

“Effect of early mobilization in the conservative management of stable two part fracture of surgical neck of humerus”

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Abstract

Background: This study was done to evaluate the effect immediate mobilization on pain, function and range of motion and to study the effect of displacement, angulation and impaction of the fracture on clinical outcome after conservative treatment.

Method: Prospective study of 26 patients of stable two part fracture of surgical neck of the humerus treated conservatively, randomized in group A i.e. patients receiving early mobilization at 1 week and group B i.e. patients receiving conventional treatment of 3 weeks immobilization followed by physiotherapy. The Constant- Murley shoulder score used for assessment and Patients were followed at 6 weeks and 12 weeks, 24 wks.

Results: Majority of patients i.e. 10 (38.5%) were from 71-80 years age group with 22 females 84.60% and 4 were males 15.40%. Constant shoulder score was better at 6 months with 78 mean for group A and 70 for group B.

Conclusion: Constant shoulder score was better at 6 months in two groups and had significant difference at 6 wks and 12 wks. Majority of the patients had angulated two part fractures of surgical neck 50% . Separated group of fracture configuration patients had statistically significant result at 24 weeks.

Keywords: Proximal humerus fractures, Conservative treatment.

THESIS SUMMARY

Introduction

Proximal humerus is the segment of the humerus obtained by erecting the square which accommodates the widest part of the proximal humerus. Fractures of the proximal humerus are common and debilitating injuries and are an increasing problem in the elderly. These fractures are best treated nonoperatively but the ideal duration of immobilization in a sling before physiotherapy begins has not been clearly defined.

Proximal humeral fractures are one of the most common osteoporotic fractures and account for 4-5% of all fractures. Approximately 40% of these fractures are displaced fractures involving surgical neck.

Literature shows that there are studies describing rehabilitation of minimally displaced fractures. But very little has been reviewed regarding rehabilitation of stable two part fracture of humerus through surgical neck treated conservatively which is quite common

in practice.

So there is a need to establish a definite protocol for rehabilitation of two-part fracture of surgical neck of humerus treated non-operatively.

Aims and Objective

To study the clinical outcome after the stable fracture of surgical neck of humerus treated conservatively

Objectives-

1. To study the effect immediate mobilization on pain, function and range of motion.
2. To study the effect of displacement, angulation and impaction of the fracture on clinical outcome after conservative treatment

Materials and Methods

Study area was Department of Orthopaedics, L.F. Hospital,

Angamaly, Kerala.

Study population- All patients with stable two part fracture of proximal humerus with age > 50 yrs, presenting to department of orthopaedics, Little Flower Hospital, Angamaly from august 2009 to August 2012.

Total twenty six patients were included in the study. They were included in study after applying inclusion and exclusion criteria which are as follows:

Inclusion criterion

All two part fracture of surgical neck of humerus (according to Neer's classification) which are stable and in an acceptable position by two conditions- i) displacement (<66%) and angulation are acceptable may or may not be reduced manually and ii) the humeral head and shaft move as a unit.

Age > 50 yrs

Exclusion criterion

Patients with previous ipsilateral or contralateral shoulder problems.

Patients with ipsilateral elbow problem .

Patients with poor general health.

Pathological fractures.

Multifragmentary displaced fractures of surgical neck.

Patients unable to comprehend/ follow treatment or mobilization protocol

Baseline assessment included determination of the patient's age, gender, dominant side, co-morbid conditions and associated injuries and the cause of the injury.

Non operative treatment protocol

Group A- patients receiving early physiotherapy by 1 week

Shoulder immobiliser for 1 week.

Phase I exercises upto 3rd week.

4th week to 3 months phase II exercises.

After 3 months phase III exercises.

Group B- immobilisation for 3weeks followed by physiotherapy

Shoulder immobiliser for 3 weeks.

4th to 6th week phase I exercises.

7th to 12th week phase II exercises,

after 3 months phase III exercises

The Constant- Murley shoulder score used for assessment.

Qualitative variables were recorded as percentages, and comparisons between treatments involved the use of a chi square. Quantitative variables were recorded as the mean and the standard deviation; means were compared with use of the Independent samples t test, and mean differences were calculated with 95% confidence intervals.

