ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 49. 23

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 3, Issue –3, June - 2018, Page No. : 212 - 214

Evaluation of Results of Interlocking Nail in Fracture Shaft of Humerus.

Dr Deepak kumar Sharma, Associate professor, Central institute of orthopaedics, VMMC & Safdarjung hospital, Delhi

Correspondence Author: Dr Deepak kumar Sharma, Associate professor, Central institute of orthopaedics, VMMC & Safdarjung hospital, Delhi

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Fractures of the humeral shaft account for approximately 3% of all fractures. It can be treated both conservative or operative method. In operative method it may be in form of plating or interlocking nail. Nailing of humeral shaft fractures has the benefit of smaller incisions, preserved fracture site biology, and load sharing properties . So in this study we are evaluating results of closed interlocking nail in fracture shaft of humerus. The study is based on 48 cases of fracture shaft of humerus treated with interlocking nail. In this study mean union rate was 95.8%, mean time for union was 13.9 weeks, Most common complication is shoulder impingement in 25% patients. Out of 48 cases, 4 cases developed superficial infection, and 2 patients were with iatrogenic radial nerve injury which recovered without any special treatment.

Key words –fracture shaft of humerus, interlocking nail.

Summery- Fractures of the humeral shaft can be treated by closed interlocking nail. It has benefit of smaller incisions, preserved fracture site biology, and load sharing properties . It has the main complication in form of shoulder impingement. So interlocking nail can be used to treat fracture shaft of humerus with precautions to avoid shoulder impingement.

Introduction

Fractures of the humeral shaft account for approximately 3% of all fractures(1). Simple diaphysial humeral shaft fractures can be treated non-operatively, with good results in most cases. Acceptable alignment of humeral shaft fractures is considered to be 3 cm of shortening, 30 degree of varus, 20 degree of anterior angulations and 15 degree of malrotation (2). Although acceptable range is large and complications are infrequent, non-operative treatment requires a long period of immobilization, which lead to shoulder joint stiffness and non-union up to 10% after conservative treatment. To avoid these problems there is a growing trends towards operative interventions in the form of plating or interlock nailing. Plate fixation require extensive soft tissues striping, violation of fracture haematoma and it provide less secure fixation specially in osteoporotic bones with high risk of infection and high chances of radial nerve injury(3,4). Intramedullary nailing of humeral shaft fractures has the benefit of smaller incisions, preserved fracture site biology, and load sharing properties (5,6) .So in this study we are evaluating the results of interlocking nail in fracture shaft of humerus.

Material and methods

The study is based on 48 cases of fracture shaft of humerus treated with interlocking nail from December 2006 to June 2015. Out of 48 cases 40 were closed fracture where as 8 were compound grade I .All the patients were included in the study except fracture with in 2 cm of surgical neck humerus, fracture with in 3 cm of olecrenon fossa, fracture with established infection,

fracture of grade II or higher grade of compounding. In all patients closed, antigrade interlocking were done and special care was taken to keep nail below the bone at the entry point to prevent the impingement of nail below the acomian. All patients were operated with in one week of injury. Postoperatively, patients were instructed to follow a standard protocol involving pendulum and active-assisted exercises until clinical and radiographic evidence of healing permitted the addition of strengthening exercises. Stitches were removed at 12 day and Patients were followed at 2, 6 and 8 weeks and after that at every month till union is achieved. Every patient were followed for minimum for 1 year and accessed for radiological and clinical sign of union, complications and functional outcome with American shoulder elbow surgeons(ASES) shoulder score. (Rockwood 1990) (Table 1).In American shoulder elbow surgeons score (ASES score), 13 Activity of daily living requiring full shoulder elbow movement are taken each activity scored 0 to 4. Maximum possible score is 52.

Table 1 American shoulder and elbow surgeon score (ASES) . Rockwood,1990.

Back pocket	Perineal care
Wash opposite axilla	Eat with utensils
Comb hairs	Use arm at shoulder level
Carry 10lb at affected side	Dress
Sleep at affected side	Pull
throw	Use hand overhead
Lift	

(Score – 4- normal, 3-mild compromised, 2-difficulty, 1-unable, NA-not possible)

Results

Mean age of patient is 42.2 years.75% patients are with high energy trauma and most common mode of injury is road traffic accident ie 62.5%. 83.3% patients are with closed fracture and rest was compound grade I fracture. Maximum number of patients ie 46 patients had radiological union in period of 12-16 weeks and mean time of union 13.9 weeks. 2 patients underwent non-union and secondary bone grafting was required for for union . Out of 48 patients 36 patients were with excellent , 8 with good and 4 with poor functional results. Most common complication is shoulder impingement in 12 patients followed by superficial infection in 4 and non-union in 2 patients. Primary radial nerve injury was in 5 patients, whereas iatrogenic nerve injury was observed in 2 cases , in all cases nerve injury recovered without any intervention. Figure 1 showing various activity after humerus nailing. Figure 2 showing pre and postoperative x rays.

