

Emergency Case

Reducing anterior shoulder dislocation

Easy is good

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QUESTIONS

A young woman presents to the emergency department with a dislocated shoulder. She had first dislocated that shoulder a year ago playing rugby. Today she was brushing her hair when the shoulder “went out.” What are the most common neurologic deficits with anterior shoulder dislocation? Are x-ray films required before reducing this shoulder? What are the quickest and easiest ways to reduce a dislocated shoulder?

The shoulder is the most commonly dislocated joint; dislocated shoulders have been described in medical writings for more than 3000 years. Hippocrates wrote that shoulder dislocation should be reduced immediately or as soon as possible. This is held to be true for dislocations today. Most (90% to 97%) shoulder dislocations are anterior, and in most anterior dislocations, the humeral head assumes a subcoracoid position. Subglenoid, infraclavicular, and intrathoracic dislocations are uncommon variants of anterior dislocation.^{1,2}

Diagnosis

Clinical diagnosis of anterior shoulder dislocation is simple. First-time dislocations are almost always a result of trauma. History usually reveals a force to the hand or arm when the patient's arm is over and behind his or her head (hyperflexed) or extended behind his or her chest. There might be some arm abduction also.

Shoulder dislocations seen in emergency departments are mostly recurrent. Often, little or no trauma is involved; arm position alone has resulted in dislocation. Patients typically present with one arm slightly abducted and extended with the elbow flexed and the opposite arm supporting it. A concavity or flattening in the deltoid area can usually be seen, and palpation reveals an “empty glenoid” and a subcoracoid fullness.

Examination

Neurovascular examination of the entire affected arm is of primary importance. Nerve injury occurs in up to 55% of shoulder dislocations.³ Most commonly, the axillary nerve is injured, resulting in loss of “shoulder badge” sensation with or without deltoid muscle paresis. Abnormalities in sensation in the lower arm are uncommon and indicate severe nerve injury.

Neurovascular examination must be repeated after reduction; deficits must be followed carefully and motor deficits treated with aggressive physiotherapy to avoid permanent shoulder stiffness. With appropriate treatment, the prognosis for full recovery within 3 to 10 weeks is good. Rotator cuff rupture occasionally simulates deltoid paresis. Fortunately, treatment is the same: aggressive physiotherapy.³

Radiographs have traditionally been taken before and after reduction to confirm diagnosis and look for associated fractures. A recent report states that “neither prereluction nor postreduction films are likely to change the [emergency department] management of patients with recurrent dislocations by atraumatic mechanisms.”⁴

Reduction

Reduction methods for any dislocation should ideally be quick, effective, and as painless as possible for patients; they should not exhaust physicians; and they should not cause further injury. We should also be teaching patients easy techniques for attempting reduction of their own shoulder dislocations in case medical care is not readily available.

Traditional reduction methods often involved strong force, such as traction-countertraction (method recommended by Hippocrates) or forcefully levering the arm (Kocher maneuver). These methods are painful, difficult for medical staff, and potentially traumatic (theoretically, neurovascular injuries could be caused or exacerbated).

Patients must relax their shoulder muscles before any reduction can be easily effected. A physician's

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Figure 1. External rotation method for reducing anterior shoulder dislocation: *Method can be used with patient sitting or prone.*

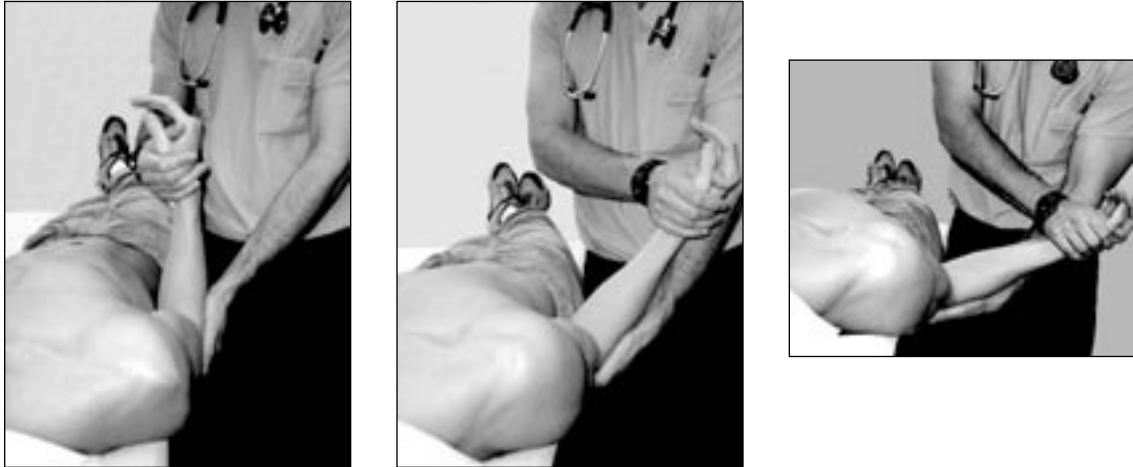
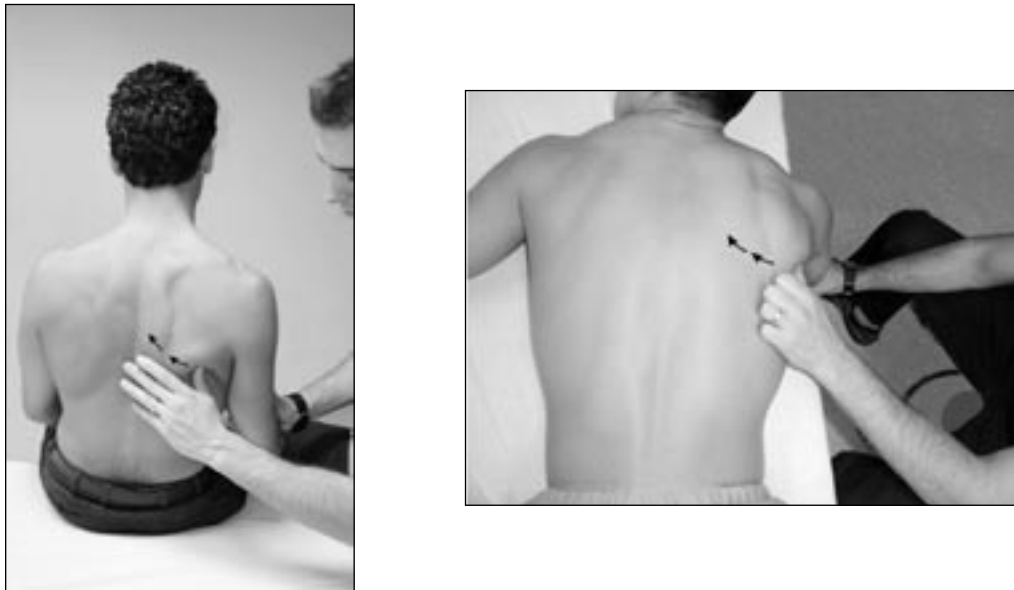


