

## Effect on efficacy, quality of life and quality sleep after locking plate fixation in proximal humeral fractures in geriatric population

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**Abstract: Objective** To explore effective treatment for the proximal humerus fractures in geriatric, to pay attention of its impact on the patient's quality of life and quality of sleep, in order to provide guidance for clinical work. **Method** 106 cases of proximal humeral fractures in elderly patients were collected and divided into two groups. Total of 53 cases categorized as the observation (case) group after application of lock plate, and 53 patients in the control group after application of ordinary steel in treatment. Clinical efficacy of the treatment, and differences in quality of life and quality of sleep were observed. **Results** The follow-up of efficacy was significantly better in the case (observation) group than the control group. The quality of life and sleep quality scores were significantly better than the control group. **Conclusion** The elderly proximal humerus fractures with application of locked plate has significant clinical efficacy. The follow-up of high quality of life and quality of sleep is significant and thus can be applied in the clinical treatment and surgical treatment

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Three, and four-part fractures of the proximal humerus are clinically more common in elderly populations. Due to the complexity of the type of fracture anatomy, while patients with osteoporosis, the difficulty of the treatment increases <sup>[1]</sup>. The locking plate has the lock reinforcement pressure, to form an overall engagement with the humerus, to ensure the effective fixed block of cancellous bone fractures, and postoperative without external fixation, patients with early functional exercise <sup>[2]</sup>. The concern of this study was in observance of locking plate in treatment of the elderly proximal humerus fractures, and concerned about the impact on quality of life and quality of sleep in patients, and to explore the role of treatment from many angles.

### 1. Data and methods

- 1.1 GENERAL INFORMATION: our hospital from January 2006 - December proximal humerus fracture patients with a total of 106 cases, 59 cases were male, female 47 cases. Age 57-80 years, mean 68.2 years. 52 cases on the left and right side in 54 cases. Cause of injury: falls 40 cases, traffic accident in 40 cases, injured in 26 cases. Exclusion criteria: ① the past six months with hormones or immunosuppressive therapy patients. ② limb fracture or surgery patients with a history.
- 1.2 grouping method: in accordance with the principles of the patients admitted to the order and random block will be incorporated into the patients were divided into two groups, the observation group of 53 cases, including 29 males and 24 females, aged 57-

79 years old, with an average of 68.1 years old. Control group of 53 patients, male 30 cases, woman sex 23 cases, aged 57-80 years old, with an average of 68.3 years old. The two groups of patients in the gender composition, age structure, comparison of the clinical data of the injured factors, no significant difference.

- 1.3 Treatment methods: observation group application locking plate for treatment, the specific method of anesthesia in the: Application neck muscle, beach chairs supine, take the neutral position of the upper limb. Along the deltoid the inside edge of the line vertical incision, pay attention to the protection of the cephalic vein, the effective exposure of the proximal humerus fracture and joint capsule, for shoulder dislocation first reset. Fracture fragments to be poking traction, Kirschner of bone temporary fixed. Appropriate length locking compression plate put in placed in the greater tuberosity proximal ending point under 5 mm nodule between the ditch after 10 mm. First cortical bone screw fixation distal humeral side, again under the guidance of the guide to the humeral head screwed 3 - 4 locking screws, the last of the distal humeral shaft side screws. Severe cases of transplantation, autologous iliac fracture crushed and humeral shaft side using the locking screws <sup>[3]</sup>. The activities of shoulder check fixed C-arm fluoroscopy fractures satisfaction locking screws in the humeral head articular cartilage 5-7 mm after rotator cuff repair articular capsule, placed suction drainage tube, sutured

incision. The perioperative patients were anti-osteoporosis therapy. The control group treatment application of ordinary steel, to choose domestic T-shaped or clover plate, strictly in accordance with the procedure surgery. The two groups are emphasis on minimally invasive surgery principle, perioperative anti-osteoporosis therapy patients.

- 1.4 Response Evaluation Criteria: The clinical efficacy assessed by Neer fracture score score as a percentage system, including pain in 0-35, features 30 minutes, the activity is 25 points, 10 points anatomic reduction. 90-100 divided into divided into excellent, 80-90 good 70-80 classified into <70, poor.
- 1.5 Evaluation of the quality of life and quality of sleep: quality of life evaluation application of SF-36 scale

evaluation score range 0-100, the higher the score, the better the quality of life [4]. Application PSQI

- 1.6 sleep quality assessment scale evaluation score range 0-21, the higher the score, the worse the quality of sleep.
- 1.7 Statistical Methods: of SAS6.12 analysis, application of the chi-square test or t-test,  $P < 0.05$  for the difference was statistically significant.

