CASE REPORT

Outcome of Plating Versus Wiring in Surgical Management of Proximal Humerus Fractures

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Abstract

Approximately, 4-5% of total fractures are contributed by proximal humerus fractures. They contribute to about 40% of all humerus fracture. Fracture of proximal humerus also happen to be the 2nd most common fracture after radius fracture in elderly population and 3rd most common fracture after hip fracture and radius fracture, overall. Even minor trauma can lead to proximal humerus fracture in case of elderly population due to osteoporosis, whereas high impact trauma is most frequent culprit in young population. This might be the reason why fracture dislocation is common in young population. Here we report 2 cases of proximal fracture of humerus, one treated with wiring and other with plating.

***Keywords**: Proximal fracture humerus, plating, wiring*

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Introduction

Approximately, 4-5% of total fractures are contributed by proximal humerus fractures. They contribute to about 40% of all humerus fractures. [1] Fracture of proximal humerus also happen to be the 2nd most common fracture after radius fracture in elderly population and 3rd most common fracture after hip fracture and radius fracture, overall. [2-5] Even minor trauma can lead to proximal humerus fracture in case of elderly population due to osteoporosis, whereas high impact trauma is most frequent culprit in young population. This might be the reason why fracture dislocation is common in young population [6] In elderly people, management of proximal humerus fracture is difficult owing to osteoporosis. Fixation of bone, in particular is challenging and is associated with high complication rates. [6]

Neer criterion is used to classify proximal humerus fractures. Its treatment is governed by level of dislodgement of fragments of humerus [7] Most of the proximal fractures of humerus are minimally displaced and stable, which are managed by conservative techniques [5]

Mixed results have been obtained with outcomes of surgical treatment of displaced fracture segments >1 cm, significant valgus impaction, amgulation of articular surface>45^0, etc. [8, 9] A plethora of surgical techniques are available for treatment of proximal fracture of humerus. These include K-wire fixation through percutaneous technique, tension band wiring, open reduction and internal fixation, T plate fixation, intramedullary nails, locking plate fixation, etc. [10] Many hitches are encountered with surgical techniques like nonunion, avascular necrosis, rotator cuff impingement syndrome, backing out of screws and plates. [11]

Case Report- 1

A 49 year old male came to our Outpatient department, with complaint of pain in the right shoulder. He gave a history of fall on right shoulder. He was diagnosed with proximal fracture of humerus of right side. The patient was admitted to in patient department of orthopedic. Patient had C2 type of proximal humerus according to Neer classification on basis of radiography and computed tomography. Patient was operated for open reduction and internal fixation with reconstruction plate and screws as shown in figure 1. After discharge, patient was given physiotherapy gradually post which, he achieved range of motion of right

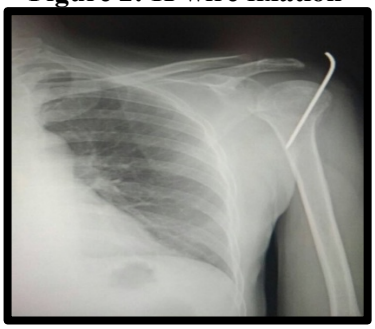
shoulder was 80^0, 80^0, 10^0 and 80^0 for flexion, abduction, external rotation and internal rotation, respectively. There was mild limitation in movements initially but it did not hamper his daily activities.

Figures 1: Reconstruction plate fixation

Case Report 2

A 56 year old male came to theemergency room with pain in right shoulder. He gave history of fall on left shoulder after fall from moving vehicle. After initial clinical assessment, he was advised radiological examination in the form of X-ray left shoulder. It was confirmed on X-ray, as proximal fracture of right humerus. He was admitted to our in-patient department and computed tomography scan was done, which showed C2 type of proximal fracture of humerus. He was operated for open reduction and internal fixation using K-wire (figure 2). After about 30 days, physiotherapy was started gradually. Range of motion improved significantly.

Figure 2: K-wire fixation



Discussion

There are plethoras of therapeutic options for the treatment of proximal fracture of humerus. These include non-surgical/conservative management techniques, open reduction and internal fixation, K-wire fixation, external fixation, plate fixation, fixation via screws using percutaneous technique, tension band fixation. Each of these modalities has their own pros and cons.

Conservative approach is associated with variety of complications like non-union, malunion, stiffness of affected shoulder, extreme pain in affected shoulder, etc. Internal rotation has been practiced extensively till date. Although loads of complications have been reported in literature with its use. [2] Authors opine that appropriate patient selection significantly hampers these complications. The advantages of plate fixation are numerous as compared to that of other implants [12-16] However; care should be taken during open reduction and internal fixation to preserve overlying soft tissues and thus its vascularity. [17-20]

Badman et al, have depicted certain evidence based practices, recommended during plate and wire fixation procedures, which helps to curb development of complications. These recommendations are: [4]

1. Counterbalancing of warping forces of cuff muscles should be done by inserting tubeoristy sutures through bone tendon border of supraspinatus, subscapularis and infraspinatus using Krackow switch technique, in pursuit of securing tuberosity.
2. Manufacturer plates that demand inserting tuberosisty suture prior to securing plate to body of humerus should be avoided.
3. Physiotherapy should not be initiated early to avoid failure and allow more time for wound healing.
4. To ensure optimal length of posterior screws, shoulder should always be viewed in internal rotation and abducted arm position.

Conclusion

Appropriate patient selection and sound surgical technique leads to optimal outcome with reduction in complications.

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