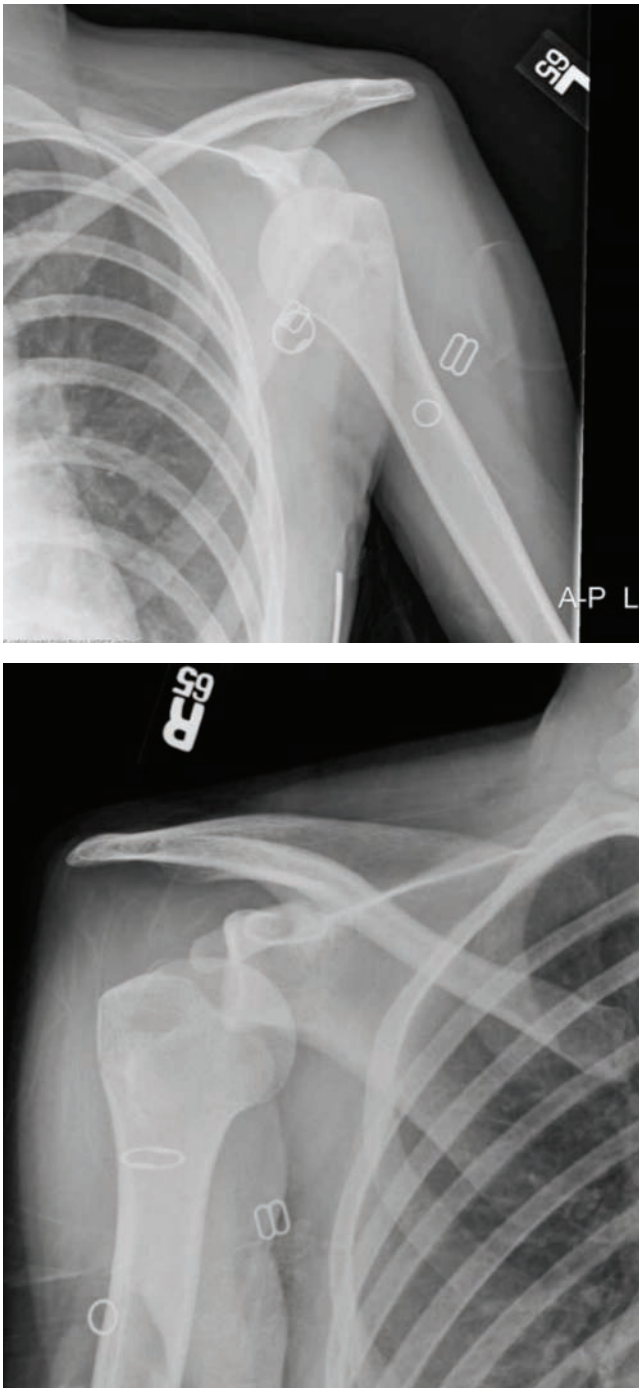

FIGURE 1. Shoulder radiographs showing bilateral anterior shoulder dislocations

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Key points

- Shoulders are the most common major joint that experiences disarticulation, accounting for 85% of all dislocations.
- Most shoulder dislocations are anterior dislocations, frequently seen in adolescent boys after trauma and older adult women after falls.
- Bilateral dislocations are usually posterior and caused by seizures, electric shock, or electroconvulsive therapy.
- Fractures such as Hill-Sachs lesions are a common complication of shoulder dislocation.

then complained of hip pain and worsening bilateral shoulder pain, demonstrating significantly decreased range of motion in both shoulders. Inspection and palpation revealed bilateral sulcus signs of the shoulders. Shoulder and hip radiographs demonstrated bilateral anterior shoulder dislocations and normal hip joints (**Figures 1** and **2**).

