Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: www.saspublishers.com

OPEN ACCESS

Dermatology

Sociodemographic Status of Displaced Bicondylar Intra-Articular Fractures of the Distal Humerus

Dr. A S M Iqbal Hossain Chowdhury[1*], Dr. Md. Shafiquzzaman[2], Dr. Mst. Khurshida Jahan[3], Dr. Mohammd Shaheb Ali[4], Dr. Mosammat Hoshneara[5]

[1]MBBS. MS (Orthopedic Surgery), Associate Professor (cc) OSD. DGHS. Attached, Department of Orthopedic Surgery, Sheikh Hasina Medical College, Jamalpur, Bangladesh
[2]Assistant Professor, Department of Dermatology, Mymensingh Medical College, Mymensingh, Bangladesh
[3]Assistant Professor (cc), Department of Obstetrics & Gynecology, Mymensingh Medical College, Mymensingh, Bangladesh
[4]Junior Consultant, Pediatrics, Upazilla Health Complex, Purbadhala, Netrokona, Bangladesh
[5]Junior Consultant (Radiology), OSD, DGHS, Attached Mymensingh Medical College Hospital, Mymensingh, Bangladesh

DOI: 10.36347/sjams.2019.v07i08.049 | **Received:** 20.08.2019 | **Accepted:** 27.08.2019 | **Published:** 30.08.2019

***Corresponding author:** Dr. A S M Iqbal Hossain Chowdhury

Abstract **Original Research Article**

Objective: in this study our main goal to evaluate the sociodemographic status of patients in displaced bicondylar intra articular fractures of the distal humerus. ***Methodology:*** This perspective and randomized study was conducted at the National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka from July 2003 to 2005. Where out of 24 patients 12 were selected for operative treatment by reconstruction plate and screws (Group –I), and 12 were selected for operative treatment by double tension band wiring (Group-II) as on random basis. ***Result:*** during the study, where in group-1 male and female percentage were equal, 50%, where as in group-2 41.67% were male and 58.33% were female. Most of the patients had clinical follow-up by 6 months, 50% and 66.67%. In group-1 58.33% patients had injury by falling whereas, in group-2, it was 75%. ***Conclusion:*** From our study we can conclude that, personal awareness, anatomic surgical reconstruction, and postoperative care should be performed correctly for management of in displaced bicondylar intra articular fractures of the distal humerus. Further study is needed for better outcome.

Keywords: Double tension band wiring, Reconstruction plate and screws, displaced bicondylar intra articular fractures.

INTRODUCTION

In adults articular fractures of the distal humerus are difficult to treat because of their epiphyseal location. About 3000 distal humerus fractures in adults and children are treated surgically every year in worldwide. An orthopaedic surgeon sees an average of five distal humerus fractures per year. Because these fractures are fairly infrequent, proposing a routine but specific supervision scheme is challenging [1, 2].

Complete fractures consequence from impaction of the proximal ulna onto the articular part (trochlea, capitellum) of the distal humerus. The effect can occur with the elbow flexed or extended. If the elbow was flexed at impact, the articular fragments move forward; if the elbow was extended, they typically move backwards [3]. Some trust that contre-coup impaction towards the lower end of the humeral shaft results in separation of the medial and lateral columns. Because of the complexity of the injury mechanisms, comminuted fractures are quite common, particularly in the elderly.

Partial sagittal fractures of the lateral or medial condyle are the result of indirect trauma in valgus or varus while in full or nearly full extension. These fractures are accompanied by capsular and ligament injuries on the opposite side of the joint. The elbow will be acutely unstable.

The treatment procedure consists of determining the injury mechanism, defining the analytic modalities and developing a treatment algorithm to allow the patient to totally regain full mobility of this complex joint. Normal function is hard to restore if the joint is warped by malunion and stiffened by heterotopic ossifications or capsular and ligament contractures.

