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Functional Outcome in Olecranon Fracture Managed by Tension Band Wiring

Ravindra B. Gunaki
Department of Orthopaedics, Krishna Institute of Medical Sciences "Deemed To Be University", Karad, Maharashtra, India

Santosh Takale
Department of Orthopaedics, Krishna Institute of Medical Sciences "Deemed To Be University", Karad, Maharashtra, India

Sandeep Patil
Department of Orthopaedics, Krishna Institute of Medical Sciences "Deemed To Be University", Karad, Maharashtra, India

***Abstract*---Background**: The most common causes of Olecranon process fractures are road traffic accident, fall and physical assault. The present study was conducted to assess functional outcome in Olecranon fracture managed by tension band wiring. Materials & **Methods**: 102 patients of olecranon fractures of both genders were treated with tension band wiring (TBW) technique. The type of fracture was recorded with Mayo classification. Visual Analogue Scale (VAS) was recorded. **Results**: Out of 102 patients, males were 60 and females were 42. Mayo score was excellent in 52%, good in 20%, fair in 16% and poor in 12%. The difference was significant (P< 0.05). Patient satisfaction score was 10 seen in 35%, 9 in 25%, 8 in 12%, 7 in 10% and 6 in 8% patients. The difference was significant (P< 0.05). **Conclusion**: Tension band wiring is treatment of choice for displaced and slightly comminuted fractures of olecranon.

***Keywords*---**both genders, fractures, functional outcome, olecranon, tension band wiring.

Introduction

In about 10% of upper extremity fractures, the reason can be Olecranon fractures and it accounts for common injuries of the proximal ulna. The most common causes of Olecranon process fractures are road traffic accident, fall and physical assault. Fracture of olecranon and proximal ulna occurs due to direct and

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***Corresponding author**: Gunaki, R. B.; Email: rbgunki@yahoo.com*
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indirect trauma (Rettig et al., 1979). Direct trauma as falling on the back of elbow or direct forceful impact at the posterior surface of the elbow. It requires immobilization for about 4-6 weeks followed by moderate range of motion exercise may be used to treat undisplaced fractures. Few researches revealed that treating undisplaced fractures with a displacement of >2 mm conservatively yields the best results. Where displaced fractures are present, open reduction and internal fixation are normally required to restore normal elbow function and anatomical realignment of the articular surface. It is known that only undisplaced fractures (5% of total) are treated conservatively while displaced fractures (95% of total) are managed by operative treatment (Gartsman et al., 1981).

It is to restore articular congruity and stability in order to begin a program of early active motion. This mostly causes comminuted fracture of the olecranon. Degree of comminution depends on the severity of the trauma (Ring et al., 1997). Indirect trauma as falling on partially flexed elbow which can cause an indirect force generated by the pull of triceps muscle causing avulsion of small proximal fragment of the olecranon or two- part transverse or oblique fracture. Tension band wiring (TBW) which was introduced by Weber and Vasey remains the most widespread method for fracture osteosynthesis (Teasdall et al., 1993). The present study was conducted to determine functional outcome in Olecranon fracture managed by tension band wiring (Hutchinson et al., 2003; Rowland & Burkhart, 1992; Paremain et al., 1997).

Materials and Method

The present study consisted of 102 patients of olecranon fractures of both genders. All were informed regarding the study and their written consent was obtained. Demographic data of each patient was recorded. A thorough physical and clinical examination was carried out. Cases of olecranon fractures were treated with tension band wiring (TBW) technique. The type of fracture was recorded with Mayo classification. X-rays were taken in all cases. Visual Analogue Scale (VAS) was recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table 1
Distribution of patients

	Total- 102	
Gender	Males	Females
Number	60	42

Table 1 shows that out of 102 patients, males were 60 and females were 42.

Table 2
Evaluation of Mayo score

Mayo Score	Percentage	P value
Excellent	52%	0.02

Good	20%
Fair	16%
Poor	12%

Table 2, Figure 1 shows that mayo score was excellent in 52%, good in 20%, fair in 16% and poor in 12%. The difference was significant (P< 0.05).

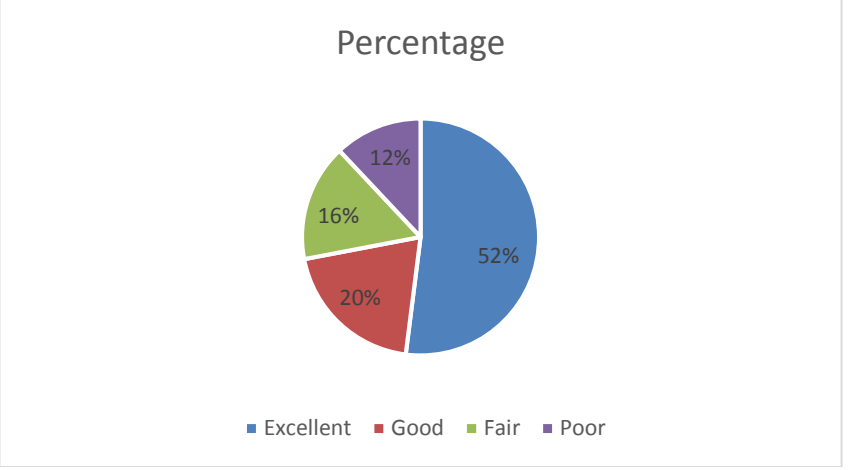

Figure 1. Evaluation of Mayo score

Table 3
Patient satisfaction score

Satisfaction score	Percentage	P value
10	35%	0.05
9	25%	
8	12%	
7	10%	
6	8%	

Table 3, figure 2 shows that patient satisfaction score was 10 seen in 35%, 9 in 25%, 8 in 12%, 7 in 10% and 6 in 8% patients. The difference was significant (P< 0.05).

