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Original Research Paper

SHORT TERM OUTCOME OF FRACTURE DISLOCATION PROXIMAL HUMERUS -30 OPERATED CASES .

Orthopaedic

KEYWORDS: Fracture dislocation proximal humerus, philos plate, Neer's prosthesis

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ABSTRACT

This is a prospective study of 30 cases of fracture dislocation proximal humerus fracture treated surgically during September 2013 to October 2015. As the patient came to trauma ward Shoulder was immobilized. Antero posterior and axial radiographs were taken. In all the patients either general/regional anaesthesia used and either supine position or beach chair position with delto pectoral approach used. All the fractures fixed with either PHILOS plate or Neer's fixed hemi prosthesis As pain permitted, pendulum exercise started, muscle strengthening except for rotation started at 4 weeks. ER against resistance started usually at 06 weeks. Follow up at 15days, 6 weeks, 3 and 6 months, 1 year and then yearly thereafter done. At each follow up x-rays taken and Quick dash scores noted. Results; - Neer's type 3 fracture dislocation was commonest. In patients with good tuberosity reconstruction had good final ROM on both plate and prosthesis group. excellent to good functional results in 80% patients. Complications were infection (6%) stiffness (6%), screw perforation (3%) and instability (3%). Limitations being short duration and small number of patients In conclusion fracture dislocation of proximal humerus is difficult to treat satisfactorily with current surgical modalities and require better understanding of patho-anatomy and better reconstructive protocol.

INTRODUCTION

The shoulder joint was less commonly exposed to trauma before modernization but with modernization there also came the evils of increasing Road Traffic Accident and polytrauma thus increasing the incidence of shoulder injuries.

Now sitting on a mountain of information regarding pros and cons of various modalities of treatment, we are in a place to study the efficacy of various modalities of treatment of fracture dislocation of proximal humerus . The purpose of this study is to evaluate the outcomes in terms of the functional ability of patients to do routine daily activities and participate in different works and evaluate complication of it.

LITERATURE SURVEY

NEER prosthesis first photograph appeared in an American Journal of Surgery in 1953 Original Neer 1 prosthesis was made of cobalt chrome alloy. It had one stem size and head boasted a 44 mm radius of curvature. He used a hole in the lateral neck of the prosthesis to stabilize fragement of tuberosity. Modified Neer 1 prosthesis with increase in number of stems to five. Each of 4 fins had multiple fenestration for bone ingrowth and stabilization. He gave a four segment classification based on the presence or absence of displacement of one or more of the four major segments.

He agreed that fracture with minimum displacement regardless of the level of number of fracture lines can be satisfactorily treated by early functional exercises. Closed reduction was found inadequate method for three part fractures and four part fractures . Origin of Neer 2 prosthesis, which had the same radius of curvature of head (44mm) but had rounded edges to prevent encroachment on the glenoid component.

the AO-ASIF has recently developed a new technique (Philos) which aims to preserve the biological integrity of the humeral head and to secure an anatomical reduction using multiple screws with angular stability. – proximal screw holes for LCP locking screws 3.5 mm enable an angular stable construct to enhance the grip in osteoporotic bone and multifragment fractures Carefully applied for osteoporotic bone and Optimal screw placement plate has 10 proximal holes for suturing to help maintain fracture reduction

PROBLEM DEFINITION

Proximal humerus fractures constitutes less than 4 % of all fractures and 80 % of all humeral fractures .in patients above 65 years Proximal humerus fractures are second most common extremity fractures Incidence in our study 2 part proximal humerus fracture constitute -20% ,3 part fracture-60%,4 part fracture-20% anterior dislocation occurred in -73 % patients and posterior dislocation -17 % patients

METHODOLOGY

This is a prospective study of 30 cases of fracture dislocation proximal humerus treated by various modalities during September 2013 to October 2015.

Patients coming with fracture dislocation proximal humerus to our hospital were admitted, injectable analgesics were given and immobilization of shoulder in the form of shoulder immobilizer was done. Standard radiographs were taken. After making patient fit for surgery patient is shifted to operation theatre and given anesthesia (general/regional anesthesia). Patients were given supine position or beach chair position with pack under shoulder.

According to plan of surgery, under brachial plexus block or general anesthesia. Fracture dislocation proximal humerus reduced by milch's method, through delto pectoral incision and inter nervous plane is made between deltoid muscle and pectoralis muscle. If required the incision can be extended distally along the humeral shaft or proximally towards the root of the neck. Once fracture site is exposed, fracture is reduced provisionally with K wires and checked in fluoroscopy. And final fixation done with locking plate/ neers prosthesis position is confirmed in fluoroscopy.

