



## International Journal of Case Reports in Orthopaedics

E-ISSN: 2707-8353

P-ISSN: 2707-8345

IJCRO 2019; 1(1): 01-02

Received: 02-11-2018

Accepted: 05-12-2018

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## Surgical neck humerus fracture- A case report

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**DOI:** <https://doi.org/10.22271/27078345.2019.v1.i1a.1>

### Abstract

Humerus fractures are reported to be the third most common osteoporotic fracture. There is an increasing incidence of humerus fracture rates. We reported a case of surgical neck humerus fracture in 46 year old male patients which was managed conservatively with a broad arm sling.

**Keywords:** humerus fractures, arm sling, osteoporotic

### Introduction

There is an increasing incidence of humerus fracture rates and a decline in hip fractures in patients over 50 years of age. Humerus fractures are reported to be the third most common osteoporotic fracture excluding spine and the second most common upper extremity fragility fracture. It is reported that 73% occur in females <sup>[1]</sup>.

In a recent prospective study of 5 147 women with osteoporotic fractures, undisplaced humerus fractures comprised 17.5% and were the third most frequent fracture after distal radius and vertebral fractures. Patients over the age of 70 years showed a decrease in the incidence of distal radius and vertebral fractures, but not proximal humerus fractures <sup>[2]</sup>.

Association between anterior glenohumeral dislocation and greater tuberosity fractures has been reported in literature. Greater tuberosity fractures have been noted in as high as 10-30% of shoulder dislocations <sup>[3]</sup>.

Management of this common injury is often challenging and controversial. Conventionally, there was a consensus that minimally displaced fractures, poor surgical candidates, and low demand patients should be treated conservatively while displaced, comminuted, or angulated fractures in good surgical candidates should be treated with plating, percutaneous techniques, intramedullary nailing or even arthroplasty. However, the more recent PROFOTHER clinical trial) questioned this conventional consensus, stating that there is no clear and rigid dichotomy between surgical and non-surgical indications and that the choice of surgical intervention needs to be considered more carefully <sup>[4]</sup>. The present paper reported a case of surgical neck humerus fracture reported in 46 year old male.

### Case Report

A 46 year old male visited the orthopaedic department with severe pain in right humerus bone since 4 days. History revealed that patient met with accident 4 days back by hitting with bike. Patient got trauma to right humerus bone. On examination, the right greater tuberosity region was painful with palpation with minimal swelling and full range of motion despite pain at extremes of motion. Patient was subjected to AP and lateral humerus radiograph. Patient was also subjected to CT scan to confirm the fracture if any.

Both radiographs and CT scan confirmed fracture of surgical neck of the right humerus. In addition to it, there were also undisplaced fractures of both tuberosities in addition to evidence of a partial tear at the teres major insertion and a low-grade strain of the infraspinatus muscle origin.

There was no evidence of an underlying pathological bone lesion. Supraspinatus, subscapularis, biceps, teres minor and pectoralis were intact. A conservative management was done with a broad arm sling. Patient was advised physiotherapy and followed up after one month. On follow-up there was no displacement of fracture. The patient had full painless range of motion. The arm sling was removed. Patient had favourable prognosis.

### Discussion

The treatment of displaced 2-part surgical neck fractures remains controversial. The most commonly used fixation option for 2-part fractures requiring surgical treatment is a locking plate and screw construct, although many complications related to this option have been

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reported throughout the literature. Complications associated with locking plates and an open approach for the treatment of proximal humeral fractures include humeral head necrosis (up to 35%), screw cutout (up to 57%) with potential glenoid erosion, and fracture nonunion<sup>[5]</sup>.

Hersche and Gerber<sup>[6]</sup> reported about seven cases of humeral neck fractures with 2 part anterior shoulder dislocation and six of them were treated primarily with closed reduction in which avascular necrosis has been developed in five of them. One case has been diagnosed using repeated shoulder radiographs and open reduction was tried primarily with later development of humeral head AVN too. The authors recommended proper assessment of all cases of greater tuberosity fracture dislocation of the shoulder before any trial for closed reduction, for the presence of any associated neck fracture. We reported a case of surgical neck humeral fracture reported in 46 years old male.

Strength training can place considerable stress across the shoulder by essentially causing the shoulder joint to become a weight bearing joint. This can result in a myriad of overuse complaints including strains of all the major muscle groups around the shoulder, including the deltoid and the rotator cuff. Injuries sustained during resistance training are mostly mild strains that resolve conservatively with appropriate rest. In more severe cases there is even a radiographic evidence of distal clavicular osteolysis<sup>[7]</sup>. Fractures around the shoulder due to strength training also have been reported. A stress fracture at the bony insertion of pectoralis major muscle has been reported in a weightlifter which was treated conservatively with an uneventful recovery<sup>[8]</sup>.

In present case, as there was not significant displacement, we used broad arm sling. Shoulder dislocations associated with strength-training exercises have also been reported in the literature. Also an associated glenoid fracture was reported. Tendon ruptures of the pectoralis major especially as a result of bench pressing, biceps, and triceps is a recognizable complication of improper heavy weight lifting technique and has been described.

Heggland *et al.*<sup>[9]</sup> performed review of 41 patients who underwent placement of a third generation IMN to treat a displaced 2-part surgical neck fracture (AO/OTA type 11A3). The mean age at surgery was 57 years (range, 17-84 years). Preoperatively, 3 types of surgical neck fractures were observed: with valgus head deformity (Type A = 8 cases), shaft translation without head deformity (Type B = 19 cases), or with varus head deformity (Type C = 14 cases). At final follow-up, all fractures went on to union, and the mean humeral neck-shaft angle was  $132^{\circ} \pm 5^{\circ}$ . We observed 2 malunions and 1 case of partial humeral head avascular necrosis. No cases underwent screw migration or intra-articular penetration. At last review, mean active forward elevation was  $146^{\circ}$  (range,  $90^{\circ}$ - $180^{\circ}$ ) and mean external rotation was  $50^{\circ}$  (range,  $20^{\circ}$ - $80^{\circ}$ ).

## Conclusion

Humerous fracture is quite common due to trauma. Careful assessment of fracture site and type of humeral fracture helps in management of cases. Broad arm sling in undisplaced surgical head humeral fracture with physiotherapy is helpful.

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