Questions and Answers

1. **What do I need to know about anterior shoulder dislocations (ADS)?**

Anterior dislocation of the glenohumeral joint is the most common major joint disruption that presents to emergency departments, in large part due to the limited bony stability necessary to allow the wide range of motion of the shoulder. The majority of dislocations are anterior and are typically found in younger men following injuries involving indirect forces transferred to the joint capsule from some combination of abduction, extension, and external rotation.

Patients typically present with splinting on the injured side, as any movement typically results in significant pain from spasm of associated muscle groups. Most commonly, the anteriorly dislocated humeral head sits subcoracoid, creating a “fullness” in the anterior shoulder as well as accentuating the lateral aspect of the acromion, giving the shoulder a square appearance. A thorough neurovascular examination is paramount, as dislocations can result in injuries to the brachial plexus, axillary nerve, radial nerve, and axillary artery. Plain films with a Y-scapular view should be completed as well as any imaging clinically warranted to rule out additional injuries.

In most cases, treatment is relatively easy and involves managing pain and reducing the joint to its normal anatomical position as soon as possible. Numerous techniques have been described and used to reduce anterior shoulder dislocations. Traditional approaches require the use of traction forces...
to overcome the anatomic forces that hold the humeral head in its dislocated position. Muscle spasm, usually as a result of pain, has to be overcome to allow this to occur. In most cases, this can be managed with careful titration of intravenous analgesics and sedatives. Reduction of shoulder dislocations is an important skill for anyone working in an emergency department.

2. Does everyone with a shoulder dislocation need an x-ray?

If in any doubt of the diagnosis (especially if humeral neck fracture is suspected), shoulder dislocation should be confirmed with an x-ray. In certain patients, the diagnosis seems so obvious that this may not be necessary. In an effort to reduce the use of unnecessary radiographic studies, a group from Québec developed the “Québec Decision Rule for Radiography in Shoulder Dislocation,” which suggests that, in patients less than 40-years-old, presenting with an ASD and a mechanism of injury within a “minor” category (i.e., fall from less than standing height or with an atraumatic mechanism) physicians were able to perform the reduction without first obtaining an x-ray to rule out associated fractures. They further suggested that patients older than 40 who have a history of recurrent dislocations without evidence of humeral bruising on exam could also forego an x-ray.¹ This rule applies only to patients with ASD.

Although the initial study reported that the Québec rule had a sensitivity of 100%, subsequent validation attempts, which included all types of shoulder dislocations (not only ASD), suggested a sensitivity closer to 42%, suggesting caution when applying the rule.²

3. What options exist for patients (or doctors) that want to avoid procedural sedation?

As with any dislocation, reduction should be achieved as early as possible and anyone working in the ED should be good at doing it. Ease of reduction varies according to one of several circumstances, including patient age, previous dislocation, and body habitus. Because different situations may call for different approaches, we should all be comfortable with a number of different reduction techniques. Older patients, who may be at greater risk of occult humeral fracture or fracture as a complication of the reduction attempt, should preferably have traction methods, rather than methods that lever the humeral head back into place (such as the Kocher manoeuvre). Success with any method of reduction may be enhanced by scapular manipulation. This involves stabilizing the superior aspect of the ipsilateral scapula with one hand, while the other hand applies force against the tip of the scapula in a medial direction towards the spine with the objective of repositioning the glenoid to facilitate the reduction of the humeral head.³ ⁴

The judicious use of intravenous sedation is usually used to manage pain and spasm and, thus, facilitate reduction (in most cases with excellent success). Many patient factors, however, including patient comorbidities, such as obesity, cardiac or respiratory disease, predicted difficulty with airway management, or drug allergies, or provider factors, such as discomfort with procedural sedation, single physician coverage, or limited availability of support staff, may make the option of procedural sedation less appealing. In these circumstances, one
option is to manage the pain by using a local anaesthetic, injected directly into the shoulder joint.

