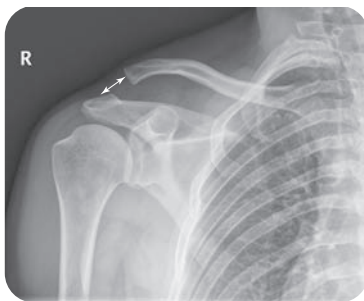


Acromioclavicular Joint Injury

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A 38-year-old man who fell on outstretched hand complains of right shoulder pain, and he has trouble moving his shoulder.

Clinical Presentation

Acromioclavicular (AC) joint injuries are relatively common. They are commonly caused by a downward force applied to the AC joint. In the workplace, they can be caused by following objects and falling onto the outstretched hand. In sports, such as hockey or football, they can be caused by hard checks or tackles. AC injuries occur most often in males in the second decade of life.

Patients with AC joint injuries often have pain and limited range of motion above the shoulder level (90 degrees), with abduction (raising the forearm outward laterally toward the head) being affected more severely than flexion (raising the forearm in front of the body toward the head). Injuries can be classified as follows (Table 32.1):

CLINICAL POINTS

- A fall on an outstretched hand may injure the AC joint.
- Associated fractures of the wrist, collarbone, scapula, and humerus may be present.
- Patients commonly hold the affected arm adducted at the shoulder, flexed at the elbow, and pronated at the wrist.

- Grade 1: point tenderness at the AC joint but no pronounced dislocation
- Grade 2: moderate pain and soreness with a mild step off
- Grade 3: moderate-to-severe pain and soreness but with a more prominent step-off
- Grade 4: severe pain; marked but unusual deformity in which the clavicle is pushed behind the AC joint
- Grade 5: severe pain; end of clavicle punctures muscle above the AC joint, causing a significant bump
- Grade 6: very pronounced and rare cosmetic deformity in which the clavicle is pushed downward

During the patient assessment, it is necessary to perform a thorough evaluation of the patient. The clinician should

- Rule out a fracture to the clavicle, humerus, or scapula.
- Rule out head or cervical trauma. Patients with C5 radiculopathies may complain of pain or numbness that radiates from the cervical region to the lateral shoulder. To help diagnose acute cervical radiculopathy, the examiner should perform a Spurling's test by placing downward (axial) force on the head while rotating the head and tilting it laterally. Patient complaint of radicular symptoms is a positive test. **Note that patients with unstable cervical injuries are not candidates for a Spurling's test.**
- Always check the lower extremities for upper motor neuron signs (spasticity, hyperreflexia, upgoing plantar responses [positive Babinski test]) for all

Table 32.1 Acromioclavicular (AC) Joint Injuries

DEGREE	GRADE	DESCRIPTION	RADIOGRAPHIC APPEARANCE	COMMENTS
Mild	1	Partial tear	Unremarkable	Localized tenderness at AC joint
Moderate	2	Capsule and AC ligament are ruptured	Widening of AC joint with 25%–50% elevation of clavicle	Tenderness with palpable step defect at AC joint
Severe	3	Capsule AC and coracoclavicular (CC) ligaments are disrupted	Complete dislocation of AC joint with AC joint and CC widening Marked displacement	Dropped shoulder Distal end of clavicle is prominent and palpable
Severe	4	Complete disruption	Posterior displacement of the clavicle	
Severe	5	Complete disruption	More than 300% superior displacement of clavicle	
Severe	6	Complete disruption	Subcoracoid displacement of the clavicle	

cervical injuries. The presence of bilateral upper motor neuron signs in a patient with cervical trauma is indicative of spinal cord damage at the cervical region (e.g., severe central cervical stenosis).

- Suspect an accompanying pneumothorax in any patient with direct shoulder trauma who complains of shortness of breath. It is necessary to perform a cardiovascular examination to rule out a pneumothorax, especially with high-impact injuries. Be wary of associated chest trauma. With any bruising of the chest wall and shortness of breath, obtain two-view chest radiographs and rib films of the affected area.
- Rule out rotator cuff tears, which may result in pain-limited abduction, such as AC joint injuries. However, rotator cuff tears are usually accompanied by weak external rotation (outward rotation of the forearm away from the body when the elbow is flexed at 90 degrees). Both conditions may lead to pain-limited extension (i.e., when the hand is placed on the lower back), but with an AC injury, the pain is usually localized to the AC joint.

