



Combined Avulsion Fracture of the Greater and Lesser Tuberosity of Humerus

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Abstract:

We report a case of an uncommon injury: a combined avulsion fracture of the greater and lesser tuberosity in the proximal humerus. Standard radiographs permitted the diagnosis and CT scans confirmed the absence of a shoulder dislocation. The fracture of the tubercles was treated by internal fixation. At 24 months of follow-up, the patient was able to walk without pain and radiographic result was excellent.

Key words: Fracture Fixation, Lesser tuberosity, Humerus, Fractures, Pain, Shoulder Dislocation.

Introduction

Isolated avulsion fractures of both tuberosity of the proximal humerus are extremely rare. They are often seen concomitantly with posterior or anterior shoulder dislocations. The association of the both lesions has been reported in one case in the literature in 2007 [1]. We report a patient who developed avulsion fracture of both greater and lesser humeral tuberosity. To the best of our knowledge, this is one of the few published case report of such an entity.

Case Report

KH, a 50 year old-woman, was admitted to the emergency department for management of blunt trauma to the left shoulder after fall from stairs. The patient complained of pain with functional impairment of the left shoulder. On examination tenderness was noticed in anterolateral aspect of

the shoulder. The radiological assessment of the shoulder showed an avulsion fracture of the greater and lesser tuberosity of the humerus [Fig.1]. An emergency CT scan of the shoulder, confirmed the avulsion of both tuberosity in the absence of a shoulder dislocation [Fig.2].

The patient was operated next day by deltopectoral approach. On surgical exploration, lesser tuberosity was moved in and attached to the subscapularis tendon along with correction of displaced greater tuberosity and repositioning of long head of the biceps tendon. Both the tuberosities were easily fixed using a malleolar screws [Fig.3]. Postoperatively, immobilization of the shoulder was done for two weeks. His shoulder was progressively mobilized without any recurrence of pain over a period of 6 weeks, followed by a rehabilitation of the shoulder for six weeks. After 6 months, the

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radiographic inspection was satisfactory [Fig.4] and the patient had resumed all her activities without any movement restriction. At last follow-up at 15 months, the shoulder was stable and painless with comparable mobility to contralateral side. At 15 months postoperatively, the patient was symptom free with stable shoulder and comparable mobility to contralateral side.

Discussion

Fractures of the greater tuberosity of the proximal humerus has been reported in numerous publications. In contrast, lesser tuberosity fractures are rare [2-4]. After a review of the literature the combination of the two lesions were found in only one publication [1]. The mechanism of occurrence of this association is unclear. Our patient was unable to describe the exact position and the movement which, at the time of the accident could have caused the injury. The mechanism lesser tuberosity humeral fracture as described in literature appears to be combined, direct trauma to the top of the shoulder resulting in classical greater tuberosity avulsion followed by forced external rotation of the shoulder in a position of abduction [5,6]. In this position, the subscapularis tendon is at maximum voltage. Fractures of the greater tuberosity are accessible by standard diagnostic radiographs shoulder. However, the lesser tuberosity fractures are rarely seen on the radiographs and may go unnoticed by superimposing the detached fragment and humeral epiphysis [6,7]. CT scan helps to confirm the diagnosis and eliminate the possibility of an associated shoulder dislocation [8,9]. Collier *et al.* reported fractures of the lesser tuberosity of the humerus associated with a dislocation or rupture of the tendon of the long head of the biceps [10]. Treatment depends on the movement and the importance of fragments. Displaced large fragment fractures require reduction and internal fixation usually with screw [11]. The same information is valid for the greater tuberosity fractures.



Fig.1: Preoperative shoulder radiographs showing an avulsion fracture of the both humeral tuberosity.

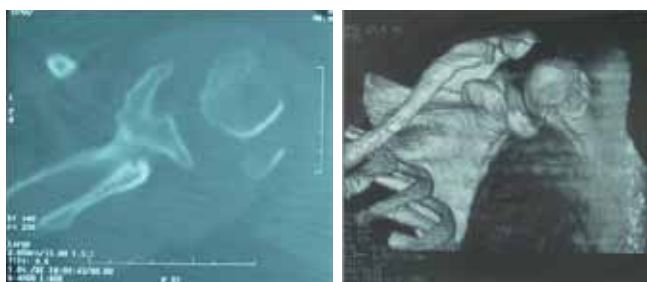


Fig.2: CT scan of the shoulder showing avulsion of the both tuberosity with good glenohumeral congruence.



Fig.3: Immediate post-operative shoulder radiographs showing fixation of both tuberosity by malleolar screws.

Conclusion

The combination of an avulsion fracture of greater tuberosity and lesser tuberosity of the proximal humerus is an exceptional lesion since we found no cases described in the literature. The treatment is essentially surgical depending on the size and displacement of fragments and associated injuries.

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Fig.4: Shoulder radiographs at 6 months follow-up.