The use of intra-articular (IA) lidocaine to facilitate the reduction of an anterior shoulder dislocation has been compared with intravenous sedation by a number of small clinical trials. While the exact technique used has varied, it basically involves the injection of 20 cc’s of 1% lidocaine into the shoulder via an anterior approach followed by the use of either a modified Stimson or Rockwood’s traction/anti-traction technique. The modified Stimson technique requires placing the patient in a prone position with a 10 lb weight attached to his or her arm; scapular manipulation (as discussed above) may be applied to assist.

The use of IA lidocaine has been reported to be associated with comparable rates of successful ASD reduction and equivalent levels of patient discomfort when compared with IV sedation. Furthermore, the IA approach appears to be associated with a significant reduction in the respiratory depression and hypotension that are common with IV sedation and, with institutional variability, a significantly shorter length of stay in the emergency department.

While no cases of infection were reported in the series of small clinical trials, the major potential complication for those patients receiving IA lidocaine is that of an iatrogenic septic joint. Careful skin preparation and use of aseptic technique for joint injection should significantly reduce the likelihood of this outcome; ED physicians considering this approach need to be aware of its potential risk and discuss this risk with patients.

4. What if the patient refuses an IV (or if you are far from a hospital)?

The Cunningham technique for reduction of anterior shoulder dislocations was first described by an Australian Emergency Physician in 2003 as a method of reducing shoulder dislocations quickly, effectively, and without the use of analgesia or sedation. Cunningham described placing patients seated upright in a chair and having them shrug their shoulders both superiorly and posteriorly, reducing static obstructing forces from the malpositioned scapula. The patient’s arm is then held to his or her side, fully adducted with the elbow flexed. The physician can then apply gentle traction (the weight of the doctor’s own arm) to the patient’s forearm, while applying deep massage sequentially to the trapezius, the deltoid, and, finally, the biceps at approximately midshaft humerus. This technique is intended to remove dynamic forces (i.e., muscle spasm) that are preventing the humeral head from relocating back into the glenoid. Reduction of the shoulder should occur quickly but without the audible “clunk” noted with other methods. Practitioners considering the use of this technique may want to watch some of the many informational videos available on the internet.

Further commentary on the Cunningham technique is limited, but other authors have described it as quick and effective, though with a greater degree of patient discomfort than initially described by Cunningham; some go as far as to describe individual cases of anterior shoulder dislocations reduced with the Cunningham technique following the use of intravenous narcotic analgesia or intra-articular lidocaine, albeit
in much smaller doses than those used by the authors investigating the use of IA lidocaine. These authors additionally comment on a noted incidence of Bankart lesions with this technique but acknowledge that their small study population makes these findings inconclusive.10

Patients with recurrent ASDs and a history of easy reductions can be instructed to attempt reduction of atraumatic dislocations at home, early after dislocation (muscle spasm increases with time after dislocation). This can often be achieved by having the patient grip the wrist of the dislocated arm with the opposite hand, place the part where hand and wrist meet just below the tibial tuberosity of the ipsilateral leg, and slowly extend the hip. This is best done in a sitting position, leaning backward gently with the neck extended at the same time that the weight of the leg disimpacts the arm from its dislocated position. Shrugging the shoulder at the same time will facilitate reduction.11

This method (the Boss-Holzach-Matter manoeuvre) may take up to ten minutes to be successful but may save a trip to the hospital.

References:

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After discussion of the available options, our patient elected to receive intra-articular lidocaine, as described above. Because of the patient’s age, we decided to use a traction method. A 1 L bag of normal saline was attached to his forearm with tape, and he was placed supine on a gurney with his shoulder just away from the edge and his arm hanging under the weight of the bag. He was given 1 mg of lorazepam to calm him and was left to relax. After about 10 minutes, with gentle scapular manipulation, the shoulder reduced with a soft “clunk.” Post-reduction film confirmed reduction. After discussion regarding his alcohol use, Charlie was discharged with a sling and scheduled for an orthopaedic follow-up.

References:

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