Original Article

Outcome of Non Operative VS Operative Technique in Managing Mid Shaft Humerus Fracture

Babar Bakht Chughtai, Zulfiqar Ali, Asad Ali Bubak and Zobia Zulifqar

ABSTRACT

Objective: To compare the outcome of non-operative technique Vs operative technique in the treatment of mid shaft fractures of humerus.

Study Design: Randomize controlled trial study.

Place and Duration of Study: This study was conducted at the Orthopedic complex, Bahawal Victoria Hospital, Bahawalpur from March 2018 to October 2018.

Materials and Methods: 72 Patients fulfilling the inclusion criteria were selected for this study. The patients were allocated and divided into two groups A and B. Group A patients were managed by non-operative technique (U Slab) and Group B patients by operative technique. Follow up was taken at 48 hours, 8 week and 16 weeks. Outcome was compared between both groups.

Results: In this study we have 74 patients, half of them were in Group A and other half were in Group B. Patients were between ages of 15 years to 72 years. Male Patients were 47 in number and female were 27. We are comparing the two groups on the basis of pain intensity, union and movements of shoulder and elbow joints and their radiographic findings. Group A patients were treated conservatively. Out of 37 patients male patients are 22 and Females are 15 in numbers. During follow up period one patient was missed in Group A on 8th and 16th week because he had no union. But in Group B two patients were not included in our study due to iatrogenic injury of radial nerve and he was not recovered till 16th weeks and the other had developed osteomyelitis.

Conclusion: According to the data in our study there was no significant differences between conservative treatment and operative treatment in the management of mid shaft fracture of humerus regarding union. Although there is a trend towards conservative treatment to avoid the hazards of surgery as well as financial burdens on the shoulder of poor people and the Government.

Key Words: Humerus shaft fracture, non-operative (U-slab), operative (DCP)

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INTRODUCTION

In this modern age humerus fractures are increasing day by day and there management is important for orthopedic management for good outcome[2,4]. These fractures are an injury to the bone of the arm. Most of the time these are caused by road traffic accidents and the Gun shot injuries in the young people. The older people get injuries after fall from due to their osteoporotic bone[1,5]. These fractures are commonly 3 to 5% of all fractures. Humeral dya physical fractures account for 1.2% of all fractures.

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These are divided into proximal fracture,mid-shaft fractures, and distal fractures.[3,7] These patients are presented with pain, deformity, loss of function of limb and neurological deficit which is up to 18%.[5,7]

The treatment depends on the type of fracture, duration of fracture, presence of associated injuries availability of facilities and the managing surgeon experience.[9,10] Mostly these fractures are treated non-operatively. There are various modes of non-operative technique such as hanging arm cast, U slab, functional brace, co-aptation splints, collar and cuff sling, and shoulder spicca cast.[11]The aim of these techniques is to keep the patient comfortable, establish union with acceptable, functional alignment and restoration of function. In conservative treatment it is to save the patient from the hazards of surgery.[12,13,14] However, there are few drawbacks of these conservative methods like immobilization of the limb, prolonged period of time, stiffness of the elbow joint, irritation inside the cast, mal-union, and non-union. These techniques are not helpful in case of poly trauma patients, comminuted fractures, segmental fractures, floating elbow and with secondary radial nerve injury.[15, 16]

To overcome these above problems operative techniques are applied which are dynamic impression, interlocking nail, and locking plates. Our four most object of operative technique is to early mobilization of the poly trauma patients and anatomical reduction of bone and stable fixation. However, operative techniques have its own hazards like infection, non-union, hardware failure and autogenic radial nerve injury.[17] However, most of the time these fractures are managed operatively and non-operatively at different centers of world by orthopedic surgeons.[18] But it emphasizes me to study both the techniques for the management of humeral shaft fractures, to see which is more beneficial and less financial burden on the shoulder of the patients and the Government.[19,20]

MATERIALS AND METHODS

This study was done at Bahawal Victoria Hospital in Orthopedics Complex with randomized control trial including patients who are treated conservatively and operatively between from 24th March 2018 to 24th October 2018.