In Many patients Greater tuberosity tied using ethibond no 2or no 5 If pre operative planning did not match with per operative findings we decided to move with best suitable procedure for the patient

As soon as the pain permits, usually 3rd to 5th day, gentle shoulder mobilization exercises in form of pendulum exercise is started. After 10 to 15 days all stitches are removed. Physiotherapy continued

PREOPERATIVE X RAY **POST OPERATIVE X RAY**

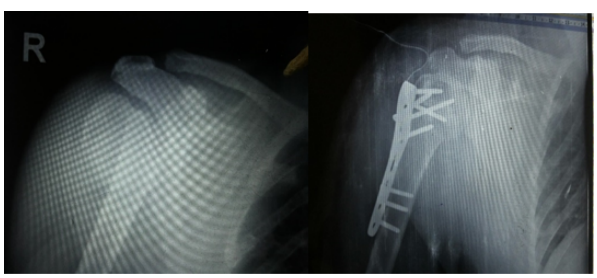

FIGURE 1 **FIGURE 2**

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PREOPERATIVE X RAY _____ **POST OPERATIVE X RAY**

FIGURE 3

FIGURE 4

Day 10. Assisted forward flexion is begun using pulleys with the unoperated arm to raise and lower the operated arm.

Day 21. A static anterior deltoid muscle exercise is begun. No external or internal rotation strengthening exercises can be initiated until the tuberosities are healed.

Weeks 6 to 8. With the patient lying supine, passive external rotation is begun with both elbows tucked in at the side with the unoperated arm pushing the operated arm into external rotation. Isometric muscle strengthening exercises are begun for external and internal rotation of the humerus. Forward flexion, stretching, and external—internal rotation stretching are continued with the patient supine.

Week 10. Resistive exercises for deltoid and resisted external-internal rotation exercises are begun using Theraband graduated elastics for resistance. Patients are told that movements will improve for 1 year to 18 months following surgery and those they should continue a stretching program during this time.

A total of 30 patients were treated during this period & were called for regular follow up.

Follow-up period being minimum 6 months and maximum up to 2 years and a total 30 patients at final follow up .

RESULTS

the most common age group of patients for fracture dislocation proximal humerus in our study are above 60 years in 10 patients(33%) followed by 31-40 years in 7 patients (24%).youngest patient being 22 years and oldest being 74 years.average age is 49.9 years the fracture dislocation proximal humerus are more common among the males and the M: F ratio is 2:1 .fracture dislocation proximal humerus are common among those who are labourers followed by house wives. the commonest mode of injury in fracture dislocation proximal humerus is fall on outstretched hand (63%) followed by road traffic accident (26%).Most common injury in fracture dislocation proximal humerus is by fall causing anterior dislocation of shoulder joint. Our study reveals that isolated fracture dislocation proximal humerus are more common when compared to associated injuries of head in 2 patients and radius fracture in 1 patient and femur fracture in one of the patient .in our study- fracture dislocation proximal humerus none of patients is having open injury. the most common associated illness in fracture dislocation proximal humerus is hypertension (16%) followed by diabetes and epilepsy (6% each) our study group most patients are right handed and most of the patients having injury on the right side (60%). 3 part fracture dislocation proximal humerus (60%) (table 1) are the most common fracture pattern followed by 2 part and 4 part (20% each) In our study most patients were treated by philos plating (66%) and most common fracture pattern is 3 part fracture dislocation .most of 4 part fracture dislocation treated by hemireplacement and all 2 part fracture dislocation treated by philos plating. The most common complication of our study group fracture dislocation proximal humerus is infection 6.6%, followed by stiffness 6.6% and instability and screw perforation being 3.3% each Many patients have decreased range of movement but better functional score due to compensatory movements of other joints and limited demand majorly are not involved in sports activities.