Outcome The patient was given moderate sedation and analgesia with IV fentanyl and propofol, and both shoulders were successfully reduced using a traction-countertraction method. Postreduction radiographs confirmed reduction of both shoulders with bilateral Hill-Sachs lesions (posterior humeral head compression fractures, **Figure 3**). The patient's upper extremities were placed in shoulder immobilizers and she was discharged home. No additional treatment was needed for the Hill-Sachs lesions. She was seen in orthopedic follow-up 4 days later and had normal motion, intact strength on testing of the rotator cuff, and no shoulder instability bilaterally.

DISCUSSION

Shoulder dislocations are the most common major joint dislocation encountered in an ED and account for 85% of all dislocations.[1-3] Shoulder dislocations are categorized as anterior, posterior, or inferior. Most (95%) of shoulder dislocations are anterior, and only 4% of dislocations are posterior; inferior dislocations account for just 0.5% of all cases.[4,5]

Anterior shoulder dislocations are most common in adolescent boys after trauma; they also are common in older women because of their increased rate of falls and decreased cross-linked collagen capsular tissue, which causes joint instability.[1,6] Anterior dislocations have associated greater tuberosity fractures in more than 15% of cases, especially in patients older than age 40 years.[2] In patients younger than age 40 years, Hill-Sachs lesions are common.[7] The Hill-Sachs lesion or deformity is a cortical lesion on the posterior aspect of the humeral head secondary to contact with the glenoid rim during the dislocation.[8] Although conservative treatment is most common, surgical interventions include capsular shift, bone grafting, disimpaction, and shoulder replacement.[9]

Anterior shoulder dislocation can be caused by forced extension, abduction, and external rotation along with a direct blow to the posterior aspect of the shoulder. A posterior dislocation results from a sudden and violent contraction of the perishoulder musculature that forces the humeral head superiorly and posteriorly against the acromion and medially against the glenoid fossa.[2,10] The infraspinatus and teres minor muscles as well as the posterior deltoid and latissimus dorsi provide the necessary force to dislocate the joint.[10]

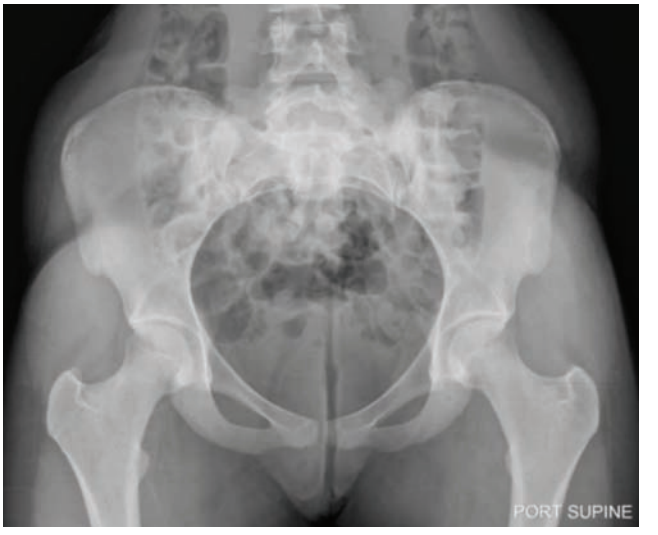

FIGURE 2. Hip radiograph showing no dislocations

A review of the literature reveals that patients diagnosed with bilateral anterior shoulder dislocations are predominantly male and that the dislocations are usually secondary to seizure activity.[3,11-17]

About 15% of posterior shoulder dislocations involve both shoulders.[18] Seizures are the most common cause of posterior fracture dislocations.[19] Bilateral posterior dislocations are more common than bilateral anterior dislocations and usually are caused by seizures, electric shock, or electroconvulsive therapy.[2] Although rare, inferior dislocations result from forceful hyperabduction of the shoulder, such as reaching up to prevent a fall. Forceful, direct axial loading of an abducted shoulder can also result in luxatio erecta. The patient presents with the "hand up" position in the affected arm, as if asking a question.[20]

Fractures are a known complication of dislocations. Greater tuberosity fractures occur in about 15% of patients with shoulder dislocations.[21] Bankart fractures (affecting the inferior aspect of the glenoid) tend to occur in younger patients and account for about 20% of anterior dislocations.[7] The literature review conducted for this case report demonstrated that 3 of the 12 bilateral anterior dislocations described involved fractures and 4 of the 6 bilateral posterior dislocations also had fractures. Therefore, a greater percentage of bilateral posterior dislocations appear to be associated with fracture than bilateral anterior dislocations.