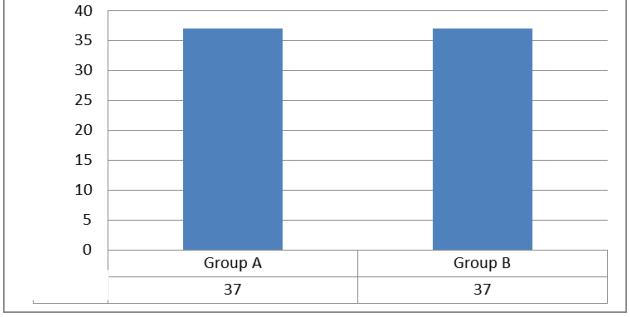
According to WHO the calculation of the sample size is , confidence level is 95%, Absolute precision is 5%, Power is about 80%, P1 is equal to 18% and P2 is 5%.. Our patients are 74 which are divided into A and B groups. Our patients are between the ages of 15 to 75 years of both genders. Causes include road traffic accidents, fall from height, gunshot injury, fracture with radial nerve injury and fractures within two weeks and patients who are not included in our study are the open fractures, poor general medical condition, pathological fractures, fractures with vascular injury, patients with any metabolic diseases like diabetes mellitus and hypothyroidism.

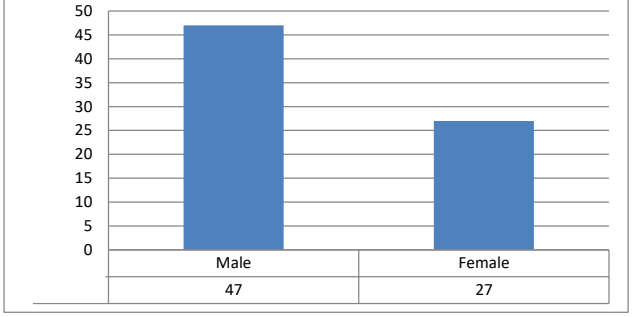
RESULTS

In this study we have 74 patients, half of them are in group A and half of them are in group B. The average age of the patients are 15 to 72 years, male patients are 47 in number and female are 27. We are comparing the two groups on the basis of pain intensity and union and shoulder movements, elbow movement and radiographic findings. In Group A patients are treated conservatively. During Follow up period, one patient was missed on 8th week and 16th week because he had no union but in Group B was not included in our study, one had iatrogenic injury of radial nerve and he was not recovered till 16th week and the other got osteomyelitis.

The results of the Group A were in first 48 hours the 21.6 % had no pain and 54.05% had mild pain, 16.22 % had moderate pain, and 8.11% had severe pain. On 8th week 86.11% had no pain, 8.33% had mild pain, 5.5% had moderate pain. On 16th week 91.6% had no pain, 5.6% had mild pain and 2.78% had no pain. After 48 hours, there is no shoulder movement. On 8th weeks 86.11% had movements, On 16th week 94.44% had movements. On 48 hours there no elbow movements but on 8th weeks 94.4% had movements. On 16th week, 97.22% had movement; Union on X-ray is 88.89% on 8th week, and on 16th week 97.22% had union.

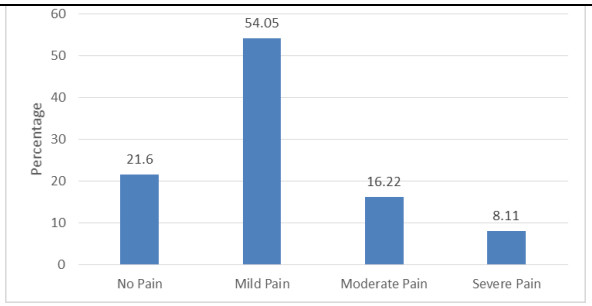
In Group B, pain intensity in 48 hours is 10.81% had mild pain, 32.43 % had moderate pain and 56.76% had severe pain. On 8th week 74.25% had no pain, 20.0% had mild pain and 5.7% had moderate pain. On 16th week, 91.67% had no pain, 5.6% had mild pain and 2.76% had moderate pain. Shoulder movement in 48 hour is 2.7% had movement. On 8th week 88.57% had movements and on 16th week 91.43% had movement. Elbow movement in 48 hour is 5.4%. On 8th week 91.43 had movement and on 16th week 94.29% had movement. Union on X-rays is 92.43% on 8th week and 94.23% on 16th week.

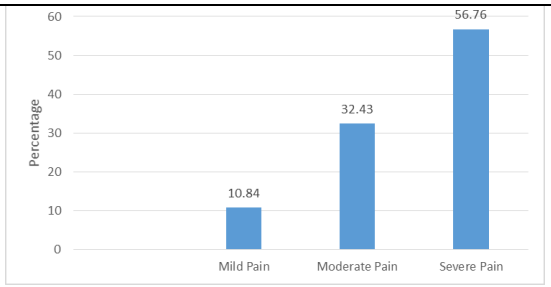




Pain intensity in 48 hours of Group A			
No pain	Mild Pain	Moderate	Severe Pain
21.6%	54.05%	16.22%	8.11%

