Multifocal Scapula Fracture
A Case Report and Imaging Review

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Introduction
Coracoid fractures are an uncommon diagnosis, often missed on initial evaluation (DiPaola & Marchetto, 2009; Goss, 1996; Gulec, Kutahya, Goncii, & Toker, 2014; Jettoo, de Kiewiet, & England, 2010; Thomas, Ng, & Bishop, 2010). This finding accounts for about 0.7%–1% of all fractures, and various reports estimate the occurrence at 2%–13% with regard to all scapular fractures (Cole, Freeman, & Dubin, 2013; Gulec et al., 2014; Jettoo et al., 2010). The typical mechanism of injury involves direct trauma to the shoulder girdle (Cole et al., 2013; Jettoo et al., 2010). A fracture of the coracoid is often accompanied by other pathology of the shoulder including rotator cuff tears, acromioclavicular joint dislocations, or concomitant fracture of the shoulder girdle (Gulec et al., 2014). The treatment recommendations vary according to fracture type, be that isolated or involving other injury to the shoulder girdle, as well as patient-specific factors such as age, conditioning of the patient, and comorbid medical conditions (Cole et al., 2013; Gulec et al., 2014). Here is presented a case, with associated imaging findings, of a patient with multifocal scapula fracture involving the coracoid and anterior glenoid rim.

Case Presentation
A 63-year-old, right-hand-dominant woman presented to the orthopaedic clinic nearly 6 weeks after a fall. She reported tripping and attempted to brace herself by reaching out with the right arm, resulting in a fall onto her right side. She reported an immediate onset of pain and inability to move the shoulder. She presented to an outside emergency department and reportedly received a diagnosis of a scapula fracture. Unfortunately, she did not present with any of the accompanying records or images. She was provided a sling and instructed on gentle range-of-motion exercises, but she noted continued pain that precluded her doing these exercises. The reported shoulder swelling and ecchymosis had resolved within 3 weeks, but the pain and limited range of motion remained.

Upon presentation to this orthopaedic provider, the patient noted continued shoulder pain and stiffness. The pain was described as a deep ache, primarily of the anterior shoulder. This worsened with any movement, becoming a global ache and throbbing sensation of the shoulder. She had been diligent about wearing the sling. She reported the intermittent use of ibuprofen, which provided minimal relief. She denied numbness, tingling, or burning distally. No incoordination was reported.

Physical examination revealed an alert, oriented, affect-appropriate female in no apparent distress. She was wearing a sling. She postured with protracted shoulders, holding the right arm tight to her body when sling was removed. There was no gross deformity, swelling, discoloration, or skin tenting. Tenderness to palpation was appreciated anteriorly and, less notably, about the lateral shoulder. She had significantly limited, painful range of motion, both active and passive. She was unable to actively elevate the arm beyond 40°. She was unable to tolerate true strength testing. Elbow and wrist motion was smooth, painless, and symmetrical. She was found to be distally neurovascularly intact. She displayed a positive drop arm, sulcus, and anterior load shift.

Radiographs obtained in the clinic included four views of the right shoulder. These were significant for a displaced fracture of the coracoid process (see Figure 1). With this, it was recommended that the patient obtain a computed tomographic (CT) scan to evaluate extent of displacement while assessing for further involvement of the shoulder girdle (Cole et al., 2013; Goss, 1996; Gulec et al., 2014; Thomas et al., 2010). This scan was in fact revealing for an anterior glenoid rim fracture as well as the previously appreciated coracoid fracture (see Figure 2). The coracoid fracture was considered displaced, measured at 11 mm without appreciable callus formation (see Figure 2).

Management
There is a lack of clarity within the literature as to the specific management of coracoid fractures (Gulec et al., 2014). Several articles discuss successful conservative
management, in the setting of a nondisplaced or minimally displaced fracture, but the treatment protocols vary (Cole et al., 2013; DiPaola & Marchetto, 2009; Gulec et al., 2014).

There is, however, consensus as to the recommendation for open reduction and internal fixation. These generally accepted “rules” include the finding of a displaced fracture (>10 mm), a painful nonunion, the presence of a concomitant scapula fracture, or findings indicative of injury to the superior shoulder suspensory complex (Cole et al., 2013; Gulec et al., 2014; Hill, Jacobson, Anavian, & Cole, 2014; Maquieira, Espinosa, Gerber, & Eid, 2007).

In the case presented here, there was a delay in presentation, significant functional limitation with shoulder weakness, pain and instability, as well as imaging findings of a displaced coracoid fracture and a concomitant glenoid fracture. Given this, the patient was referred to an orthopaedic shoulder surgeon for definitive management.

Discussion

Although rare, coracoid fractures should be considered in the differential for any patient presenting with complaints of shoulder pain resulting from a direct trauma (Cole et al., 2013; DiPaola & Marchetto, 2009; Goss, 1996). Care should be taken in reviewing appropriate imaging so as not to miss this finding, especially if the patient has persistent symptoms. If appreciated, CT scans should be obtained to assess the extent of displacement as well as the possibility of other fractures of the shoulder girdle (Cole et al., 2013; DiPaola & Marchetto, 2009; Gulec et al., 2014; Thomas et al.,...
The patient may also require magnetic resonance imaging to appreciate tears of the rotator cuff.

The advanced practice nurse should be aware of this diagnosis, the appropriate workup, as well as discerning findings that necessitate referral to an orthopaedic surgeon for definitive surgical intervention.

REFERENCES


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