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Bilateral Unfused Coracoid Process
: Report of a Case

The coracoid process is a part of the scapula and plays an important role in shoulder function. The present case demonstrates bilateral separation of the coracoid processes from the scapular bodies. The cause of this condition was thought to be a failure of fusion of the ossification centers of the coracoid processes with the scapular bodies. Bilateral unfused coracoid processes was identified incidentally in a patient with recurrent dislocation in the left shoulder. However, history of antecedent trauma to the coradoid region was not found. It would be important to distinguish this condition from fracture or nonunion of the coracoid process.

Key Words : *Shoulder joint; Scapula, coracoid process; Shoulder dislocation*

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INTRODUCTION

Congenital anomalies of the coracoid process of the scapula are rare. Many of them are clinically not significant and do not cause serious disability. They are usually regarded as incidental findings. Several anomalies of the coracoid process have been described in literature. As many as one percent of the population have coracoclavicular joint or bar (1, 2), which is an abnormal connection between the coracoid and clavicle. Other reports about anomalies of the coracoid process include coracoid band (3), coracostosternale vestigiale bone (4, 5), the costovertebral bone (6), and the double acromion and coracoid process (5, 7). We report a case of bilateral unfused coracoid process in a patient with unilateral recurrent shoulder dislocation of the shoulder.

CASE REPORT

In May 1993 we examined a thirty-one year old construction worker who had a painful instability of his left shoulder. He had had a history of recurrent shoulder dislocations over the previous five years. The first dislocation occurred while nailing on a ceiling in a position of external rotation and abduction of the left shoulder. The subsequent dislocations occurred without any trauma or violence during various activities such as putting on his shirt in a hurry, serving in a recreational volleyball game, or just shifting his own trunk to a certain position in daily activities. He required manipulation for reduction in the initial episode, but later adopted a particular maneuver on his own for reduction. He had avoided certain activities and sports which provoked feelings of instability in the left shoulder. Over the last three months before coming to us, he had perceived pain in his left shoulder even during daily activities.

On examination, we could document the passive translation between the humeral head and glenoid fossa of grade III using the load and shift test (8), and reproduce the impending feeling of anterior dislocation with the apprehension test. Otherwise, he demonstrated a normal appearance of the musculature around both shoulder girdles and normal range of motion of the glenohumeral and scapulothoracic joints. And there was no evidence of generalized joint laxity. The anteroposterior radiograph showed the concentrically reduced humeral head within each glenoid and normal distances between the coracoid and clavicle on each side (Fig. 1). Also seen was an arthritic change on the left glenohumeral joint, which were slight flattening of the medial profile of the humeral head, sharp edges of the inferior part of the articular

Fig. 1. The anteroposterior radiograph shows normal distances between the coracoid and clavicle on each side. Each humeral head is concentrically reduced within the glenoid. An arthritic change on the left glenohumeral joint, which were a slight flattening of the medial profile of the humeral head, sharp edges of the inferior part of the articular surface, and a small loose body.

surface, and a small loose body (Fig. 1). Both axillary lateral view of the shoulder showed the coracoid process separated from the scapular body on each side with round, smooth, and sclerotic margins (Fig. 2). No other abnormal findings were noted in the patient's skeletal system.

His obstetric history was not contributory : an uncomplicated pregnancy and a normal spontaneous full-term vaginal delivery. There were no known relevant childhood illness or injuries. He had a history of pleuropneumonectomy of the left lung for tuberculous pleurisy and empyema at twenty-nine years of age.

The patient underwent an arthroscopic Bankart's operation on the left shoulder due to repetitive dislocation, pain and severe discomfort during daily activities. On arthroscopic finding, Hill Sach's and Bankart lesions were identified.

On three year follow-up after the operation, the left shoulder showed excellent results with 95 points on Neer's criteria (9).

DISCUSSION

The coracoid process has two and sometimes three centers of ossification (10). The first appears during the first year of life in the center of the coracoid process. The second arises at around age ten and appears at the base of the coracoid process (subcoracoid center). And third inconstant ossific center may appear at the tip of the coracoid process during puberty. These centers unite with the scapular body at around age fifteen (10). The present case demonstrates the bilaterally unfused coracoid processes to the scapular body, suggesting the fusion failure of the ossification centers of the coracoid process to the scapular body.