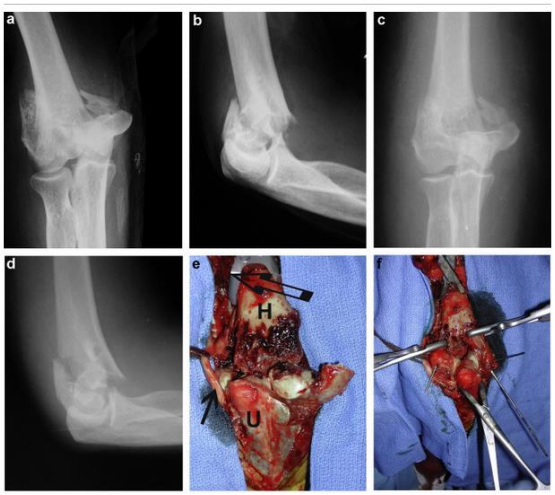

Fig-1: Type C complete articular (bicondylar) fracture of the humerus[1]

In this study our main objective is to evaluate the sociodemographic status of patients in displaced bicondylar intra articular fractures of the distal humerus.

Objective

General objective

- To assess the sociodemographic status of patients in displaced bicondylar intra articular fractures of the distal humerus.

Specific objective

- To detect causes of injury.
- To identify clinical follow-up of the patients.

Methodology

Type of study	perspective and randomized study
Place of study	National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka
Study period	1 year (February 2017 to February 2018)
Study population	Patients with bicondylar intra-articular fracture of humerus were selected for this series.
Sampling technique	Purposive

Study population

Thirty patients with bicondylar intra-articular fracture of humerus were selected for this series. Six patients were lost during follow up because of various reasons and, therefore, excluded from the study. The remaining twenty-four patients were available for follow up. Out of 24 patients 12 were selected for operative treatment by reconstruction plate and screws (Group –I), and 12 were selected for operative treatment by double tension band wiring (Group-II) as on random basis.

Inclusion criteria

- Adult patients between the age of 18 to 50 years.
- Displaced bicondylar intra-articular fractures of the humerus.
- Patients of both sexes were randomly selected.
- Closed fresh fracture within 2 weeks of injury was included in the study.
- Type II (separation of the capitulum and trochlea without appreciable rotation of the fragment in the fracture line) and type III (separation of the fragments with rotatory deformity) were selected.

Exclusion criteria

- Children (before closure of the epiphyseal plate)
- Open fracture.
- Pathological fracture.
- Polytrauma patients.
- Patients with septic focus.
- Fracture more than 2 weeks old.

Study procedure

After reporting to emergency department of NITOR, a brief history was taken, clinical examination was done to assess the vital function of the patient. As most of the cases were trauma victims immediate resuscitation was done by following the principles of ATLS (Advanced Trauma Life Support).Some of the patients were admitted in the ward through the outpatient department. After full preoperative preparation then the patient was taken to clean operation theatre for open reduction and internal fixation.

Patient was counseled regarding the management procedures, merits and demerits of operative versus conservative treatments, hazards of anaesthesia, possible post-operative sequel. Preanesthetic check-up was done. Kept no food by mouth at least 6 hours before operation. Proper size cancellous screw, Kirschner wire, surgical wire was determined after careful assessment from the study of roentogenogram of the healthy and injured site of the elbow joint.

In all cases, prophylactic antibiotic, usually second-generation cephalosporin 1 gm ---intravenous at the time of induction of anaesthesia, thereafter, six hourlies for 3 days were given. After 3 days, oral cephalosporin 500 mg 6 hourly for 7 days was given.

Data analysis procedure

- Once data collection was completed, data were compiled manually according to key variables. All

statistical analysis of different variables, were analyzed according to standard statistical method and calculation by using scientific calculator. All the data were checked and edited after collection. Then the collected data were analyzed by SPSS 15th version (statistical package for social science) computer software program. Percentage was calculated to determine the proportion of the findings. Results were presented in tabulated form. Statistical significance was set at $p<0.05$

RESULTS

In table-1 shows gender distribution of the patients where in group-1 male and female percentage were equal, 50%, where as in group-2 41.67% were male and 58.33% were female. The following table is given below in detail:

Table-1: Gender distribution of the patients

Gender	Group-1, %	Group-2, %
Male	50%	41.67%
Female	50%	58.33%

In table-2 shows age distribution of the patients were among 24 patients here, in group-1 and group-2 most of the patients belongs to 18-30 years age group, 41.67%. The following table is given below in detail:

Table-2: Age distribution of the patients

Age group (years)	Percentage	Percentage
18 - 30	41.67	41.67
31 - 40	33.33	25.00
41 - 50	25.00	33.33

In figure-2 shows distribution of the patients according to causes of injury where in group-1 58.33% patients had injury by falling whereas, in group-2, it was 75%.The following figure is given below in detail:

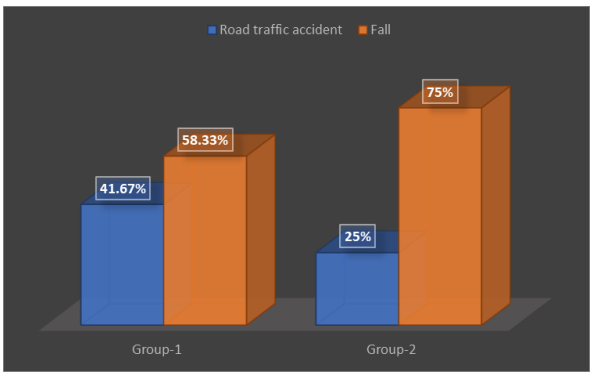

Fig-2: Distribution of the patients according to causes of injury

In table-3 shows sociodemographic characteristics of the patients where in group-1 and group-2 most of the patients belongs to urban area. Th following table is given below in detail:

Table-3: Sociodemographic characteristics of the patients

Variable	Group-1,%	Group-2,%
Resident area		
➢ Urban	➢ 60%	➢ 75%
➢ Rural	➢ 40%	➢ 25%
Educational status		
➢ Illiterate	➢ 9.72%	➢ 5.71%
➢ Primary level	➢ 27.63%	➢ 20%
➢ Secondary level	➢ 18.69%	➢ 15%
➢ higher secondary	➢ 12.88%	➢ 19%
➢ undergraduate and masters level	➢ 31.08%	➢ 40.29%
Occupational status		
House wife	➢ 25%	➢ 20%
Garments worker	➢ 22%	➢ 15%
Service holder	➢ 10%	➢ 21%
Day laborer	➢ 3%	➢ 13%
Student	➢ 14%	➢ 4%
Businessman	➢ 26%	➢ 27%
Type of Fracture		
II	➢ 33.33%	25%
III	➢ 66.67%	75%

In table-4 shows distribution of the patients according to clinical follow-up where in both group, most of the patients had clinical follow-up by 6 months, 50% and 66.67%. The following table is given below in detail:

Table-4: Distribution of the patients according to clinical follow-up

Follow-up(months)	Group-1, %	Group-2, %
4	25%	0%
5	33.33%	33.33%
6	50%	66.67%

In figure-3 shows activity level of the patients after treatment where in group-1 (50%) had activity level same as prior to accident, (41.67%) had diminution of previous level of activity, and (8.33%) had interruption of level of activity. Whereas, in group-2(41.67%) had activity level same as prior to accident, 6 (50%) had diminution of previous level of activity, and (8.33%) had interruption of level of activity.The following figure is given below in detail:

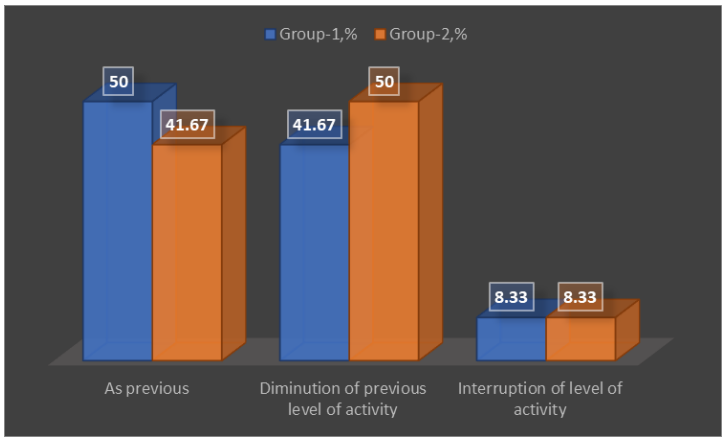

Fig-3: Activity level of the patients after treatment

In table-5 shows complication of the patients after treatment where post-operative neuropraxia due to tourniquet -- 2 cases (in Group – I) and 1 case (in Group – II), Distal migration of Kirschner wire in 3 cases, Deep Sepsis with evidence of osteomyelitis - 1 (one) case and severe stiffness of the elbow joint – 1 case in each group. The following table is given below in detail:

Table-5: Complication of the patients after treatment

Complication	Group – 1, n	Group-2, n
i) Post-operative Neuropraxia due to tourniquet	2	1
ii) Distal Migration of the Kirschner wire fron the condyles	0	3
iii) Cubitus Varus deformities	0	1
iv) Excessive bilateral Callus formation	0	1
v) Marked stiffness of the Elbow joint	1	1
vi) Deep Sepsis	1	1

DISCUSSION

The bicondylar intra-articular fractures of the distal humerus in adult are difficult fractures to manage and various accommodations for treatment have been presented. The good treatment for satisfactory elbow function depends on good anatomical reduction, rigid internal fixation and early mobilization of the elbow joint.

A perfect reduction which is necessary for good final result is difficult to achieve with closed methods and most of these fractures should be treated by open reduction and stable internal fixation [4].

For activity level comparing with previous activity level 10 to 0 point can be scored. Results categorized as, - Excellent – 90 – 100 points, Good – 70 – 85 points, Fair – 50 – 65 points, and Poor - less than 50 points.In respect of activity level, 50% cases had some activity level as prior to accident in group-I as compared to 41.67 % in group – II.

No major complication occurred in this series. Postoperative neurofraxia due to tourniquet occurred in two patients in group – I and one patient in group – II. Distal migration of the K – wire occurred in 3 cases in group – II. Cubitus Varus deformity occurred in 1 case in group – II, excessive bilateral callus formation

occurred in one case in group-II. Elbow stiffness and deep infection occurred in 1 case in both groups.

The period of study was relatively short and the number of patients was also small. So, the classical comparative study between results of the two modalities of treatment of this complex fracture was difficult.

With above discussion, it was observed that open reduction and internal fixation by reconstruction plate & screw is better than the open reduction & internal fixation by double tension band wiring in the management of bicondylar intra-articular fracture of distal humerus in respect to anatomical reduction, rigid fixation, early mobilization and functional recovery [5-7].

CONCLUSION

From our study we can conclude that, personal awareness, anatomic surgical reconstruction, and postoperative care should be performed correctly for management of in displaced bicondylar intra articular fractures of the distal humerus. Further study is needed for better outcome.

REFERENCES

1. Ring D, Jupiter JB, Gulotta L. Articular fractures of the distal part of the humerus. JBJS. 2003 Feb 1;85(2):232-8.
2. Adams J C. Fractures about the elbow joint in adults. In; Outline of Fractures. 10th ed. Adams J C, David LH. editors. ELBS and Churchill and Livingstone, London. 1993; 140-2.
3. Bickel WE, Perry RE. Comminuted fractures of the distal humerus. JAMA. 1963; 184:553-7
4. Lansinger O, Mare K. T-Y intercondylar fractures of the humerus in adult. J Orthop Trauma Surg. 1982; 100: 37-42.
5. Letsch R, Schmit-Neuerburg KP, Stumer KM, Walz M. Intraarticular fractures of the distal humerus. Surgical treatment and results. Clinical Orthopaedics & Related Research. 1989, 238-44.
6. Low CK, Wong DH, Toh CL, Wong HP, Low YP. A retrospective study on elbow function after internal fixation of intercondylar fracture of adult humerus. Ann Acad Med Singapore. 1997; 168-71.
7. Mervin E. T-Y fractures of distal humerus. J Bone Joint Surg. 1953; 35:381-5.