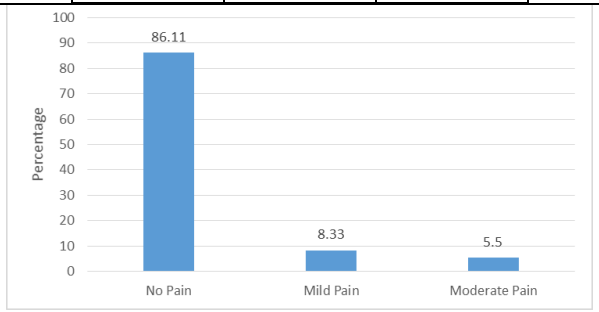
Pain intensity in 48 hours of Group B			
No pain	Mild Pain	Moderate	Severe Pain
0%	10.84%	32.43%	56.76%

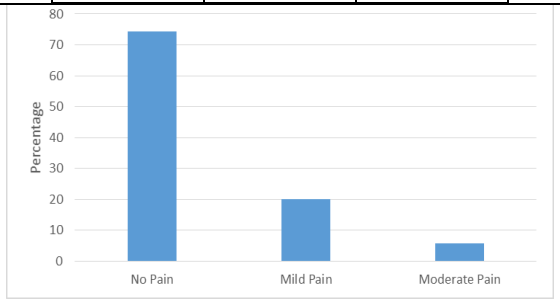




Pain Intensity in 8th Week Group A		
No pain	Mild Pain	Moderate
86.11%	8.33%	5.5%

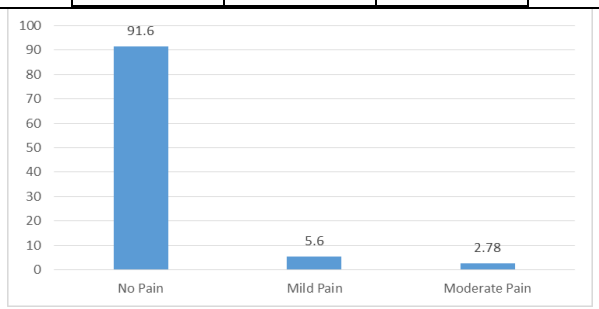
Pain Intensity in 8th Week Group B		
No pain	Mild Pain	Moderate
74.25%	20.0%	5.7%

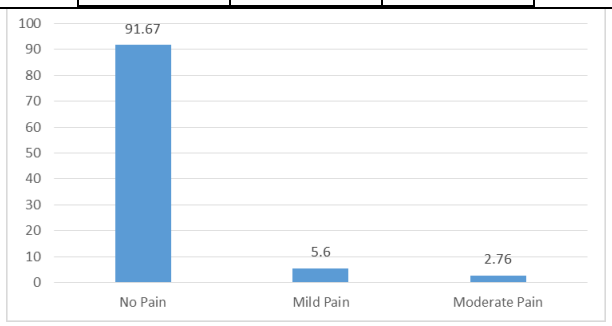




Pain Intensity in 16th Week Group A		
No pain	Mild Pain	Moderate
91.6%	5.6%	2.78%

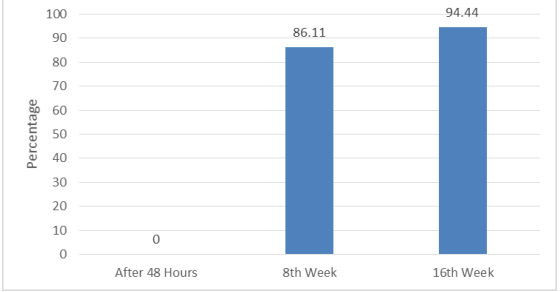
Pain Intensity in 16th Week Group B		
No pain	Mild Pain	Moderate
91.67%	5.6%	2.76%

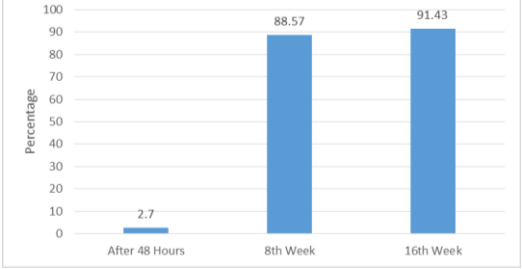




Shoulder Movement in Group A		
After 48 hrs	8th week	16th week
0%	86.11%	94.44%

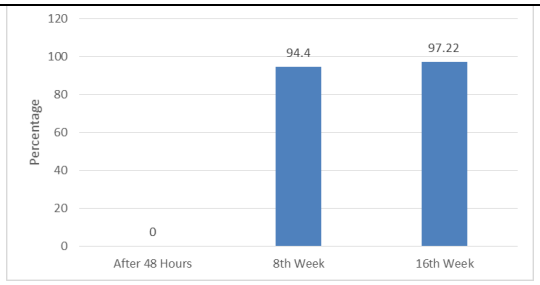
Shoulder Movement in Group A		
After48 hrs	8th week	16th week
2.7%	88.57%	91.43%