DISCUSSION

A prospective study series consists of 30 cases of fracture dislocation proximal humerus treated operatively The average age (mean)incidence in our series is 50 years, age ranging between 22 to 74 years , 10 patients (33%) being above 60 years 8(27%) patients between 40 – 60 years and 12 patients (40%) below 40 years which was consistent with the age incidence in studies done by kumar et al, mean- 58 years (range 19-90 years) and the average age incidence in babhulkar et al, study was mean -56 years (range 27 -83 years) Sex incidence study of literature reveals predominance of proximal humeral fractures in females in an elderly age group. Studies also reveal that male to female ratio being 1: 0.8, but in our series the male to female ratio is 2:1. The reason for high incidence of males in our series being that the majority of the cases, 13 out 30 were within the age of 50 years and most are males. Fracture dislocation proximal humerus have bimodal presentation fractures are seen in elderly patients(>50 years) cases they are osteoporosis related and most often seen in females and second group younger consists of middle age who are more prone for high velocity injuries most common among males. In our study Fracture dislocation proximal humerus Occurs most commonly in labourers (40%) followed by household people (30%) followed by all other group of workers (30%) .Associated injuries are found in just 13% of patients with head injury constituting 6 % and radius , seen in 3% and femur fracture contributing to other 3% of injuries and all of them seen in high velocity road traffic accidents. The mode of injury commonly observed in our series was fall on outstretched hands accounting for 19 patients (63%), 8 patients (27 %) patients had a history of road traffic accident and 2 patients (6%) had a history of epilepsy which signify common etiology was related to osteoporosis.

None of the patients in our study is having open injury(0%) which shows that open fracture of Fracture dislocation proximal humerus is very rare . Our Study shows that neers 3 part anterior fractures dislocation seen in 12 patients (40 %) is the most common fracture dislocation pattern which is followed by 3 part posterior and 4 part anterior fracture dislocation in 6 patients (20%) each and lastly 2 part anterior fracture dislocation in 4 patients (13%) followed by 2 part posterior fracture dislocation in 2 patients (6%).All patients managed primarily with shoulder immobilizer and primary supportive measures for associated traumatic or medical problems .most of them operated with in 5 days of injury usually as an elective procedure .Injury surgery interval of less than 5 days seen in 19 patients(64 %) and Injury surgery interval more than 5 days present in 11 patients (36%) compared to babhulkar series suggestive of co morbid illness (30%) and delayed admission to hospital patients required open reduction techniques, dislocation reduced by milch's method preoperatively and all patients are treated by proximal humerus locking plate 20 patients (66%) or neers prosthesis 10 patients (33%). Total 6 patients developed complications, post operative infection seen in 2 patients (6%) and one patient needed change of antibiotics and debridement and dressing other patient required implant removal .one patient (3%)developed post operative avascular necrosis of humerus head due to screw perforation for which locking Plate removal done. Two patients(6%) developed post operative stiffness for which physiotherapy exercises started . stiffness is More common in hemireplacement group which account for rotator muscle weakness, osteoporosis, poor post operative physiotherapy showing poor outcome. instability seen in 1 patient (3%)in whom hemireplacement has been done.

All patients are followed up closely and atleast for 6 months. At final follow up 28 patients (94 %) had no pain and only 2 patients (6%) had moderate to marked pain .At final follow up 86% (26 patients) have good to excellent results, and 13% (4 patients)have poor results. **Quick dash score** in our study has excellent results with 18 patients (60%) having score less than 25 and good score in 9 patients (30%)

ranged between 25- 50 only 3 patient (10%) having score above 50(poor outcome) .At final follow up radiological fracture union seen in 29 out of 30 patients.All cases are evaluated according to QUICK DASH SCORE on residual effects on clinical grounds at final examination.points(table 2) are given for pain, house hold activities, carrying based on all the above criteria excellent functional result according to quick dash score was found in 18 patients(60%) good results in 9 patients (30%) and poor results in 3 patient (10%) Poor outcome occurs due to development of complications and old age and medical illness. As per best of our knowledge we could not find any previous study with plating and hemireplacement both being studied in same series of fracture dislocation surgical neck humerus.

TABLE 1

	NO OF PATIENTS	% OF PATIENTS	FRACTURE TYPE		
			2PART	3PART	4PART
PHILOS PLATING	20	66.6	6	13	1
HRA	10	33.3	0	5	5
TOTAL	30	100	6	18	6

TABLE 2

Quick dash score	Philos plating	Percentage %	hemireplacement	Percentage %
0-25	12	40.0	6	20.0
25-50	7	23.3	2	6.6
50-75	1	3.3	2	6.6
75-100	0	0	0	0
Total	20	66.6	10	33.3