## 2. Result

- 2.1 Comparison of the therapeutic effect of the observation group and control group: patients were followed up for 12 to 18 months after surgery, the observation group after good rate of 90.57%, significantly higher than 75.4%, the difference was significant ( $P < 0.05$ ). (Illustrated Table 1)

Table1 Comparison of the observation group and control group patients were followed up for efficacy

groups	Case no	best	good	can	Poor	Excellent rate (%)	X <sup>2</sup>	P
case	53	34	14	4	1	90.57%	4.2828	0.0385*
control	53	25	15	9	4	75.47%		

\*comparing two groups  $P < 0.05$

2.2 The observation group and control group follow-up comparison of sleep quality score: two groups of patients completed the investigation of the sleep quality score, the observation group and the control group in the total score of PSQI comparison the difference was statistically significant ( $P < 0.05$ ) (Illustrated in Table 2)

Table 2 Comparison of PSQI total score in the observation group and the control group were followed

Groups	The number of cases	PSQI score	t	P
case	53	3.53±0.75	6.43	0.0201*
control	53	6.53±1.57		

\* comparison of two groups,  $P < 0.05$

2.2 Follow-up after treatment of the observation group and control group comparison of the quality of life score: two groups completed the investigation and evaluation of the quality of life. The results show

2.3 the observation group and the control group in the score of the SF-36 8 dimensions vary meaningful (illustrated in table3)

Table 3 Case group and control group followed up for eight dimensions of quality of life score in comparison

Index	case(53case)	control(53case)	t	P
Gross health (GH)	75.45±4.32	69.75±4.31	6.57	0.0293
Physiological function (P)	76.54±4.10	70.86±3.94	6.04	0.0351
Physiological role (RP)	74.04±4.28	70.52±4.10	6.29	0.0302
Bodily Pain (BP)	74.26±4.93	69.08±5.30	5.94	0.0353
Vitality (VT)	74.96±5.20	68.97±4.28	6.93	0.0282
Social Function (SF)	75.94±4.29	68.75±4.19	6.10	0.0274
Emotional Role (RE)	75.19±4.18	70.53±4.83	6.01	0.0281
Mental Health (MH)	75.18±4.10	71.97±4.20	5.46	0.0394

## 3. Discussion:

Elderly patients with proximal humeral fractures often accompanied by osteoporosis, and physical function of the elderly patients gradually decline, resulting in greatly reduced tolerance of surgery, and the impact of the effect of treatment. In this way it is

easy to elderly patients with mental tremendous impact, the long psychological backlog, can easily lead to mental disorders. For example, anxiety, irritability, and eating uneasy happens, thus affecting their quality of life and quality of sleep. Therefore, the clinical treatment to improve clinical efficacy in elderly

patients with proximal humerus fractures, to improve the quality of life and quality of sleep has important clinical significance<sup>[5]</sup>.

With the ongoing research for the the elderly proximal humerus fractures in clinical locking compression plate in the treatment of fractures have a better effect. This method is effective combination of locked internal fixation stent technology and traditional contact dynamic compression plate technology, with the locking screws and bone plates lock together to form a whole, and achieve better fixed effect. And such does not need outside help the plates fixed to the bone surface, so that the pressure between the bone plate and the bone surface to a minimum, so that the minimum interference of the plate for the surrounding periosteum and the soft tissue of the bone plate, the strongest protective effect on the blood supply<sup>[6]</sup>.

Through analysis of the clinical study, the treatment of elderly patients with proximal humerus fractures with locking plates better clinical effect. The group's data showed that patients after 12-18 months follow-up, the excellent rate of the observation group were significantly higher after good rate of data compared with a significant difference ( $P < 0.05$ ). This found that, the locking plates taken in the clinical treatment of the elderly proximal humerus fractures can effectively improve the clinical excellent rate, and the effect is significantly better than the traditional method of treatment of clinical excellent. Was mainly due to the fixing method in the application process to the patient bone protective effects<sup>[7-8]</sup>. And the locking plate having a guide means, can make the threaded screw tight sockets together with the steel plate, and each locking screw has a cross-strike add a fixed firmly to<sup>[9]</sup>. And this placed in locking plate for treatment is relatively low, so as to effectively reduce intraoperative stripped of soft tissue damage, especially to protect the inside of the soft tissue, to ensure that the blood supply of the humeral head, thus effectively improve the clinical treatment effect<sup>[10]</sup>. Once enhanced to improve the clinical efficacy and the ability to act to improve their lives, improve their body's ability to recover, and effectively improve the mood of elderly patients, and improve the taste of life and reduce the psychological burden, so as to promote its recovery<sup>[11]</sup>. And the group, the observation group and control group difference in the scores of the SF-36 8 dimensions meaningful. But also in the amount of sleep quality scores of the two groups of survey analysis, the observation group and the control group, the difference

was statistically significant ( $P < 0.05$ ) in the total score of PSQI comparison. It can be seen that, take the locking plate in the clinical treatment of the elderly proximal humerus fractures with better clinical results, thus improving their quality of life, in order to effectively promote their sleep, improve sleep quality.

In summary, the locking plate for treatment has a better effect, and can effectively improve clinical efficiency, and to reduce the damage of the patient's bodily functions<sup>[12]</sup>, thus further clinical the elderly proximal humerus fracture patients to take the improve the patient's quality of life and quality of sleep. The entire operating method is relatively simple, and can be applied in the clinical treatment.

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