Results

Age wise distribution of cases

Majority of patients i.e. 10 (38.5%) were from 71-80 years age group,

followed by 7 (26.9%) patients in 81-90 years of age groups. The mean age in our study was 72.34 years. We did not found statistically significant difference in terms of Constant shoulder score outcomes amongst different age groups.

Sex wise distribution of cases

There were 22 females 84.60% and 4 were males 15.40%. We have analysed functional outcomes of males and females with help of independent T test. We found no statistically significant difference amongst two groups.

Fracture configuration-

50% were angulated fractures. We have analysed functional outcomes of the three fracture configurations with help of Chi square test. We found no statistically significant difference amongst the three groups at 6, 12 weeks but at 24 weeks separated fracture configuration group had better result compared to other two groups.

Co-morbid conditions-

One patient had dementia, two patients were had alcohol abuse while one patient developed lt lateral tibial plateau fracture at 2wks during rehabilitation period.

Outcome measure-

Constant shoulder score was better at 6 months with 78 mean for group A and 70 for group B. We have analysed outcomes of two groups with help of independent T test. We found that there is statistically significant difference amongst two groups at 6 weeks and 12 weeks with mean constant shoulder score was higher in group A that is early mobilisation group.

Complications-

All four patients with co morbid conditions had shoulder stiffness with Constant shoulder score <60 at 6 months.

Discussion

Young TB et al, Clifford PC, Kristiansen B et al have shown that there is no consensus regarding the ideal duration of immobilization in a sling before physiotherapy begins in non operatively treated two part surgical neck of humerus fractures. Present study shows that early passive shoulder joint mobilization after nonoperatively treated stable two part fractures of surgical neck of humerus offers a better chance for a more rapid gain in shoulder functional status than does classic three-week immobilization followed by physiotherapy. In our study 50% patients had angulated fractures, 26.90% had separated fractures and 23.10% comminuted fractures. All fractures healed by 6 weeks and we did not observed any displacement. This is correlated with other studies, CourtBrown CM, Hodgson SA et al, Correard RP. When three fracture configurations were analysed in respect to Constant shoulder scores with > 60 good or excellent and < 60 as poor result, we found that at 6, 12 weeks there was no significant difference but at 24 weeks, separated group of fractures had all cases with the score above 60.

We compared the constant shoulder score at 6, 12, 24 weeks with respect to age, gender, side of involvement but there was no

significant difference in Constant shoulder score as >60 or < 60 . Our results suggest that immediate passive mobilization is safe for these fractures because we observed the better constant shoulder score at 6 weeks and 12 weeks. But the outcome is not significant at 24 weeks. This observation is similar to M.M. Lefevre-Colau et al. series. In our study four patients had shoulder stiffness with constant shoulder score <60 which we considered as poor result. All four patients had relevant co-morbid conditions. One patient had dementia, two patients had alcohol abuse and one patient developed lower extremity fracture at 2 weeks during rehabilitation period. In other studies co-morbid conditions have not been considered.

This study has some limitations. This study did not record generic health-related quality-of-life measures such as SF36 score during the follow-up period.

Another limitation was that physical therapy for both treatment groups was not uniformly supervised or unsupervised. Some patients with excellent results had received completely supervised physical therapy. Also radiological diagnosis and treatment was not made by single person, hence bias of patient motivation cannot be ruled out.

Only x-rays are used for diagnosis. A huge data suggest intra and inter observer variability in classifications which are based on radiological examination. Hence there is a chance of an overestimate of diagnosis of particular type of fractures.

Conclusions

In this prospective study of 26 patients of stable two part fractures of surgical neck of humerus-

Relevant co-morbid conditions are associated with poor outcome.

Four such patients had shoulder stiffness at 6 months with Constant shoulder score <60 .

Majority of the patients had angulated two part fractures of surgical neck 50%. Separated group of fracture configuration patients had statistically significant result at 24 weeks.

Constant shoulder score was better at 6 months in two groups and had significant difference at 6 wks and 12 wks.

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