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Original Article

Study of Occurrence of Fracture Shaft of Humerus In Adults

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ABSTRACT

Aims and Objectives: This study was conducted to know the commonest causes for occurrence of fracture shaft of humerus in adults and outcome of flexible intramedullary nailing of humeral shaft fractures. **Methodology:** The study was conducted in Chigateri Government hospital and Bapuji Hospital attached to J.J.M.Medical college, Davangere between October 2010 to September 2012. **Results and conclusion:** In 20 patients Majority of the patients 14(70%) were females and 6(30%) were males. RTA was the most common cause of injury being responsible for 80.00% of cases, 15 fractures were closed and 5 were open fractures, Most of the fractures were located in the middle third of the shaft (60%). The follow up ranged from 6 months to 18 months. 14(70%) patients had sound union in less than 18 weeks, 2(10%) patient had delayed union (22 Wks), 4 (20%) patient had non-union, 1 patient had implant breakage. 19(95%) patients recovered full range of motion of shoulder and elbow joint while 1 (5%) patient recovered good range of motion (within 10-15% of full range). The average ASES score obtained was 50. 14(70%) patients had excellent results, 2(10%) patients had good results and 4 (20%) patient had poor result.

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1. Background

A fracture of the humerus shaft is commonly encountered by orthopaedic surgeons and representing between 3% and 5% of all fractures. [1] Most will heal with appropriate conservative care, although a small but consistent number will require surgery for optimal outcome. Current research in this area focuses on defining the incidence and health care resources required to treat this injury, refining the indications for surgical intervention, decreasing the surgical failure rate through new implants and techniques and minimizing the duration and magnitude of disability post injury.

OBJECTIVES:

1. To study the functional outcome following the use of flexible nails for humeral shaft fractures in adults.
2. To study the duration of union in the above mentioned fractures.
3. To study the complications of flexible intramedullary nailing of humeral shaft fractures

METHODOLOGY:

In this study 20 patients with humeral shaft fractures were studied. All the cases were treated in Chigateri Government

hospital, Bapuji Hospital attached to J.J.M.Medical College, Davangere between October 2010 to September 2012.

All cases were treated using close reduction and internal fixation using flexible nailing retrograde technique.

OBSERVATIONS AND RESULTS:

Age and sex distribution:

Age of these patients ranged from 18 to 70 years with 7 (35%) patients in 4 decade. The average age was 40 years. Majority of the patients, 14(70%) were females and 6(30%) were males. Details are shown in figure 1.

Mode of injury

We found that road traffic accident was the most common cause of injury being responsible for 80.00% of cases followed by domestic accidents (10.00%), Fall from height(5.00%) and assault (5.00%). Details are shown in figure 2.

Side affected:

Left extremity was more often involved 60%. Right extremity was involved in only 40% of cases.

Fracture characteristics:

Most of the fractures were located in the middle third of the shaft (60%).

15 fractures were closed and 5 were open fractures. Majority of fractures (70%) were transverse type. In (30%) fractures were oblique type. Details are shown in figure 3.

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Time of union:

The time of union of fracture is shown in figure 4. Nearly 60% of the fractures united between 14-18 weeks.

Figure 1: Age and Sex distribution of patients

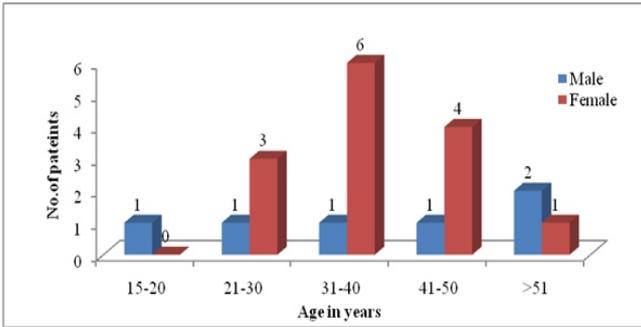


Figure 2: Mode of injury to the patients

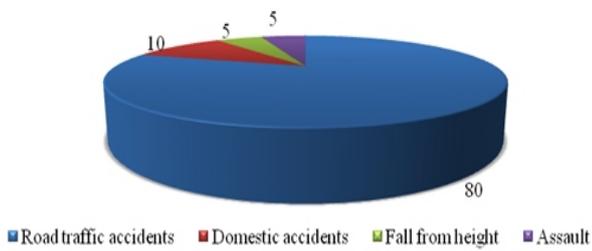


Figure 3: Fracture characteristics

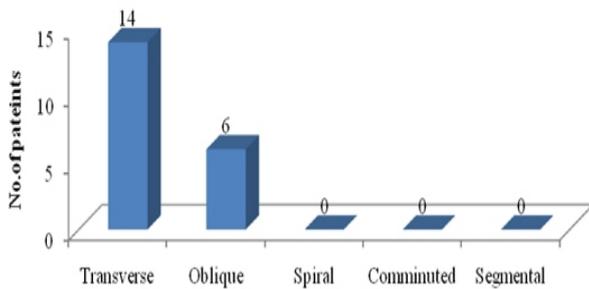


Figure 4: Time of union in weeks

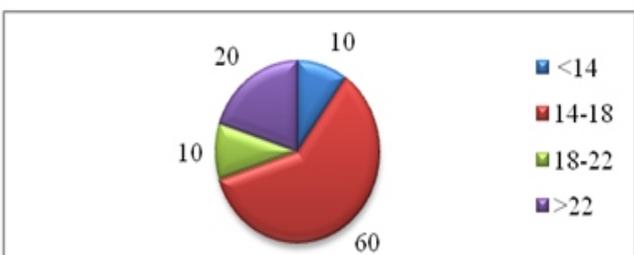


Table 1: Comparison of demographic profile with previous studies

SERIES	AVG AGE	M:F RATIO	TYPE OF FRACTURE	Good Range of motion	Commonest site
James et al [2]	49.7	6:4	Transverse & oblique	-	-
Wilairatana V, Prasongchin P [3]	29	16:5	-	-	-
Gongol T, Mracek D [4]	47	-	-	31	-
Strong GT, Walls N,	-	111:138	Transverse	-	-
McQueen MM [5]	-	-	& short oblique	-	Middle third
Tingstad EM et al [6]	-	44:38	Transverse and short oblique	-	-
McCormack RG et al [7]	-	28:16	-	44	-
Present study	38	6:14	transverse	16	Middle third

