

Fracture of the coracoid process with acute subscapularis tear without shoulder dislocation

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ABSTRACT

Coracoid process fracture is an uncommon injury and can be easily missed. An associated acute subscapularis tear is still rare. Herein, we describe a 61 year old male who fell from a 2 meter height (stair case) and presented with isolated coracoid process fracture with acute subscapularis tear without dislocation of (R) shoulder joint. The plain x-rays, CT scan and MR arthrography comprised the diagnosis. He was operated upon with reattachment of subscapularis to lesser tuberosity and conjoint tendons to pectoralis major. At 6 mo followup he had good range of motion and his MRI revealed complete healing.

Key words: Coracoid process, dislocation, subscapularis tear

MeSH terms: Scapula, dislocation, tendon injuries

INTRODUCTION

Isolated coracoid process fracture is a rare injury.¹ Furthermore, acute subscapularis tear is infrequent condition and often related with trauma rather than degenerative process.² In our case, fracture of the coracoid process was associated with subscapularis tear without any shoulder dislocation. There was only one case report of isolated coracoid process fracture with acute subscapularis tear which was described as an unstable shoulder.¹

CASE REPORT

A 61 year old male driver presented with right shoulder pain due to trauma which occurred 2 days ago. The patient fell from 2 meter height (stair case) with the shoulder in abduction and then hit the ground directly impacting the anterior shoulder. He had no history of shoulder trauma previously or any other shoulder disease. At initial radiologic evaluation, a displaced coracoid process fracture was identified on the axillary lateral view [Figure 1].

Three dimensional computed tomography confirmed the coracoid process fracture. It was displaced about 2.5 cm inferiorly without any other shoulder girdle fracture or dislocation [Figure 2]. It was a midprocess level fracture, a type II injury as per the classification of Eyres *et al.* and Ogawa *et al.*^{3,4} From the coracoid fracture classification point of view, conservative treatment could be sufficient. However, at physical examination, the patient revealed a positive belly press test and internal rotation lag sign, although there was mild pain that limited complete examination. For further evaluation, magnetic resonance arthrography (MRA) of the shoulder was performed and complete and retracted tear of the subscapular tendon was identified [Figure 3]. Sagittal MRA revealed Goutallier grade 1 fatty infiltration indicating acute tear. No evidence of shoulder dislocation such as an anteroinferior labral tear or a Hill-Sachs lesion was seen.



Figure 1: X-ray (R) shoulder joint axillary view showing coracoid process fracture fragment (white arrow)

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During surgery, ruptured full thickness subscapularis tendon was easily identified and reducible to the lesser tuberosity [Figure 4]. We repaired the subscapularis tendon to footprint of lesser tuberosity using two suture anchors. However, as the coracoid process fracture fragment was too small and fragile to fix, we excised the coracoid process bone fragment and reattached the remaining conjoint tendon (short head of bicep brachii, coracobrachialis) and pectoralis minor tendon to the pectoralis major.

Postoperatively, the patient wore internal rotation brace for 6 weeks, after which, the stretching exercises were started. At 3 months after injury, the patient was instructed to follow cuff strengthening exercises for 3 months. 6 month after the surgery, the patient showed a negative belly press test and a negative internal rotation lag sign. He recovered to show normal range of motion and no other symptoms affecting activities of daily living with a constant score of 89. Followup magnetic resonance imaging (MRI) at 6 months

showed healed subscapularis tendon without any atrophic changes [Figure 5].

