

# A study of the role of locking humerus plates in early mobilization of fracture of proximal humerus in adult at tertiary health care center

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## Abstract

**Background:** Proximal humeral fractures are the second most common upper-extremity fracture and the third most common fracture after hip fractures and distal radial fractures, in patients who are older than sixty-five years of age.

**Aims and Objectives:** To study the role of locking humerus plates in early mobilization of fracture of proximal humerus in adult at tertiary health care center. **Methodology:** This was a cross-sectional study carried out in the patients of proximal humerus fracture at the department of Orthopedics of a tertiary health care center during the one-year period i.e. June 2015 to June 2016. During the one-year period there were 61 patients included into the study after written and explained consent. All patients undergone proximal humerus locking plate operations as per the standard operating protocols and procedures. The data was presented in the percentages and in tabular form. **Result:** The majority of the patients were Female i.e. 68%, followed by Male were 32%. Excellent result present in 13% of the patients, Satisfactory results present 64 % of the patients, Unsatisfactory results presents in 23% of the patients. Flexion-Range of movement was 128°-172 and Average was 153°, Abduction-69°-169° and 129°, External rotation-59°-93° and 78° respectively the range and average of movement. **Conclusion:** It can be concluded from our study that majority of the patients were having Satisfactory and excellent result and satisfactory range of movement to Flexion, Abduction, External rotation etc. so this locking humerus plates is quite good for early mobilization of fracture of proximal humerus

**Key Words:** Locking humerus plates, fracture of proximal humerus, Neers Criteria.

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proximal humeral fractures are either non-displaced or minimally displaced and can be treated with sling immobilization and physical therapy<sup>2</sup>, approximately 20% of displaced proximal humeral fractures may benefit from operative treatment<sup>3</sup>. Many surgical techniques have been described, but no single approach is considered to be the standard of care.<sup>4</sup> It has been always enigma of management because of numerous muscles attachment and the paucity of space for fixing the implantin fracture of the proximalhumerus. The treatment is more controversial for articular fractures which carrya high risk of the humeral head necrosis<sup>5</sup>. Three and four part fractures represent 13 to 16% of proximal humeral fractures.<sup>6</sup>Treatment options for these displaced fractures include open reduction and fixation. Neer recommended open reduction and internal fixation for displacedtwo and three parts fractures. Most of the poor results following open reduction and internal fixation of three partfracture are due to imperfect technique.<sup>5</sup>In a three or four

## INTRODUCTION

Proximal humeral fractures are the second most common upper-extremity fracture and the third most common fracture after hip fractures and distal radial fractures, in patients who are older than sixty-five years of age. They account for about 5% of all injuries to appendicular skeleton<sup>1</sup>. Although the overwhelming majority of

partfracture dislocation when the head of the humerus is entirely devoid of any blood supply it can be replaced by a humeral prosthesis. However, the goal of Proximal Humerus fracture fixation should be stable reduction allowing early mobilization. This study conducted to analyze fractures of the proximal humerus that were treated with the locking compression plate and documents their clinical and functional outcome.<sup>6</sup>

## MATERIAL AND METHODS

This was a cross-sectional study carried out in the patients of proximal humerus fracture at the department of Orthopedics of a tertiary health care center during the one-year period i.e. June 2015 to June 2016. During the one-year period there were 61 patients included into the study after written and explained consent. All patients undergone proximal humerus locking plate operations as per the standard operating protocols and procedures. All the necessary data like Age of the patients, sex, Outcome and any associated complications were noted. As per the Neers Criteria the Outcomes were graded as Excellent, Satisfactory and Unsatisfactory. The data was presented in the percentages and in tabular form.

## RESULT

**Table 1:** Distribution of the patients as per the age

Age	No.	Percentage (%)
20-30	2	3.28
30-40	5	8.20
40-50	12	19.67
50-60	17	27.87
>60	25	40.98
<b>Total</b>	<b>61</b>	<b>100.00</b>

The majority of the patients were in the age group of >60 were 40.98%, followed by 50-60 were 27.87%, 40-50 were 19.67%, 30-40 were 8.20%, 20-30-3.28%.

**Table 2:** Distribution of the patients as per the Sex

Sex	No.	Percentage (%)
Male	20	32
Female	41	68
<b>Total</b>	<b>61</b>	<b>100</b>

The majority of the patients were Female i.e. 68%, followed by Male were 32%.

**Table 3:** Distribution of the patients as per the Results

Final result	No. of patients	Percentage (%)
Excellent	8	13
Satisfactory	39	64
Unsatisfactory	14	23
<b>Total</b>	<b>61</b>	<b>100</b>

From above table it is clear that Excellent result present in 13% of the patients, Satisfactory results present 64 %

of the patients, Unsatisfactory results presents in 23% of the patients.

**Table 4:** Distribution of the patients as per the Range of movements

Movements	Range	Average
Flexion	128°-172°	153°
Abduction	69°-169°	129°
External rotation	59°-93°	78°
Internal rotation	60°-90°	73°

For Flexion-Range of movement was 128°-172 and Average was 153°, Abduction-69°-169° and 129°, External rotation-59°-93° and 78° respectively the range and average of movement.