Table 2: Fracture union rate obtained in various studies

Series	Total no of patients	Delayed union	Nonunion	Overall results
Klenerman L[8] (1966)	98	8(8.2%)	-	98(100%)
Bell MJ et al [9] (1985)	34	-	1(3%)	33(97%)
Griend RV, Tomasin J, Ward et al [10] (1999)	36	5(14.6%)	1(3%)	35(97%)
Gongol T, Mracek D [4] (2002)	32	-	1(3.1%)	31(96.9%)
Present study (2012)	20	2(10%)	4(20%)	16(80%)

Table 3: Overall results obtained in various studies

Study	Year	No of patients	Method of treatment	Excellent /good results (%)
Heim D et al [11]	1993	127	DCP	87.3
McCormack RG et al [7]	2000	44	DCP & Intra-medullary nail fixation	95.7
Tingstad EM et al [6]	2000	44	AO plating	94
Gongol T, Mracek D [4]	2002	32	Functional brace	93.8
Present study	2012	20	Flexible nailing	70

DISCUSSION AND CONCLUSION

Comparing our study with that of previous reported series, the demographic profile, fracture union rates and overall results is shown in table 1, 2 and 3 respectively. In this study, twenty cases with twenty fractures of shaft of humerus in adults were surgically managed by closed reduction and internal fixation using flexible nails between October 2010 to September 2012 at Bapuji Hospital and Chigateri General Hospital attached to J. J.M. Medical College, Davangere.

All patients were evaluated clinically and radiologically before and following surgery, for an average period of follow up was 7 months. The age of the patient in this study, ranged from 20 years to 60 years average being 38 years. There were 6 male patients as compared to 14 female patients in this study. A total of 12 patients had fracture of left humerus shaft and 8 patients had fracture of right humerus. All fractures were closed. A total of 16 cases sustained fracture following road traffic accident, 2 cases had domestic trauma, 1 sustained fall from height and 1 case of assault. In this study, 12 fractures were situated in middle third of shaft, 4 fractures in the upper 3rd, and 4 fractures in the lower third of

shaft of humerus. Different fracture patterns were seen, 14 were transverse, 6 oblique. There were 4 cases of associated chest injury, 1 head injury, 2 cases of hand injury, one case both bone leg fracture. The fractures united in 14(70%) patients, 2(10%) cases of delayed union and 4(21%) cases of non-union.

The fracture was additionally supported by humerus brace postoperatively for 10 days. Post operatively patients were rehabilitated with active exercises of all the joints of the involved upper limb as soon as possible. Good or full range of mobility of shoulder and elbow joints was present in all patients.

By the analysis of the data collected in the present study, closed reduction and internal fixation with flexible nailing for humeral shaft fracture is one of the modality of treatment for fracture shaft of humerus in adults.

REFERENCES

1. Eben A. Carroll, MD, Mark Schweppe et al. Management of Humeral Shaft Fractures. *Am Acad Orthop Surg* 2012; 20 (7): 423-433.
2. James W. Pritchett. Delayed union of humeral shaft fractures treated by closed flexible intramedullary nailing. *J Bone Joint Surg Br.* 1985;67(5):715-18.
3. Wilairatana V, Prasongchin P. The open reduction and internal fixation of humeral diaphysis fracture treatment with a medial approach. *J Med Assoc Thai* 2001;84(1):423-427.
4. Gongol T, Mracek D. Functional therapy of diaphyseal fractures of the humeral bone. *Acta Chir Orthop Traumatol Cech* 2002;69(4):248-53.
5. Tytherleigh-Strong G, Walls N, McQueen MM. The epidemiology of humeral shaft fractures. *J Bone Joint Surg* 1998;80:249-53.
6. Tingstad EM, Wolinsky PR, Shyr Y, Johnson KD. Effect of immediate weight bearing on plated fractures of the humeral shaft. *J trauma* 2001; 49(2): 278-80.
7. McCormack RG, Brien D, Buckley RE, McKee MD, Powell J. Fixation of fractures of the shaft of the humerus by dynamic compression plate or intramedullary nail. *J Bone Joint Surg Br* 2000;82(3):336-39.
8. Klenerman L. Fractures of the shaft humerus. *J Bone Joint Surg Br* 1966; 48: 105-111.
9. Bell MJ, Beauchamp CG, Kellan JK, McMutry RY. The result of plating humeral shaft fractures in patients with multiple injuries. *J Bone Joint Surg Br* 1985;67(2):293-6.
10. Griend RV, Tomasin J, Ward EF. Open reduction and internal fixation of humeral shaft fractures. *J Bone Joint Surg Am* 1986;68A:430-433.
11. Heim D, Herkert F, Hess P, Regazzoni P. Surgical treatment of humeral shaft fractures, the basal experience. *J Trauma* 1993; 35:226-232.