It is important to distinguish this condition from a fracture or nonunion of the coracoid process. Nonunion of a fractured coracoid process after dislocation of the shoulder has been described by Garcia-Elias and Salo

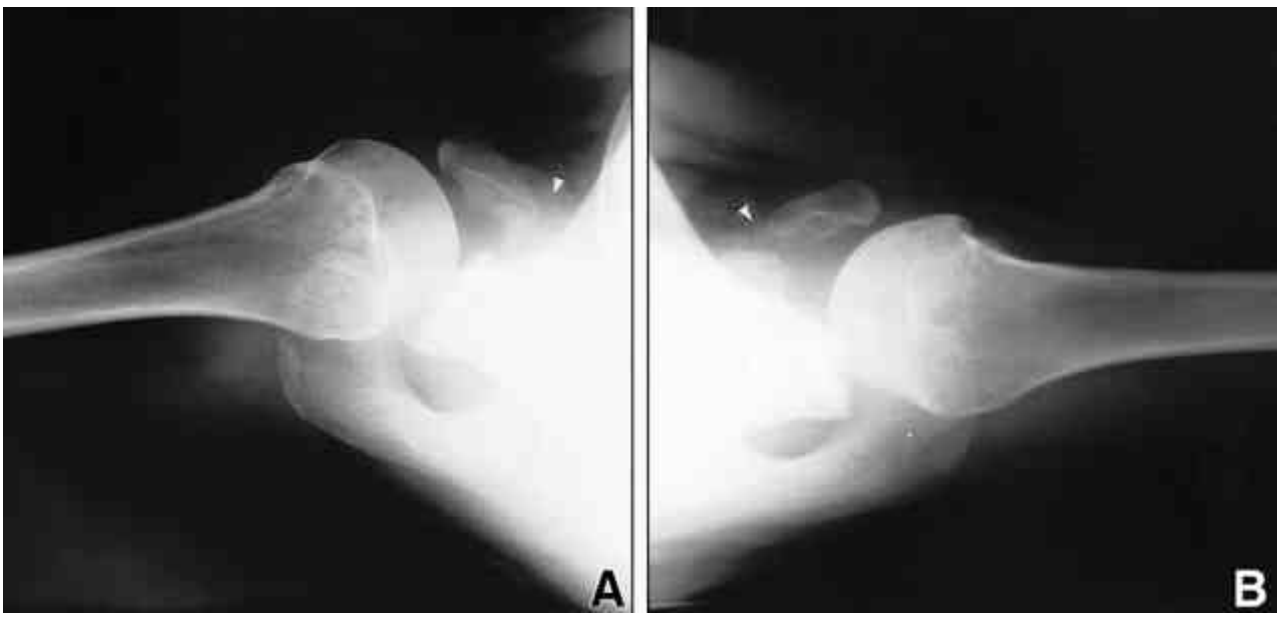

Fig. 2. The axillary lateral view of both shoulders show definite shadow of the coracoid processes separated from the scapular bodies on each sides with round and smooth margin (arrowheads). A, Right; B, Left.

(11). They did not recognize the fracture initially and allowed early mobilization, therefore causing the fracture widely separated and to heal improperly resulting in a painful pseudoarthrosis. They believed that such a condition may not be as rare as generally supposed, and emphasized the importance of careful examination in patients with shoulder dislocation. In the present case, however, our diagnosis was the fusion failure rather than fracture or nonunion on the basis of the following four findings. The first finding favoring the fusion failure was the bilaterality of the lesion. The second was no remarkable history of a significant trauma causing a dislocation of the shoulder, childhood injury, or repetitive sports activity. The third was the fact that there was no pain in the coracoid region, and the fourth was the round and smooth borders of both ends of the coracoid and scapular body on the radiographs.

The coracoid is an important part of the attachment of the limb flexion muscles and ligaments, especially those stabilizing the clavicle (12). Stability of the coracoid is supplied by the coracoacromial and coracoclavicular ligaments superiorly and by the pectoralis minor and the conjoined tendon of the biceps short head and coracobrachialis muscle inferiorly. In spite of the bilateral fusion failure, the normal coracoclavicular distances, muscle contours and powers on each side indicate intact ligaments and muscles attached to the coracoid processes in this patient. Therefore, we thought that this case was an incidental finding which is not related to the instability of the left shoulder and the bilateral fusion failure of the coracoid processes caused no interference to shoulder function.

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