PATIENT ASSESSMENT

1. Pain and tenderness
2. Limited range of motion
3. Possible associated fracture of the collarbone, scapula, or humerus

Radiographic Evaluation

Standard radiographic views are two anteroposterior (AP) views (one with the arm in internal rotation). The two AP views are helpful in identifying fracture of the humeral head and neck. A “Y” (transscapular) view may be necessary if a shoulder dislocation is suspected. It should be noted that some clinicians prefer an axillary view to rule out a shoulder dislocation. An enhanced view (digital radiograph) is optional (Fig. 32.1).

The standard AP view shows a slight elevation of the clavicle without a pronounced increase in the AC space. This increase is associated with a 25% to 50% elevation of the clavicle. A 25% to 50% elevation of the clavicle is diagnostic of a grade 2 AC joint dislocation (see Table 32.1). An elevated clavicular tip is suspicious for an AC joint dislocation (Fig. 32.2).

Another way to determine whether there is increased AC separation is to take a stress view of the AC joint with the patient holding a 5- to 7-lb weight (Fig. 32.3). However, most grade 1, 2, and 3 injuries are treated conservatively, and some clinicians have begun to question the usefulness of the stress view.

NOT TO BE MISSED

- Shoulder fractures or contusions
- Shoulder dislocations: acute or chronic
- Rotator cuff strains or tears
- Clavicle fractures
- C5 radiculopathy
- Subacromial bursitis
- SLAP lesions
- Upper biceps tendonitis
- Pneumothorax
- Upper lobe pneumonia
- Pancoast tumor (rare)

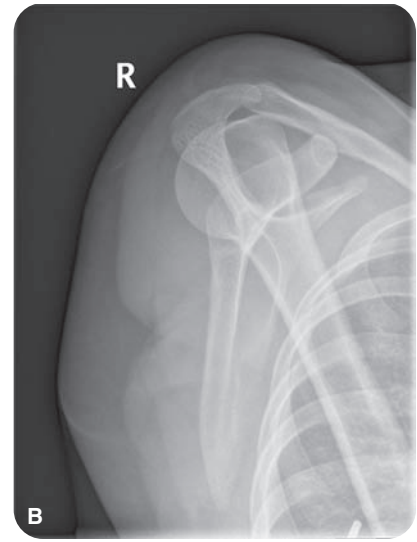


Figure 32.1 Normal (A) anteroposterior and (B) Y-views of the right clavicle.

Treatment

Treatment of AC dislocations, also known as separations, may be conservative or surgical, depending on the situation. Conservative treatment, involving a combination of ice, use of sling or brace, nonsteroidal anti-inflammatory (NSAIDs), and rehabilitation with an experienced physical therapist, is generally adequate for grade 1 and 2 AC joint injuries. Similar therapy is also effective for most grade 3 injuries, although this is more controversial. Refractory cases may require steroid injections. Operative intervention for patients with grade 3 separations remains controversial and is limited to overhead athletes or laborers. Patients can expect to return to activity after 2 (grade 1) to 12 weeks (grade 3), after painless range of motion has been achieved.



Figure 32.2 Grade 2 acromioclavicular (AC) joint separation. This anteroposterior radiograph of the left shoulder in a 27-year-old man complaining of left shoulder pain after a football injury demonstrates elevation of the clavicle in relation to the acromion, consistent with an AC joint separation.

