Objectives

• Whether percutaneous pinning or plate fixation is more appropriate for metacarpal fractures is still often debated.
• Our study purpose was to determine the optimal treatment modality for metacarpal fractures on the basis of functional outcomes, radiographic outcome, and rates of complications.

Methods

• We selected PubMed, Cochrane Library, EMBASE, and the relevant English orthopedic journals and pooled data from all eligible trials.
• Five studies met the criteria: 4 comparative studies and one retrospective review.
• Three reviewers extracted data independently from the studies using a standardized data collection form.
• Overall, the studies contained 222 patients with 231 fractures, 143 treated with pinning and 88 treated with plates and screws.
• Mean follow up was 7.5 months (4-12 months).
• Standard meta-analysis statistical methods were used.

Results

• The results show that patients undergoing pinning for metacarpal fractures have higher motion scores when compared to ORIF with plate and screws.
• Pooled risk ratio of good proportion of total active motion of pinning compared to plating is significantly greater than one (RR 1.15, 95% CI: 1.03, 1.29, p-value = 0.017), as well as the mean of motion (%) is 12 percent (0.12) greater in pinning than plate (95% CI: 0.06, 0.17, p-value < 0.001).
• The mean difference of functional score, grip strength, radiographic parameters, time to radiographic union and the rate of complications were not significantly different between the two treatment groups.

Conclusion

• The results show some evidence supporting the use of pinning over ORIF with plate and screws in the treatment of metacarpal fractures.
• This may also have practical advantages by allowing a technically easier insertion and requiring minimal dissection.
• Limitations in this study include the small number of eligible studies, lack of reporting of standard deviation values, and lack of universal DASH-score assessments.
• Larger studies, with longer follow-up, and improved reporting are required to substantiate superiority of one fixation method over another.