



## FUNCTIONAL EVALUATION OF MINI PLATING IN METACARPAL FRACTURE

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## KEYWORDS :

## INTRODUCTION

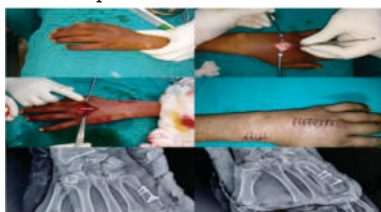
Roughly 10% of all fractures reported to the emergency room and outpatient department involve the hands, with metacarpal fractures accounting for 36% of all hand fractures.<sup>(1)</sup> The hand is so vital to a person's daily activities, it is crucial to work on reducing complications and improving bone union so that the patient can resume his full range of pre-injury activities as soon as possible. Accurate reduction and stable fixation are ensured via open reduction and internal fixation with a mini plate, which also guarantees early mobilization.<sup>(6)</sup> As a result, this approach minimizes joint stiffness and rotational stability along with early healing. Since surgery aids in the appropriate preservation of hand function, there has been a shift from conservative care to surgical therapies. Our Aim is to functionally evaluate the effectiveness of mini plating in metacarpal fracture.

## MATERIAL AND METHODS

This prospective observational study was conducted in Department of orthopedics in a tertiary care hospital in central India from 1st March 2021 to 30<sup>th</sup> June 2024. Institutional ethics committee clearance was obtained and written informed consent from all patients was taken. Relevant history and clinical findings were noted and demographic data such as age, Gender was documented. All consenting patients more than 18 years of age having closed metacarpal bone fractures with discontinuity or disruption of more than 50% shaft or neck, Trauma less than 2 weeks old, were included and Previously injured hand, Pathological fracture. Rheumatoid arthritis or any other deforming bony disorders, Co-morbid metabolic disorders Paralytic hand, Infected/compound fracture and fractures having intra articular components were excluded.

Technique- Open Reduction and Internal fixation with mini-plate under anaesthesia via dorsal approach. Stainless steel/ Titanium plates were used Plate size 2.7 mm, drill bit size -2 mm, Screw Size 2.7 – 2 mm. Dental plate can be used Closure and sterile dressing done. Postoperative IV antibiotics were given to prevent infection. Check X-rays was taken on 3rd postoperative day. dressings were done on 3rd and 5th postoperative day and patient will be discharged. Patients were assessed clinically and radiographically at 2 weeks, 4 weeks, and 16 weeks to assess the fracture union and the progress of patient recovery was documented. After clinical and radiological union, results were evaluated as:-

- A) MICHIGAN HAND OUTCOME QUESTIONNAIRE (for function)  
B) VAS SCORE (for pain)



## RESULTS

There were 28 (70 %) patients in the age group 18-30 years, 3 (7.5 %) patients were in age group 31-40 years and 9 (22.5 %) patients were in the age group 41-55 years. Mean age of patients in our study group was 30.68 years (18-60 years) with SD 10.932. There were 03 (7.5 %) females and 37 (92.5%) males in our study, showing a male preponderance in the study. In 23(57.5 %) patients Right side involvement was seen and in 17 (42.5 %) patient Left sided involvement was seen.

| VAS Score          | Mean  | SD    | Paired t value | p value |
|--------------------|-------|-------|----------------|---------|
| At Admission       | 8.75  | 0.439 | 53.23          | 0.001   |
| After Two Week     | 2.50  | 0.641 |                |         |
| At Admission       | 8.75  | 0.439 | 74.83          | 0.001   |
| After Four Week    | 0.325 | 0.655 |                |         |
| At Admission       | 8.75  | 0.439 | 126.19         | 0.001   |
| After Sixteen Week | 0.225 | 0.577 |                |         |
| After Two Week     | 2.50  | 0.641 | 16.92          | 0.001   |
| After Four Week    | 0.325 | 0.655 |                |         |
| After Two Week     | 2.50  | 0.641 | 75.80          | 0.001   |
| After Sixteen Week | 0.225 | 0.577 |                |         |
| After Four Week    | 0.325 | 0.655 | 1.16           | 0.253   |
| After Sixteen Week | 0.225 | 0.577 |                |         |

| MHQ                | Mean  | SD    | Paired t value | p value |
|--------------------|-------|-------|----------------|---------|
| At Admission       | 26.63 | 2.317 | 81.91          | 0.001   |
| After Two Week     | 82.25 | 2.826 |                |         |
| At Admission       | 26.63 | 2.317 | 132.43         | 0.001   |
| After Four Week    | 91.50 | 2.353 |                |         |
| At Admission       | 26.63 | 2.317 | 174.07         | 0.001   |
| After Sixteen Week | 96.93 | 1.248 |                |         |
| After Two Week     | 82.25 | 2.826 | 19.71          | 0.001   |
| After Four Week    | 91.50 | 2.353 |                |         |
| After Two Week     | 82.25 | 2.826 | 21.19          | 0.001   |
| After Sixteen Week | 96.93 | 1.248 |                |         |
| After Four Week    | 91.50 | 2.353 | 15.8           | 0.001   |
| After Sixteen Week | 96.93 | 1.248 |                |         |

## DISCUSSION

Hand plays an unique role in a person's daily life. Our aim is to reduce the complication and to enhance union of bone so that the patient can return to his pre injury level activities as early as possible Proper management of metacarpal fractures is the most important as any complication can result in functional handicap Conservative treatment with close reduction and casting is not suitable for unstable fractures and it requires prolonged immobilization that ultimately results in stiffness of fingers and wrist as well. Open reduction and internal fixation using a mini plate provides accurate reduction and rigid fixation and ensures an early mobilization Reduces metacarpophangeal joint stiffness and provides earliest rehabilitation because mini plate surgery gives anatomical reduction and gives rotational stability of metacarpal fracture.

Mini plate surgery is a joint sparing surgery when we use k wire joints are involve hence mini plate surgery has better functional outcome.

#### Statement of Consent for Image Publication

- Consent to publish these findings and images were gathered from the patients.
- Permission for publication of photographs was obtained from patients.

#### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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