## DISCUSSION

The incidence of proximal humerus fractures has increased in last few years due to changes in lifestyle and increase in road traffic accidents.<sup>10</sup> The best management of these injuries is still uncertain. Most of the proximal humerus fracture which is undisplaced can be treated conservatively. Even if the injury is thoroughly analyzed and the literature is understood, treatment of displaced fracture or fracture dislocation is difficult.<sup>11</sup> Non-operative treatment of unstable or displaced proximal humeral fractures may result in malunion and stiffness of the shoulder<sup>12,13</sup>. Different types of internal fixation have been developed for the surgical treatment of these fractures including plates and screws, staples, wires, percutaneous pinning and intramedullary nails<sup>14,15</sup>. Currently, for three and especially four-part fractures there is a trend to proceed with shoulder hemiarthroplasty<sup>16</sup>. All the aforementioned operative fixation techniques have demonstrated different outcomes and complication rates<sup>16</sup>, and this diversity of options implies that there is an ongoing effort to find out what is the best osteosynthesis technique to stabilise certain fracture patterns. In our study we have seen that The majority of the patients were in the age group of >60 were 40.98%, followed by 50-60 were 27.87%, 40-50 were 19.67%, 30-40 were 8.20%, 20-30-3.28%. The majority of the patients were Female i.e. 68%, followed by Male were 32%. Excellent result present in 13% of the patients, Satisfactory results present 64 % of the patients, Unsatisfactory results presents in 23% of the patients. Flexion-Range of movement was 128°-172 and Average was 153°, Abduction-69°-169° and 129°, External rotation-59°-93° and 78° respectively the range and average of movement. The findings in Sivakumar Arumugam<sup>17</sup> were ; the majority of the patients were males, elderly aged, with RTA being the commonest mode of injury, involving 2 part,3part and 4part fractures of the proximalhumerus. Excellent and satisfactory results were found in 76.7% of patients with unsatisfactory

results in 23.3 % according to Neer's criteria. There were 100 % union rates and no failures.

## CONCLUSION

It can be concluded from our study that majority of the patients were having Satisfactory and excellent result and satisfactory range of movement to Flexion, Abduction, External rotation etc. so this locking humerus plates is quite good for early mobilization of fracture of proximal humerus.

## REFERENCES

- Court Brown CM, Caesar B. Epidemiology of adult fractures: A review Injury 2006; 37:691-697.
- Terry Canale's Campbell's Operative Orthopaedics, Vol-3: 9th edition, 1998 Mosby Publishers, USA Pg 2286-2296.
- Steven. H.Rose Joseph Melton Bernard. F. Morrey et al Epidemiological features of humeral fractures Clin. Orthop-1982:168:24-30.
- RL Sahu: Philos Locking plates in proximal humerus fractures literature review..The Internet Journal of Health. 2010 Volume 11
- Campbell's operative orthopedics. Fracture of the proximal humerus in adults. 10th edition. Volume 3. Mosby Publishers; 1998: 2990-2994
- Campbell's operative orthopedics. Fracture of the proximal humerus in adults. 10th edition. Volume 3. Mosby Publishers; 1998: 2990-2994.
- Lous U, Bigiliani. The shoulder. Chapter 9. Volume 1. Fractures of the proximal humerus. In Rockwood CA, Matsen, editors. Philadelphia: W.B. Saunders; 1990: 278-334.
- Neer CS. Displaced proximal humeral fracture. Part 1. Classification and evaluation. J Bone Joint Surg (Am). 1970;52:1077-89
- Kristiansen B, Christensen SW. Plate fixation of proximal humeral fractures. Acta Orthop Scand. 1986; 57:320-3.
- Mouradian WH. Displaced proximal humeral fractures. Seven years experience with a modified nickel supracondylar device. Clin Orthop. 1986; 212:209-18.
- Bigiliani LU, Flatow EL, Pollock RG: Fractures of the proximal humerus. In Rockwood and Green's fractures in adults. 4th edition. Edited by Rockwood CA Jr, Green DP, Bucholz RW, Heckman JD. Philadelphia: Lippincott-Raven; 1996:1055-1107
- Neer CS: Displaced proximal humeral fractures Part II: treatment of threepart and four-part displacement. J Bone Joint Surg Am 1970, 52(6):1090-1103.
- Bjorkenheim JM, Pajarin J, Savolainen V: Internal fixation of proximal humeral fractures with a locking compression plate: a retrospective evaluation of 72 patients followed for a minimum of 1 year. Acta Orthop Scand 2004, 75:741-745.
- Ogiwara N, Aoki M, Okamura K, Fukushima S: Ender nailing for unstable surgical neck fractures of the humerus in elderly patients. Clin Orthop Relat Res 1996, 330:173-180
- 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(2):85-89
- Hessmann MH, Blum J, Hofmann A, Küchle R, Rommens PM: Internal fixation of proximal humeral fractures: current concepts. Eur J Trauma 2003, 29(5):253-261.
- Sivakumar Arumugam,Venkateshwara Arumugam.Surgical management of proximal humerus fracture treated with locking compression plate. International Journal of Research in Orthopaedics. 2017 Nov;3(6) ;1165-1169

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