

Nonunion of Lesser Tuberosity Fracture in A 16 Years Old Teenager

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ABSTRACT

We report a case of a 16 years old adolescent who sustain a traffic accident with direct trauma in his left shoulder. He suffers an isolated avulsion of the lesser tuberosity of humerus. The lesion was missed and lead to a nonunion of the fragment. The interest of this report is to analyze this rare case his diagnosis, treatment and evolution.

Keywords: Lesser Tuberosity Fracture, Isolated Avulsion, Lesser Tuberosity Nonunion, Teenager Fracture. Case Report

Introduction

While the fracture of the lesser tuberosity of the humerus is frequently associated with posterior dislocation of the shoulder, its isolated fracture is extremely infrequent and frequently missed. The subscapularis muscle under considerable tension may avulse the lesser tuberosity onto which it inserts. nonunion of the lesser tuberosity is rare, especially in adolescents.

After a thorough review of the world literature (PubMed, Embase, Cochrane), we found n re-ported cases of delayed diagnosis or treatment of this injury (Neogi *et al.*, 2013; Vezeridis *et al.*, 2011) and n reported cases of acute isolated fractures of the lesser tuberosity (Teixeira *et al.*, 2012; Tosun and Kesemenli, 2011; Ohzono *et al.*, 2012; Provance AJ and Polousky, 2010; Dhawan *et al.*, 2008; Hepp *et al.*, 2008; Gruson *et al.*, 2008; Alistair Pace, 2008; Levine *et al.*, 2005; Hinov *et al.*, 2002; Kanso and Bricout, 1998; Ogawa and Takahashi, 1997; Caniggia *et al.*, 1996; Van Laarhoven *et al.*, 1995; Paschal *et al.*, 1995; Berbig *et al.*, 1994; Le Huec *et al.*, 1994; Kuroda *et al.*, 1993; Kunkel and Monesmith, 1993; Earwaker *et al.*, 1990; Berbig *et al.*, 1994).

However we could not find any report of nonunion of an avulsed lesser tuberosity not related to posterior shoulder dislocation.

We report such a case and comment on the diagnosis and treatment of this condition.

The aim of this manuscript is to bring attention to the importance of a correct diagnosis and treatment for this injury.

Case Report

On February of 2011 R.R a 16 years old male sustain a traffic accident while driving a motorcycle and bumping against a car, suffering a direct trauma in his left shoulder.

He was immediately assisted in a peripheral hospital where the AP and Lateral roentgenogram showed the fracture of the humeral lesser tuberosity (Fig. 1).



Figure 1: Rx Showed Humeral Lesser Tuberosity Fracture

He was immobilized in a sling and swath position for 3 weeks and then he began a rehabilitation plan with no further controls.

Four-month latter was admitted in the Institute and department of Orthopedics and Traumatology complaining of pain and functional limitation. Physical examination revealed no soft tissue swelling or bruise. the patient suffered of pain in the anteromedial aspect of the left shoulder. The active range of forward flexor was 110 degrees, abduction was 100 degrees, external rotation was normal whereas the internal rotation was 10°. Active extension and adduction was limited by pain to 10°. The passive range of extension and adduction were both 30. The strength of the affected shoulder was decreased in all the ranges of motion. Regarding preoperative clinical evaluation, the visual analog scale score was 5 points. DASH score was 57.5/100. Distal neurologic and vascular exam disclosed no abnormalities.

AP and lateral X. rays showed the gleno- humeral joint in normal position, thought the lesser tuberosity was displaced medially and anteriorly.

CT scans confirm the X. rays findings providing accurate information (Fig. 2 and Fig. 3) of the lesion and leading to the indication of open reduction and internal fixation of the fragment.

As the patient was a minor consent for the surgery was requested from his legal tutors.



Figure 2: CT Scan Shows Non Union Fracture



Figure 3: CT Scan Shows Non Union Fracture

This was performed using an anterior delto-pectoral approach, the fragment was identified, reduced and fixed using 2 cancellous 4.0 screws one of them supported with a washer (Fig. 4 and Fig. 5).



Figure 4: Fracture Fixed With 2 Cancellous Screws

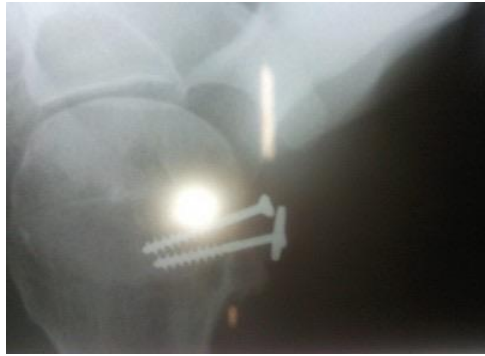


Figure 5: Rx Postoperative Control

After closure of the wound the upper limb was immobilized in the sling and swath position, during 4 weeks.

Thereafter a rehabilitation program was instituted with progressive motion of the shoulder during two further months.

At the latest follow up 2 years after surgery the patient recover full range of motion and strength of his upper limb.

Discussion

The interest of this report is to analyze a rare lesion and its evolution to a nonunion fracture with functional limitation.

The displacement of 1cm of the lesser tuberosity fragment from its fracture bed and the fact that the patient did not seek for further assistance and continue to move his shoulder probably were the reasons of nonunion in this case.

The clinical signs were pain and weakness of internal rotation four months after injury in a teenager with high demand of his upper limb mainly in sport activities.

Open reduction and internal fixation of the lesser tuberosity was performed and led to a very good outcome.

In case like this, the diagnosis should be precocious leading to surgical treatment, in order to avoid mal union and nonunion. Reduction and internal fixation should be done immediately after the diagnosis of a displaced lesser tuberosity fracture to avoid these complications

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