In addition to Hill-Sachs lesions and tuberosity avulsion fractures, other complications of shoulder dislocation include rotator cuff tears and vascular injuries.[22,23]

O'Connor-Read has theorized that bilateral shoulder anterior dislocations may be a result of falling to the floor

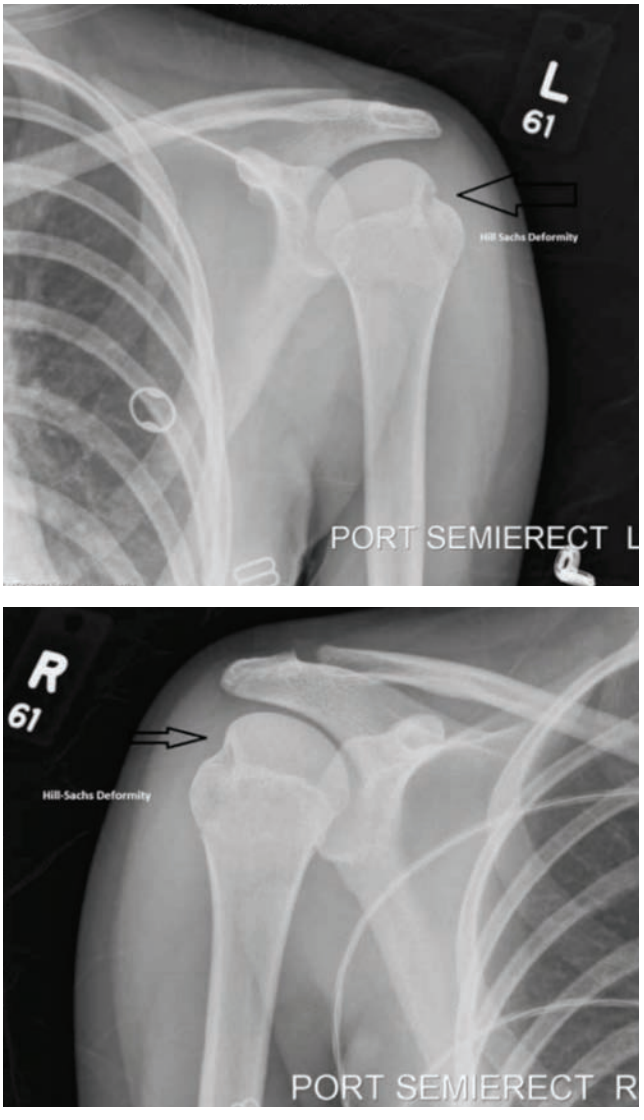

FIGURE 3. Bilateral Hill-Sachs lesions (posterior humeral head compression fractures)

after a seizure rather than seizure activity itself.[11] However, in this case, the patient did not experience a fall. Furthermore, her arms were motionless at her side during her seizure in the CT scanner. It is likely that this patient's dislocations were the result of a forceful contraction and external rotation of the shoulder's external rotator muscles during her second witnessed seizure.

CONCLUSION

The shoulder is the most common major joint to experience disarticulation. Bilateral shoulder dislocation is rare and commonly associated with seizure activity. Shoulder dislocation associated with seizure activity usually occurs posteriorly but may occur anteriorly. Careful physical examination and radiographs will differentiate anterior versus posterior dislocation. Associated injuries include Hill-Sachs deformity of the humeral head, defects of the inferior glenoid, rotator cuff tears, and neurovascular injuries. **JAAPA**

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