

Casting vs Surgical Treatment of Children with Medial Epicondyle Fractures: A Randomized Clinical Trial

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INTRODUCTION:

Medial humeral epicondyle fractures in children are traditionally treated with casting, while surgical fixation is increasingly used despite limited supporting evidence. This study aimed to determine whether casting is non-inferior to surgical fixation for displaced medial epicondyle fractures.

METHODS: A multicenter randomized non-inferiority trial was conducted at four university hospitals. Seventy-two children aged 7-16 years with ≥ 2 mm displaced medial epicondyle fractures were randomized to either casting (n=35) or surgical fixation (n=37). Baseline characteristics were similar across groups. The primary outcome was the Quick Disabilities of the Arm, Shoulder, and Hand (QuickDASH) score at 12 months, with a non-inferiority margin of 6.8 points. Secondary outcomes included the Pediatric Quality of Life Inventory (PedsQL), PedsQL Pain Questionnaire, carrying angle, grip strength, range of motion, cosmetic appearance, time of return to hobbies, and rates of fracture union.

RESULTS: At 12 months, the mean QuickDASH score was 1.7 in the surgery group and 2.7 in the casting, confirming non-inferiority (mean difference: -0.98 points, 95% CI -2.95 to 0.98) (Figure 1). The cosmetic visual analog scale favored casting (mean difference: -8.9 points, $p=0.0004$). Non-union occurred in 69% of cast-treated patients and 2.7% of surgically treated patients but did not impact functional outcomes. No significant differences were observed for secondary outcomes. All 65 patients returned to pre-injury sports activity at a median of 2 months.

DISCUSSION AND CONCLUSION:

Casting without reduction was non-inferior to surgical fixation, providing similar functional outcomes with better cosmetic results. Casting is a viable alternative to surgery for displaced medial epicondyle fractures in pediatric patients.