Figure 2. Scapular manipulation method for reducing anterior shoulder dislocation: *Method can be used with patient sitting or prone.*



calm and reassuring conversation and demeanor is of great value in coaching patients toward satisfactory muscle relaxation. If coaching does not work, analgesic and muscle-relaxing medications are required.

Two quick, easy, and highly effective methods of reducing shoulder dislocations are described below. Both can be used with any anterior shoulder dislocation.

External rotation method. First described in 1977,⁵ this method can be summarized as follows.

- Shoulder muscle relaxation: coach patient to achieve this voluntarily. If successful, proceed in sitting position; if not, position patient supine and use intravenous or intramuscular drugs to achieve relaxation.
- Stabilize the elbow against the trunk with one hand. With the elbow flexed at 90°, gradually allow the forearm to move laterally to the extent that muscle relaxation allows. Never use force. A small degree of abduction of the humerus in the latter phase of

this maneuver might be helpful. The shoulder will likely reduce before the forearm reaches the coronal plane.

Figure 1 illustrates this method in the supine position. Success rates of 80% and more have been reported.⁶ The external rotation method can be attempted by patients themselves in the supine position. They should allow the arm to “fall” laterally, using only gravity to assist.

A modification of the external rotation method can also be attempted by patients alone. Beginning with elbows at their sides, sitting or supine patients should raise both hands toward their heads and slowly attempt to place both hands behind their heads. Some flexion and abduction of the arms is required. The unaffected arm can be used to assist the affected arm. If the hands-behind-head position can be achieved, the shoulder will likely reduce.

The external rotation method has great advantages over other reduction methods in that it can be performed in virtually any position; it requires only one person to do it; and patients can attempt reduction on their own. Patients who learn to reduce recurrently dislocating shoulders on their own are truly empowered.

Scapular manipulation method. Also known as the scapular rotation method and first described in 1979,⁷ this method can be summarized as follows.

- Shoulder muscle relaxation: when this is achieved, the scapula moves very freely. If muscle relaxation can be achieved with coaching alone, proceed in sitting position; if not, position patient prone and use intravenous or intramuscular drugs to effect relaxation.
- With the patient sitting, an assistant gradually lifts the arm to a horizontal position, directed

anterior to the patient, and applies gentle traction. (I have found equal efficacy is achieved by grasping the arm with one hand and stabilizing it against the trunk. No assistant is required.) With a thumb, push the tip of the scapula medially and upward (cephalad) one or more times. The glenoid will move anteriorly and downward (caudad) to meet the head of the humerus, and reduction will likely be achieved. If this is not successful right away, move the patient to a prone position.

- With the patient prone, allow the affected arm to hang down toward the floor. Coach patient about relaxing the shoulder and allow time for adequate relaxation. If coaching does not work, use drugs to effect relaxation.
- Hold the humerus steady and apply gentle downward traction with one hand. With the thumb of the other hand, push the tip of the scapula medially and cephalad one or more times until reduction occurs.

Figure 2 illustrates the scapular manipulation method. Success rates of 79% to 96% have been reported.^{8,9}

Traumatic shoulder dislocations

These dislocations should be examined with x-rays as soon as possible. Analgesics are usually indicated. If there is no serious fracture, any of the methods described above can be used for reduction. Serious fractures, in association with dislocation, mandate emergency orthopedic consultation.

Shoulder dislocation is a painful condition. As great or greater than the pain is the distress of having part of the body disarticulated. Suitable coaching can usually make drug-free reduction as easy for patients as it is for physicians. It is very satisfying to treat patients

successfully and have them leave the emergency department within minutes of arrival.

Answers

The most common neurologic deficits with anterior shoulder dislocation are loss of axillary nerve function, deltoid paresis, and “shoulder badge” sensory loss. X-ray examination does not assist emergency treatment of recurrent nontraumatic anterior shoulder dislocations. The external rotation method and the scapular manipulation method are the quickest and easiest ways to reduce anterior shoulder dislocations. ❖

References

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