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ORIGINAL ARTICLE

Functional Outcome of Non-operative Method of Treatment in Adult Patients with Proximal Humeral Fracture

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ABSTRACT

Objective: To find the functional-outcomes of non-operative treatment in proximal-humeral fracture of adults.
Study Design: Prospective study
Place and Duration of Study: Department of Orthopedic, Khyber Teaching Hospital, Peshawar from 1st January 2019 to 31st December 2019.
Methodology: One hundred patients age more than 50 years were enrolled. Patients were treated by usage of sling and their clinical as well as radiological imaging was followed until a year. Primary out comes were measured by Oxford-Shoulder Score and EuroQol5 Dimensions3-Levels while secondary through visual-analogue scale and university of California Los Angeles-scoring protocol.
Results: There were 73% females and 27% males. OSS and EQ-5D-3L mean score highly reduced as shown by the improved scores of primary outcomes. VAS as secondary outcomes 32.2 at a year time with 59.1 treatment gratification and health score of VAS as 68.1 with 20.5 of UCLA presenting significant improvement and recovery.
Conclusion: Non- operative method of treatment is a significant method with efficient recovery outcomes.
Keywords: Humeral fractures, Non-operative, Shaft displacement, Outcome

INTRODUCTION

Non-operative surgical treatment is now widely considered as an alternative procedure for the treatment and fixation of proximal humeral fractures (PHF). It is specifically happened in adult population where patient is more concerned and considered non-operative treatment method as a reliable and safe protocol for fracture fixation. Surgical treatment method for fractures fixation especially proximal humeral fractures is still a controversial topic and vast number of researches are need to be done and explored. Several studies have shown the non operative protocol as a better treatment option even in severe multi-part fractures or displaces cases of adult population.[1,2]

Non-operative treatment method not only showed satisfactory and reliable results but also helps in attaining overall health and functioning of bone.[3,4] Although various studies support the result and considered non operative treatment as a reliable procedure, still there is paucity of well-researched data to make it as a standard procedure. There is non-availability of detailed outcomes and results of this treatment method in PHF adult population.[5-10]

Result of the present study would prove advantageous for better understanding the treatment protocol of non operative method especially in immunocompromised population. The purpose of the present study is to provide detailed information and outcomes of non-operative procedure in proximal humeral fractures treatment of adult population.

MATERIALS AND METHODS

This prospective study was conducted at Department of Orthopedic, Khyber Teaching Hospital, Peshawar from 1st January 2019 to 31st December 2019. A total of 100 patients of the age >50 years were enrolled as study participants. Patients were enrolled after their informed consent and this study was also approved from review board. Those patients who had non pathological proximal-fractures of their humeral bone and were defined in accordance with square-method which either involved tuberosity or non-tuberosity were taken in inclusion criteria. In addition to this patients injury was scrutinized within a timeline of two weeks with absence of neuro-vascular injury. Higher tuberosity or lower tuberosity were operated and were taken in exclusion criteria. Complete patient clinical examination and radiological imaging was done for assessment of the bone fractures. The imaging was follow up at six, twelve and twenty fourth week until 12 months considered as limit of recovery period. The tuberosity cut off was taken as greater than 1 cm displacement of orientation in 3-4 parts in addition to complete parting of humeral head and shaft or in other conditions severe angular deformity of humeral head with a shaft inclination over 160°. The treatment protocol was based on wearing sling for 3 weeks period. A well structured questionnaire was used for recording demographic, clinical as well as follows up imaging and other lab information's. Oxford-Shoulder score (OSS) was adapted for analyzing the primary outcomes at a year follow up time. There are 1-48 scores available with OSS. Various 12 variables are used for scoring shoulder pain, functional and day to day activity level. Euro Qol-5 3D levels was also scored with 5 scoring scale including self care, level of anxiety, mobility and pain. Higher score represents more pain and severity. Negative scoring is termed as "worse than death". VAS with complete name as Visual-Analogue scale was used for measuring secondary outcomes especially for assessment of overall health in terms of hundred millimetre scale. University of California Los-Angeles (UCLA) with 15 scoring was opted at 1 year assessment. All the data was entered in SPSS version 26.0 and analyzed by its Chi-square analysis and Pearson correlation test method where p value <0.05 was taken as significant.

RESULTS

There were 73% females and 27% males. The mean age was observed as 66.5±4.4 years. Only 8% had a past clinical history of shoulder fractures. Ninety percent of cases reported low energy fall as the major cause of their injury and fracture. The EQ 5D 3L score was in negative at higher age at the time of enrolment (Table 1).