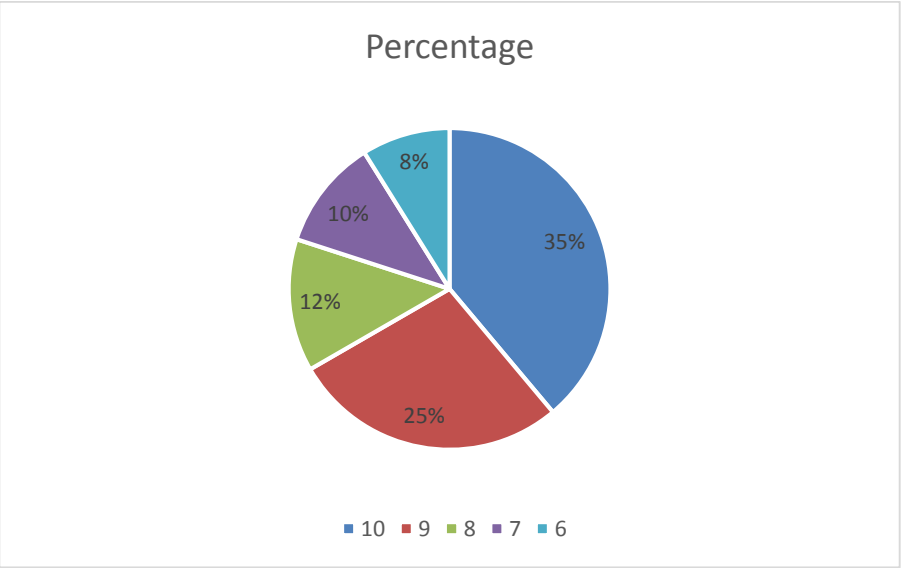

Figure 2. Patient satisfaction score

Discussion

Olecranon fractures account for about 20% of all proximal forearm fractures and approximately 10% of upper extremity fractures in adults.8 In all fractures of the proximal ulna and olecranon, the severity of the fracture, fracture pattern and concomitant elbow trauma, and ligamentous instability influence surgical decision making and prognosis (King et al., 1996; Tejwani et al., 2002). The present study was conducted to determine functional outcome in Olecranon fracture managed by tension band wiring. In present study, out of 102 patients, males were 60 and females were 42. Parate et al. (2020), in their study found that majority of the patients were type II A fractures. The Mayo elbow performance score showed that in the K wire category, 5 patients (50%) had excellent results, 3 patients (30%) had decent results, and 2 patients (20%) had fair results. In both categories, there were no negative repercussions. In the cancellous screw category, excellent results were found in 8 patients (80%), nice in 1 patient (10%), and fair in 1 patient (10%).

We found that mayo score was excellent in 52%, good in 20%, fair in 16% and poor in 12%. Kumar et al. (2020), evaluated the elbow function and the outcome as per rating by the patient after olecranon fractures were fixed by Tension Band Wiring. 20 patients were studied (13 men and 7 women) with an average age of 43.2 years who had undergone TBW for isolated olecranon fractures. Assessment was done by clinical and radiological (X-Rays) evaluation. Visual Analogue Scale (VAS) score was used to know the functional outcome. Follow up was done for 1-2 years. The incidence of fractures was more in males when compared to females. Simple fall onto the point of elbow was the main mode of injury. Implant removal was done in 13 patients (65%) but 7 of them (53.84%) were still complaining of mild pain during activities of daily life. The average satisfaction level was 9.3 out of 10. 12 patients (60%) were fully satisfied with the final result.

We found that patient satisfaction score was 10 seen in 35%, 9 in 25%, 8 in 12%, 7 in 10% and 6 in 8% patients. El-Sayed et al. (2021), evaluated 18 patients with displaced olecranon fracture and were divided into 2 groups according to the method of treatment. The quality of the reduction, union and position of the implant will be measured. The elbow's range of motion (ROM) was measured. At the end of the follow-up was done for one year. The mean age was distributed as 30.33±9.83 and 30.88±10.05 respectively between groups with no significant difference between groups, regard sex there was no significant difference between groups. There was no significant difference detected between groups regard side. No significant difference regard follows up duration. Time of union was significantly shorter among group B. No significant difference between groups detected regard any items. Hume & Wiss (1992), compared TBW and plate fixation. They reported that plate fixation had a lower complication rate, better clinical outcomes, less displacement of the fracture fragments, and less complain of implant problems. They found that altering the compressive forces across the fracture during contraction of the triceps, lead to reduction of fracture compression with both fixation modes, but never diminishes to zero with plates and remains several times greater than that with TBW, which showed negligible compression at the anterior part.

Conclusion

Authors found that tension band wiring is treatment of choice for displaced and slightly comminuted fractures of olecranon.

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