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Anterosuperior Dislocation of the Shoulder Joint in an Older Patient with Parkinson's Disease

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An 83-year-old woman, subsequently diagnosed with Parkinson's disease, fell on her right shoulder. Radiographs showed the humeral head dislocated anterosuperiorly. The supraspinatus tendon was massively disrupted and judged irreparable. The subscapularis tendon was repaired, however re-dislocation of the humeral head was confirmed after the surgery but further treatment was rejected as she was almost pain free and had a low activity level. The patient was followed up for one year after surgery and her shoulder became almost pain-free, but range of motion with active elevation was limited. In such cases a goal of absence or reduction of pain rather than real repair might be considered appropriate.

Traumatic dislocations of the shoulder joint are usually described as anteroinferior dislocations. Anterosuperior dislocations are extremely rare, since the coracoacromial arch prevents the humeral head from translating to the superior direction anatomically. We report a rare case of traumatic anterosuperior shoulder dislocation in an older patient with Parkinson's disease and discuss its clinical manifestations.

CLINICAL CASE

An 83-year-old woman fell on her right shoulder. Five days after injury, she was referred to our hospital as the pain had not abated. Her medical history was not remarkable, but she had rigidity in the general joints, bradykinesia, and tremor and spent her days lying in bed or in a wheel-chair. We consulted a neurologist who diagnosed Parkinson's disease, however she was not a candidate for medication as it was believed the side effects of medication would outweigh the benefits especially considering her reduced activity levels.

On physical examination, the anterior protrusion of the humeral head was observed subcutaneously (Figure 1). Range of motion of the shoulder could not be examined due to severe pain. Radiographs showed the humeral head dislocated anterosuperiorly (Figure 2). Computed Tomography (CT) scan revealed an avulsion fracture of the lesser tuberosity with the fragments located superiorly (Figure 3). It was impossible to obtain accurate information from Magnetic Resonance Imaging (MRI) because of severe pain and tremor.

Manual reduction was easily performed by inferior traction of the arm and compression of the humeral head, however the humeral head immediately migrated to an anterosuperior direction. Surgical treatment was performed to stabilize the shoulder joint. Under general anesthesia, the humeral head was stabilized in its anatomical position and recurrence of shoulder dislocation was not observed. Through a deltopectral approach, the coracoacromial

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ligament was loosened and the joint capsule disrupted. Avulsed fragment of the lesser tuberosity attached to the upper component of the subscapularis tendon was observed in the glenohumeral joint. The lower component of the subscapularis tendon was attached to the proximal humerus. The supraspinatus tendon was massively disrupted and the end of the tendon could not be determined, and was judged irreparable. The avulsed fragment of the lesser tuberosity was reattached using metal suture anchors and the upper and lower component of the subscapularis tendon were sutured together. Postoperatively, the right arm was immobilized by an abduction pillow for two weeks. However, two weeks after the surgery, re-dislocation of the humeral head was confirmed by radiograph. The dislocation could be reduced if the arm was abducted horizontally, therefore she was put a 90 degree abduction brace on the right shoulder was suggested to maintain the reduction position. However, the patient rejected it because pain was not severe even though the shoulder was dislocated anterosuperiorly. We also suggested re-operation to obtain reduction of the right shoulder and medication for Parkinson's disease, however she and her family would not agree to additional surgery or medication because the pain was not severe and her activity level was low. The patient was followed up for one year after surgery and her shoulder became almost pain-free, but range of motion with active flexion and adduction was limited to 30 degrees.

Figure1 The shoulder is dislocated anterosuperiorly.

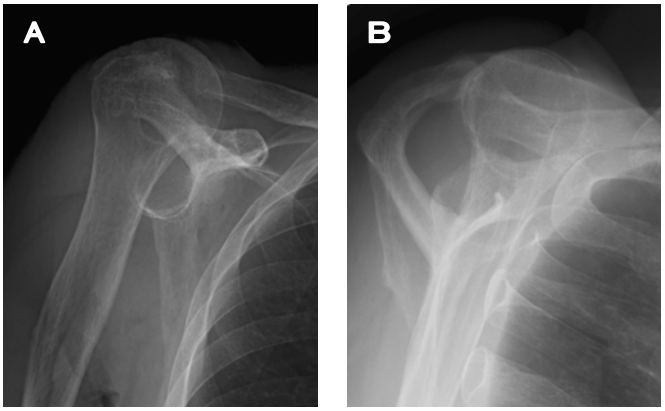

Figure2 Anterior-posterior (A) and lateral (B) view radiograph show the humeral head dislocated anterosuperiorly.