DISCUSSION

Coracoid process fracture is an uncommon injury, occurring in about 2-5% of all scapular fractures. It is often associated with other shoulder suspensory complex injuries such as acromioclavicular injuries, clavicular fractures, shoulder dislocations, etc.³ It is recommended that a coracoid process fracture at the base of the process may need surgical intervention because it disturbs the coracoclavicular ligament and results in unstable connection between the scapula and the clavicle. On the other hand, coracoid process fractures distal to the coracoclavicular ligament can be treated conservatively.^{3,4}

In our case, isolated coracoid process fracture distal to the coracoclavicular ligament was combined with



Figure 2: Three-dimensional computed tomography reconstruction image showing of displaced coracoid process fracture

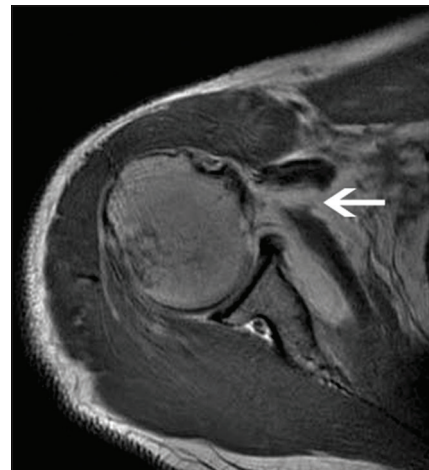


Figure 3: Preoperative magnetic resonance arthrography axial image showing complete subscapularis tear (white arrow)

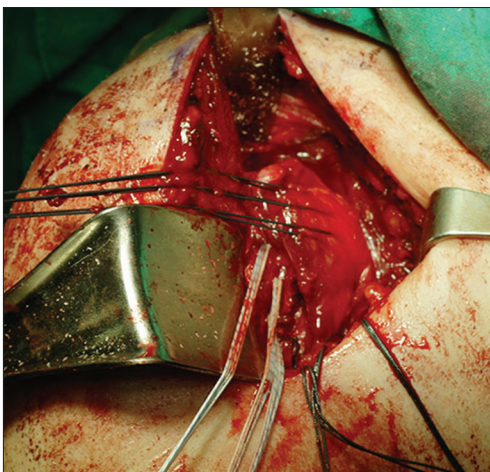


Figure 4: Intraoperative clinical photograph showing ruptured subscapularis tendon and easily reducible to footprint



Figure 5: Postoperative magnetic resonance axial image showing complete healing state of subscapularis (arrow)

acute subscapularis tear without any dislocation. There has been only one similar previous report but it was described as an unstable shoulder.¹ The mechanism of this type of injury has been described as acute shoulder external rotation and extension trauma which results in shoulder dislocation. However, there was no dislocation or instability in our case contrary to the previous report. We hypothesize that there could be impact between the coracoid process and the lesser tuberosity of the humerus, which leads to subscapularis tear but without shoulder dislocation.

Coracoid process fracture classification systems are based on the anatomical location. Surgical interventions are decided based on the site of the fracture.^{3,4} In our case, coracoid process fracture itself could be treated conservatively since the fracture involved midportion of the coracoid process and did not disturb the coracoclavicular ligaments. However, our clinical evaluation suggested weakness of subscapularis. MRA confirmed our suspicion with full thickness subscapularis tear. Therefore, the patient was taken up for surgery for repairing the isolated full thickness subscapularis tear which seemed to be acute.

It is known that acute rotator cuff tears should be treated within 3 weeks and if the treatment is delayed, it is hard to have functional recovery.⁵ During surgery, coracoid process fractured fragment was fragile and hence excised and reattachment of the conjoined tendon and pectoralis minor to the pectoralis major was done, which resulted in a good functional recovery without any deficits.

A coracoid process fracture itself can be neglected, overlooked or misdiagnosed. It is important to see for associated injuries not only within the bony structure but also amongst the surrounding soft tissues such as the rotator cuff and the labrum. Complete and thorough physical examination is, therefore, essential in these injuries. If proper diagnosis and appropriate treatment is not promptly initiated then full recovery of shoulder function becomes difficult. MRI is beneficial so that we should not miss associated soft tissue injuries along with coracoid fracture. Hence we recommend using MRI or MRA without hesitation for coracoid process fractures with internal rotation weakness and hypothesize new collision type injury between lesser tuberosity and coracoid process in high energy fall down trauma.

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