EVALUATION OF THE RESULTS OF FIXATION OF DISTAL ULNAR FRACTURES BY CONDYLAR MINI-PLATE

Ayman Soliman Ismail, Yasser Mohamed Aref, Mahmoud Khairy Tantawy, Mahmoud Mohamed Gaber Mohamed Elmasry
Department of Orthopaedic Surgery and Traumatology, Faculty of Medicine, Alexandria University

Introduction

The ulnar styloid tip and base, ulnar head, and ulnar neck are all included in the distal five centimetres of the ulna, which is the distal end of the ulna. The ulnar notch on the lower end of the radius and the head of the ulna form the pivot-joint known as the distal radioulnar articulation.

A fall onto an outstretched hand or a direct trauma to the ulnar distal end could be the mechanism of injury. Stable distal ulna fractures can be effectively managed with closed reduction and cast immobilization but unstable fractures need operative management.

A distal end ulna fracture may be complicated by wrist joint stiffness, ligament damage preventing full wrist mobility, post-traumatic arthritis, compression of the median nerve causing carpal tunnel syndrome, secondary wrist derangements of the ulnocarpal and distal radioulnar joints, compartmental syndrome, reflex sympathetic dystrophy, and ruptured tendons, particularly the extensors.

Aim of the Work

The aim of this work was to evaluate the results of fixation of distal ulnar fractures using condylar mini-plate.

Patients and Methods

The study included 23 patients presented to El-Hadra University Hospital, Faculty of Medicine, Alexandria University. They had a recent fracture at the distal ulna.

The inclusion criteria:

1. Isolated closed distal ulnar fractures.

The exclusion criteria:

1. Open fractures.
2. Pathological fractures.
3. Neglected fractures.
4. Non-united fractures.
5. Concomitant disorders affecting the function of the upper extremities because of their unexpected results.
6. Distal ulnar fractures associated with other fractures.

- The age of the patients ranged between 21- 59 years old. 15 males, 8 females.
- All patients were assessed after 6 months according to Modified Mayo Wrist Score and The Visual Analogue Scale (VAS).

Results

Table 1 shows the distribution of post-operative Modified Mayo Wrist Score categories among the study participants. It indicates that 4.35% of the participants had unsatisfactory outcomes (1 individual with a poor category classification), while 95.65% had satisfactory outcomes (22 individuals). Of the total sample, 26.09% were fair (6 individuals), 30.43% were good (7 individuals), and 39.13% were excellent (9 individuals).

Table 1: Post-Operative distribution Modified Mayo Wrist Score Categories

	N (%)
Post-operative Modified Mayo Wrist Score (category)	-
Unsatisfactory	1 (4.35%)
Poor	1 (4.35%)
Satisfactory	22 (95.65%)
Fair	6 (26.09%)
Good	7 (30.43%)
Excellent	9 (39.13%)

Table 2 shows the association between radiological union and post-operative Modified Mayo Wrist Score categories. It indicates that all participants with union (100%) had satisfactory scores, while the participant with non-union (100%) had an unsatisfactory score. The association between achieved union status and satisfactry category are statistically significant (p-value: 0.022).

Table 2: Correlation Between Radiological Union and Post-Operative Modified Mayo Wrist Score Categories

		Radiological union		
	Overall N (%)	Non-union N (%) (n=1)	Union N (%) (n=22)	p-value
Post-operative Modified Mayo Wrist Score (category)				0.022*
Satisfactory	22 (95.65)	0 (0)	22 (100)	
Unsatisfactory	1 (4.35)	1 (100)	0 (0)	
α = 0.05				
P-values obtained from Pearson's chi-square test of independence				

Conclusion

The condylar mini plates with their design, intrinsic compatibility and improved biomechanical stability, serve as an ideal option in distal ulnar fractures. Our study highlighted the excellent functional results, very high rates of radiological union, fewer rates of complications, and shorter healing time associated with mini plates in comparison to other forms of fixation reported in the literature.

Mini plates achieved satisfactory outcomes regardless of age, occupation, smoking status, or comorbidities. There is still more need for real-world comparative studies on larger cohorts and longer follow-up periods to confirm the superior role of mini plates in the treatment of distal ulna fractures.