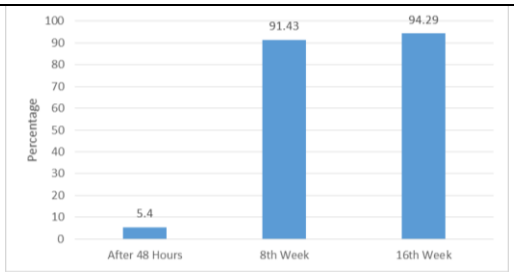




Elbow Movement in Group A		
After 48 hrs	8th week	16th week
0%	94.4%	97.22%

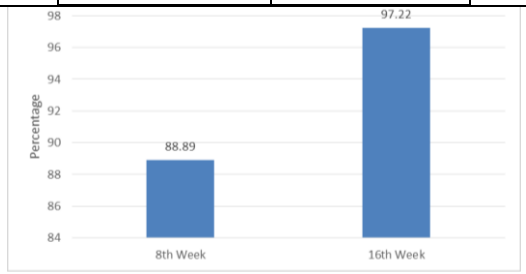
Elbow Movement in Group B		
After48 hrs	8th week	16th week
5.4%	91.43%	94.29%

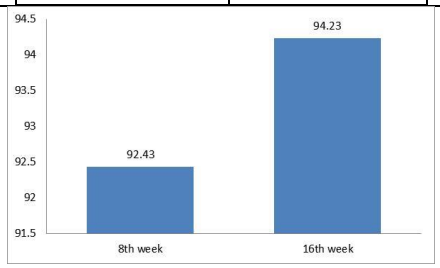




Union Seen on X-ray Group A	
8th week	16th week
88.89%	97.22%

Union Seen on X-ray Group B	
8th week	16th week
92.43%	94.23%





DISCUSSION

Non-operative management of humeral shaft fractures is the main part of treatment, however there can be some drawbacks with non-operative treatment like immobilization of the joint for a long period of time resulting in decreased movements of the joins. There is decreased movement in the elbow joint.97% of the union rate can be achieved by using the non-operative technique such as U-slab and bracing. It leads to good results with minor morbidity.

Wallny et al, treated the mid shaft fractures by using the functional humeral brace and he achieved very good results in these cases. They used mostly these braces for spiral/oblique fractures of the humerus.

Jawa et al, compared functional bracing and plate fixation. In the plate fixation, he studied that there was mild decrease in the shoulder movement and also in the elbow joint movements and there were no non-unions. But the cases which were dealt by the non-operative, they developed radial nerve palsy in 3 cases. They also noticed mal alignment in few of the patients and he found more than 90% results achieved by non-operative methods. Both the techniques had their own advantages as well as disadvantages

The operative treatment had the advantage of good alignment with immediate stability and early restoration of function.

Denard et al compared the results of non-operative versus operative management of humeral shaft fractures. They found mal-alignment and non-union in non-operative cases. But in operated cases there was no such difference of union and movements of the joints as compared with the non-operative cases. They also found that with the recent improvement in plating techniques and implants get good results and by using braces same results were achieved.

The Union rates either with non-operatively or operatively for the treatment of humeral shaft fractures approximately between the 8th to 16th weeks. In younger patients, non-operative management maydelay their ability to return to work. Nerve palsy is the most common complication, reported in up to 7% of patients. Infection is also a common complication, affecting up to 3% of patients.

CONCLUSION

Surgeon experience and assessing functional outcomes in non-operative patients have challenged the belief that humeral shaft fractures uniformly do well without surgery. In operative cases there is early mobilization of the joints and patient go to work early but there are complications like osteomyelitis and radial nerve injury. In non-operative cases there is no risk of surgical and anesthesia hazards. Therefore, non-operative treatment is safer for the patient and for surgeon.

Group A have better results that are treated conservatively as compared to Group B who are operated.

Author's Contribution:

Concept & Design of Study:	Babar Bakht Chughtai
Drafting:	Zulfiqar Ali
Data Analysis:	Asad Ali Bubak, Zobia Zulifqar

Revisiting Critically:	Babar Bakht Chughtai, Zulfiqar Ali
Final Approval of version:	Babar Bakht Chughtai

Conflict of Interest: The study has no conflict of interest to declare by any author.

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