

A Case Study on Treatment of Non-Union Proximal Humerus with Fibular Strut Autograft

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Abstract: Proximal humerus fractures comprises about 4 to 5% of all fractures and its the most common humerus fracture, accounting about 45%¹. Due to its metaphyseal location, it rarely goes for non union. More than 80% heal without surgical intervention but displaced, unimpacted surgical neck fractures are associated with higher incidence of non-union varying from less than 1% to as high as 23%. We report a case of 18-year-old male with non-union following fracture of left humerus.

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I. Introduction

Most often non-union of proximal humerus are two part fractures at the surgical neck. Although Non union of the proximal humerus are not common, they are challenging for even experienced surgeons. The bone quality is typically poor, and the proximal bone stock is limited. Often these patients have associated multiple co morbidities, which lead to non-union. Most common predisposing factors contributing non-union proximal humerus includes: smoking, alcoholism, diabetes, soft tissue interposition, extensive comminution, hanging arm cast, poor surgical technique, etc¹. Surgical intervention is to be considered for fractures that demonstrate no evidence of healing on consecutive radiographs taken at least 6 to 8 weeks apart during course of conservative management.

II. Case report

An 18 years old male sustained left proximal humerus fracture following fall from bicycle. He was taken to a local hospital where he was treated conservatively with plaster immobilisation.

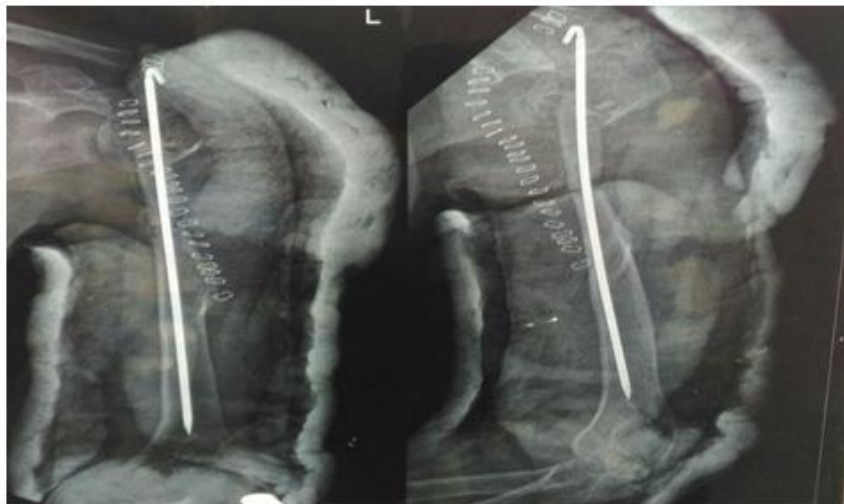
He was brought to our outpatient department, 7 months later with gross deformity of left arm. There was gross abnormal mobility in the proximal Humerus. X ray of left arm was taken in both AP and lateral view. X-ray showed non-union of proximal humerus.

III. Procedure

Fracture was managed by open reduction and autologous fibular strut graft with intramedullary K wire fixation. Proximal Humerus was exposed by Deltopectoral approach. The fibrous tissue was excised and fracture ends freshened. The medullary continuity was restored. Ipsilateral nonvasulasized Fibular strut graft was taken and humoral length restored. A 2 mm K wire was inserted intramedullary to maintain the alignment of the bone.



PRE OPERATIVE XRAY



IMMEDIATE
POST OPERATIVE XRAY

Postoperatively shoulder was immobilised with U Slab for 4 weeks. Shoulder range of movements started at 4 weeks postoperatively with functional cast brace which was continued for 2 months.

IV. Result

Patient had good range of motion of Shoulder and Elbow at 4 weeks. Clinically and radiological union was achieved at 10 weeks post operative. K wire was removed at 10 weeks.



10 WEEKS POST OPERATIVE XRAY

V. Discussion

Historically, the treatment of non-union proximal humerus involved open reduction and internal fixation. Several techniques has been proposed with no superior solution. Neer² and Rockwood first recommended tension band technique with intramedullary rods to facilitate head compression and improve stability. Nayak et al³ noted both 20% incidence of persistent non-union and avascular necrosis and 80% incidence of hardware removal secondary to pain. Various authors suggested use of intramedullary bone peg, autologous iliac bone graft. These studies showed good outcomes with use of bone grafts. In our case we have used an autologous fibular strut graft and fixed with K-wire.

VI. Conclusion

Our case study, treatment of proximal humerus non-union with fibular strut graft has shown promising result with good range of motion in 6 month follow up. However, the effectiveness and expected complications have to be sorted out in future with more number of cases.

References

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