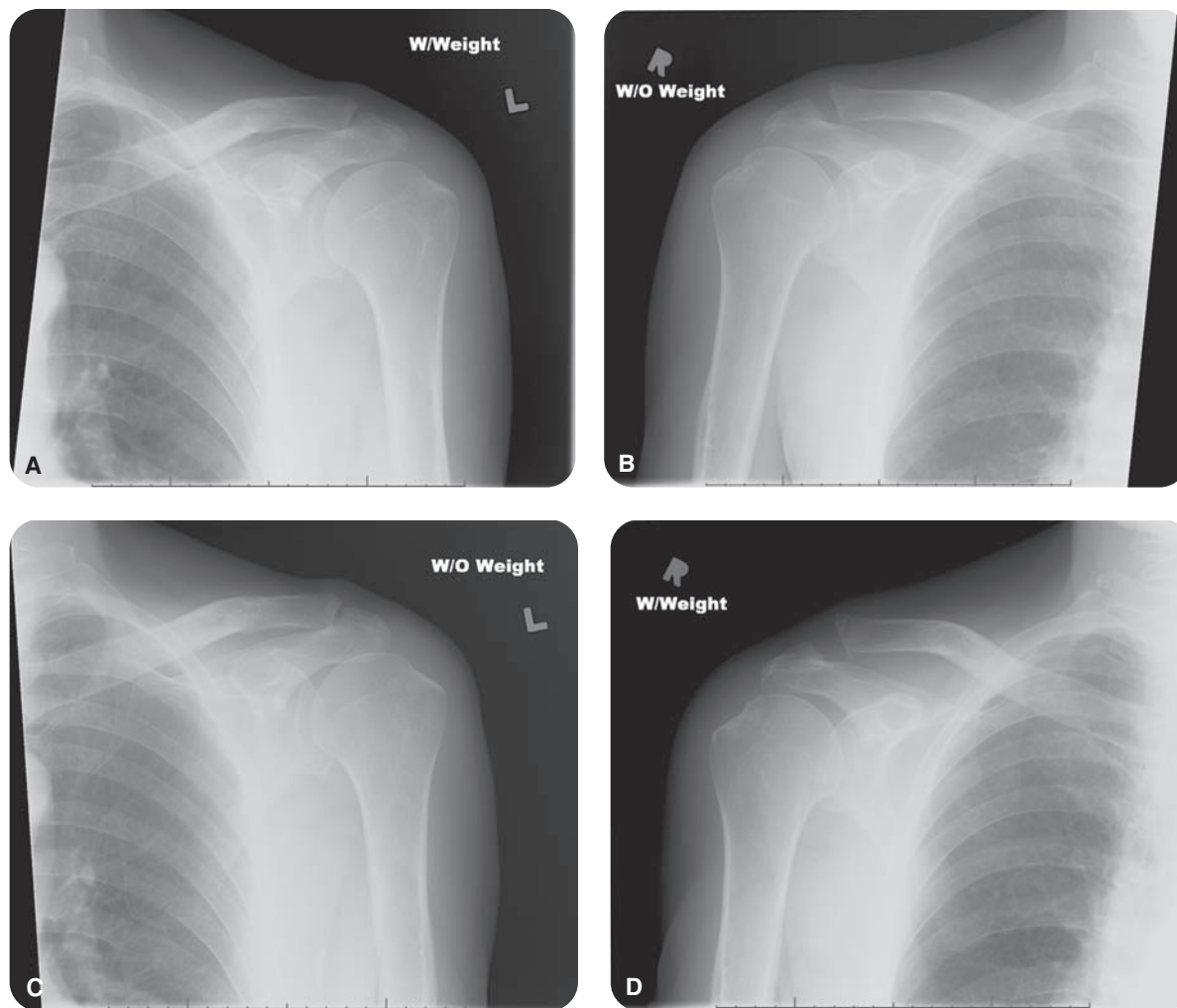


Figure 32.3 Anteroposterior radiographs without and with weights of the bilateral acromioclavicular (AC) joints in a 73-year-old man complaining of right shoulder pain after being hit in the right shoulder by a piece of machinery. **(A and B)** Without weights, the right AC joint is widened compared with the left. **(C and D)** On weight-bearing images, the AC joint separation is accentuated on the right, whereas there is no change on the left.

WHEN TO REFER

- Immediate referral is warranted for:
 - Cases with pronounced deformities (grades 4–6), especially if there is a risk of chest wall trauma
 - Associated neurovascular impairment
 - Associated serious cervical or chest injuries
- Referral is up to the discretion of the primary care physician for patients with grade 1 to 3 injuries.

Surgical treatment is recommended for grades 4 to 6 separations. Operative management has traditionally been performed using a modification of the Weaver–Dunn technique, which involves distal clavicle excision followed by stabilization of the AC joint with the coracoacromial ligament. A recent technique described by Mazzocca and colleagues involves allograft reconstruction of the coracoclavicular ligaments with interference screw fixation. Postoperatively, patients are immobilized in a sling to help eliminate gravity and minimize the downward pull of the scapula and shoulder girdle for at least 6 weeks; this protects the soft tissues while healing occurs. After 6 weeks, the patient may begin active assistive range of motion exercises with physical therapy. At approximately 3 months, a strengthening program may be initiated.

Suggested Readings

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