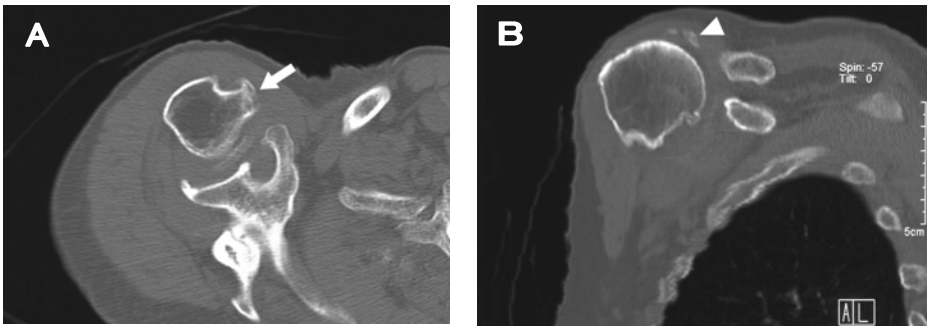

Figure3 CT confirming the lesser tuberosity deficit (arrow) in axial view (A) and the fragments (arrow head) displaced superiorly in the coronal view (B).

DISCUSSION

Traumatic anterosuperior dislocation of the shoulder is a very rare condition. Anterosuperior subluxation of the shoulder joint has been reported as a complication of failed rotator cuff surgeries with a combination of rotator cuff insufficiency including the subscapularis tear, loss of the coracoacromial arch, and anterior deltoid compromise[1,2]. Ogawa et al. reported two cases of anterosuperior subluxation caused by deltoid contracture and a fibrous band forming in the posterior portion of the deltoid converting the weight of the arm into a force that led to subluxation of the humeral head in the anterosuperior direction[3]. Galatz et al. have reported postoperative anterosuperior subluxation in massive rotator cuff insufficiency[2]. In the present case, cause of anterosuperior dislocation was hypothesized to be deficiency of the supraspinatus and subscapularis muscles, which are the supportive musculature associated with shoulder joint stability. It is possible the patient had a pre-existing supraspinatus tendon tear and a subscapularis tendon deficit from the avulsion fracture of the lesser tuberosity. Deficiency of the supraspinatus muscles is associated with increasing upward migration of the humeral head[7]. A study using a cadaver model suggested that the subscapularis muscles play an important role in limiting superior translation[4] and another recent cadaver study showed that the subscapularis muscles limit anterior humeral head translation in anterior dislocation loading[8]. Thus, we speculated that shoulder dislocation developed in an anterosuperior direction since the two supporting musculatures were insufficient.

We also considered anterosuperior re-dislocation after surgical treatment in the present case to be a result of the patient's Parkinson's disease. The main feature of Parkinson's disease is muscle hypertonicity, which may underlie functional impairments of posture[9]. The hypertonicity of the deltoid due to the disease might have forced the humeral head to migrate superiorly, just as the fibrous band in the deltoid by multiple intramuscular injections causes anterosuperior subluxation of the humeral head[3]. Complete repair of the rotator cuff including the supraspinatus and subscapularis might have produced better results in the present patient by reconstructing the ruptured tendons using patch grafts of fascias, tendons or artificial materials.

In older people, rotator cuff tear is one of the most common complications of shoulder dislocations[5,6]. Simank et al. commented that the frequency of rotator cuff tears was 100% in patients over 70 years of age in symptomatic shoulders after dislocation[5]. Shoulder dislocations in older people therefore have complex problems and present many treatment

challenges. In our present case, the cause of re-dislocation is considered to be a result of the deficit of the supraspinatus tendon, the supportive musculature. However, it might not be necessary to reduce shoulder dislocation and repair ruptured rotator cuff in older patients, especially if patients have hypertonicity due to Parkinson's disease. The activity level of the patient should also be considered in older patients with shoulder dislocations because the pain due to the joint dislocation reduces to a tolerable level within several days without reduction if the activity level of the patient is relatively low. In such patients, a goal of an absence or reduction of pain rather than real repair might be more appropriate.

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