Tuberosity was seen highest in patients followed by neck fractures and head shaft translation. Head shaft translation was seen in the 14% of the case. The requirement of operation was only seen in 4% of the cases while others were recovered through non-operative opted treatment method (Fig. 1). The OSS and EQ-5D-3L mean score of head shaft translation was negative at the start of the study while requirement of operation and hospital admission after a year was highly reduced as shown by the improved scores of primary outcomes (P<0.001) [Fig. 2].

A complete year OSS scoring showed 33.2 score with 95% CI while 0.60 for EQ5D3L. In case of VAS as secondary outcomes 32.2 at a year time with 59.1 treatment gratification and health score of VAS as 68.1 with 20.5 of UCLA presenting significant improvement and recovery in enrolled patients through person correlation analysis assessment measures (Table 2).

Table 1: Comparison of primary outcome scores and demographic features (n=100)

Variable	Values	OSS	EQ-5D-3L	P value
Age (years)	66.5±4.4	-0.26	-0.25	<0.001
Gender				
Female	73 (73%)	33.1	0.55	<0.001
Male	27 (27%)	34.8	0.66	<0.001
Past shoulder history	8 (8%)	26.4	0.61	<0.001
Fall with low energy as injury mode	90 (90%)	33.2	0.57	<0.001
Movement	80 (80%)	36.5	0.66	<0.001

Table 2: Primary and secondary outcomes comparison in PHF patients

Outcome	Value at 1 year	OSS	EQ-5D-3L	Pain VAS	Health VAS	Treatment Gratification VAS	UCLA movement score at injury	UCLA movement score post 1 year	Modification in UCLA activity score
One year primary-outcomes									
OSS*	33.2	1	0.88	-0.81	0.66	0.55	0.50	0.67	0.38
EQ-5D-3L*	0.60	-	1	-0.80	0.72	0.60	0.47	0.63	0.35
1 year Secondary-outcomes									
Pain VAS*	32.2	-	-	1	-0.67	-0.62	-0.42	-0.57	-0.31
Health VAS*	68.1	-	-	-	1	0.61	0.47	0.58	0.24
Treatment Gratification VAS*	59.1	-	-	-	-	1	0.22	0.33	0.29
UCLA activity score*	20.5	-	-	-	-	-	-	1	0.39

*Mean

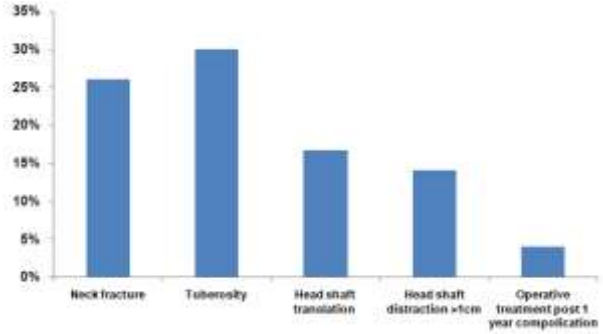

Fig 1: Clinical features of patients and their follow up assessment

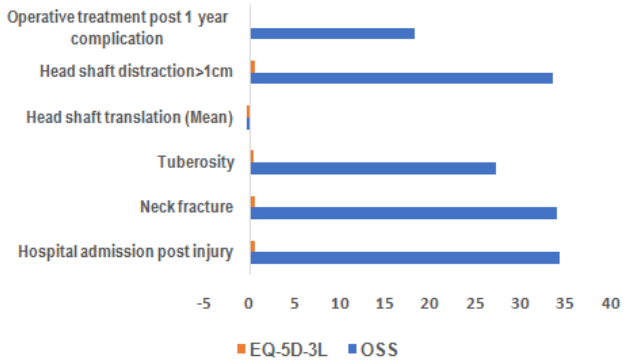

Fig 2: Comparison of primary outcome scores

DISCUSSION

Non operative method for humeral fractures is considered as substantial method that is widely accepted by various health care sector because of its reliable and satisfactory outcomes.[11] Few articles have already well documented this technique with normal scoring, large scale observational studies are still required to obtain exact results. Predictors that can be considered strong and reliable for PHF are social disorder history, deprivation score and dependency level.[12-14] Prediction values can also be made at case presentation time by investigating injury.[15]

Present study also reported that, psychosocial is the most common associated factor. Complications were reported only in 10% of the cases.[16] Other studies also reported similar results as 10.2% cases reported post procedure complications and their scoring was worse than death.[17] It is noteworthy to state that, only few cases undergo surgical treatment despite of the negative scoring, thus highlighting the efficacy of the protocol.[18]

Displaced tuberosity fracture was another factor which further worse the scoring and was present around 1-4% in both primary and secondary analysis. Osteonecrosis was also the worst outcome of humeral heads.[19] Cases in which scoring was near 47 points had ceiling effect. This effect was more prevalent in younger adults with poorer outcomes.[20]

CONCLUSION

Non-operative method of treatment is a significant method with efficient recovery outcomes.

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