Discussion

Interlocking nail of humeral shaft fractures is a good modality because of its smaller incisions, preserved fracture site biology, and load sharing properties. In our study mean union rate was 95.8% which is comparable to study done by Crates and Whittle (94.5%)(7) , this may be attributed to that all patients were closed or compound grade I, which preserve fracture haematoma as well as distraction avoided at fracture site by thumping of elbow before locking. The mean time for union in our study was 13.9 weeks. Two patients underwent non-union which were highly comminuted fracture and required secondary bone grafting for union. Most common complication is shoulder impingement in 25% patients. This complication develop although special care was taken to keep the nail below the bone at the entry point and no nail was protruded at entry point to impinging at acromian . It is thought this is because of development of adhesive capsulitis and rotator cuff injury at entry point. 4 cases developed superficial infection which was resolved with antibiotics. In this study 5 patients were with primary and 2 patients were with iatrogenic radial nerve injury all recovered without any special treatment.

Conclusion

Fractures of the humeral shaft can be treated by closed interlocking nail. It has benefit of smaller incisions, preserved fracture site biology, and load sharing properties. It has the main complication in form of shoulder impingement. So interlocking nail can be used to treat fracture shaft of humerus with precautions to avoid shoulder impingement and future study is required to avoid shoulder impingement in nailing of humerus because of adhesive capsulitis or rotator cuff injury at entry point.

References

1. Beaty JH 1999. Humeral shaft fractures. In: Tornetto, Saumgaertnes, ed. Orthopaedic knowledge update American Academy of Orthopaedic Surgeons: Rosemont, Ill, 278—86.

2. Klenerman L. Fractures of the shaft of the humerus. J Bone Joint Surg Br. 1966;48:105–111.

3. Cole PA, Wijdicks CA. The operative treatment of diaphyseal humeral shaft fractures. Hand Clin. 2007;23:437–448. doi: 10.1016/j.hcl.2007.11.004.

4. Walker M, Palumbo B, Badman B, et al. Humeral shaft fractures: a review. J Shoulder Elbow Surg. 2011;20:833–844. doi: 10.1016/j.jse.2010.11.030.

5. Ekholm R, Ponzer S, Tornkvist H, et al. Primary radial nerve palsy in patients with acute humeral shaft fractures. J Orthop Trauma. 2008;22:408–414. doi: 10.1097/BOT.0b013e318177eb06.

6. Hughes R, Schneeberger A, An K, et al. Reduction of triceps muscle force after shortening of the distal humerus: a computational model. J Shoulder Elbow Surg. 1997;6:444–448. doi: 10.1016/S1058-2746(97)70051-X.

7. Crates J, Whittle AP. Antegrade interlocking nailing of acute humeral shaft fractures. Clin Orthop Relat Res. 1998;350:40–50.

List of Figure:

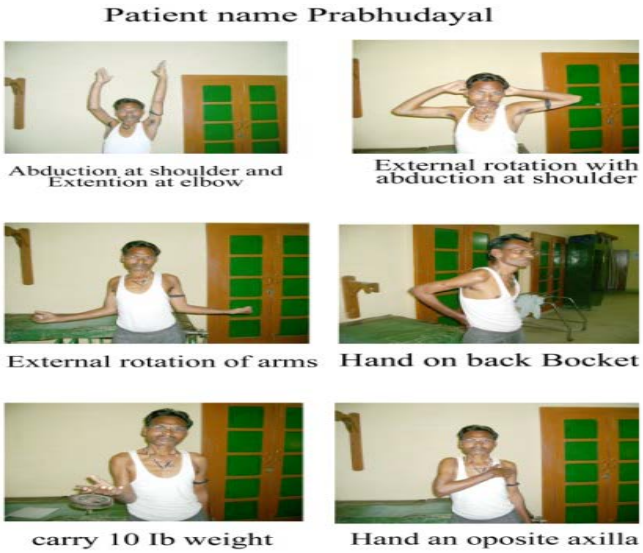

Figure 1 clinical pictures of patient showing various activity after interlocking nail Humerus.

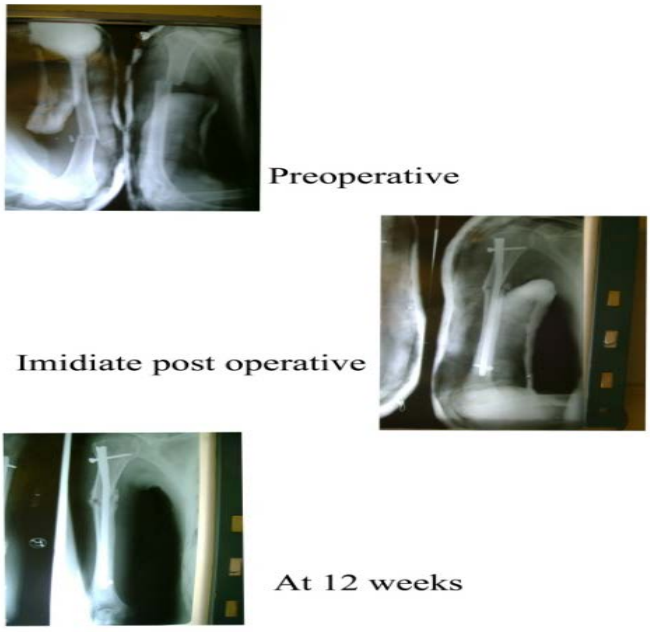

Figure 2 showing radiological picture preoperative, postoperatively and at union.