Conclusion

In conclusion fracture dislocation of proximal humerus is difficult to treat satisfactorily with current surgical modalities and require better understanding of patho-anatomy and better reconstructive protocol. Fracture dislocation proximal humerus commonly occurs in elderly persons usually following fall on outstretched hands where as in young patients it is a result of a high energy trauma. NEERS classification was used, 3 part anterior dislocation is most common fracture type followed by 3 part posterior dislocation and 4 part anterior dislocation. Majority of patients were admitted and operated within 7 days of trauma with only few patients being operated after 7 days due to associated medical illness.Anatomical reduction and stable fixation by proximal humerus locking plate done in most (66%) of cases and hemireplacement with neers prosthesis in 33% cases. Early mobilization exercises started in most of the patients and routine activities were started by 3 months. Patients had standard delto pectoral approach with lower rate of infection and shorter hospital stay.

Fracture dislocation proximal humerus treated with proximal humerus locking plate and neers prosthesis gives union in 97% patients .Quick dash scoring is good score to evaluate functional outcome of the patients but in many patients although fracture united, quick dash score is poor because of old age, lack of physiotherapy exercise and medical illness.

Fracture dislocation proximal humerus treated with proximal humerus locking plate and neers prosthesis gives excellent to good functional results in 80% patients.

Soft tissue balance may be restored through permutation and combination of various implants, sutures. Younger patients are more likely to have an intact rotator cuff with good bone stock where plating is more suitable leading to healthier abductor function of the arm and better functional outcomes. Patient age, gender, injury-surgery interval, rehabilitation time and condition of rotator cuff affect functional outcome, as does anatomic union of tuberosities and rotator cuff. Fracture dislocation proximal humerus treatment in our study has complications in form of infection (6%) stiffness (6%), screw perforation (3%) and instability (3%).

REFERENCES

1. Neer C.S.: Displaced Proximal humerus fractures, part I, Classification and evaluation J.B.J.S., 52-a,1970(1077-1089)
2. PHILOS Plate fixation for displaced proximal humerus fractures: between June 2003 & June 2006. M A Fazal-Chas Farm Hospital, London, UK & F S Haddad-UCLH, London, UK. Journal of Ortho surgery 2009,17(1): 15-8
3. Zyto K, Wallace WA, Frostick SP, Preston BJ. Outcome after hemiarthroplasty for three- and four-part fractures of the proximal humerus. J Shoulder Elbow Surg 1998;7:85–9.
4. Kristiansen B, Barfod G, Bredesen J, Erin-Madsen J, Grum B, Horsnaes MW, Aalberg JR: Epidemiology of proximal humeral fractures. Acta Orthop Scand. 1987, 58: 75-7. 10.3109/17453678709146347.
5. Bigliani LU, Flatow EL, Pollock RG. Fractures of the proximal humerus In: Rockwood CA, Green DP, Bucholz RW, Heckman JD, eds. Fractures In adults. Philadelphia,etc: Lippincott-Raven,1996: 1055-107.
6. Open reduction and locking plate fixation of displaced proximal humerus fractures Chandan Kumar, Anil Kumar Gupta, Rohit Nath, Javed Ahmad Indian Journal of Orthopaedics, Year 2013, Volume 47, Issue 2 [p.156-160].
7. Ashish Babhulkar.Journal of orthopaedic Surgery 2011;19 (2):194-9. 51-55
8. Moonot P, Ashwood N, Hamlet M: Early results for treatment of three and four-part fractures of the proximal humerus using the PHILOS plating system. J Bone Joint Surg Br. 2007, 89: 1206-9. 10.1302/0301-620X.89B9.18528.
9. Walsh S, Reindl R, Harvey E, Berry G, Beckman L, Steffen T: Biomechanical comparison of a unique locking plate versus a standard plate for internal fixation of proximal humerus fractures in a cadaveric model. Clin biomech (Bristol, Avon). 2006, 21: 1027-31. 10.1016/j.clinbiomech.2006.06.005.
10. Bosch U, Fremery RW, Skutek M, Lobenhoffer P, Tscherne H: Hemi-arthroplasty-primary or secondary measure for 3- and 4- fragment fractures of the proximal humerus in the elderly?. Unfallchirurg. 1996, 99: 656-664. 10.1007/s001130050039.
11. Fialka C, Stampfl P, Arbes S, Reuter P, Oberleitner G, Vescei V: Primary hemiarthroplasty in four-part fractures of the proximal humerus: randomized trial of two different implant systems. J Shoulder Elbow Surg. 2008, 17: 210-5. 10.1016/j.jse.2007.07.002.