

Operative Versus Nonoperative Management of Olecranon Fractures in Older Patients: A Cohort Comparison of Functional Outcomes and Predictors of Failure

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Purpose: For patients $\geq$ age 70 years with displaced olecranon fractures, surgical management is the traditional standard of care although recent evidence has supported nonoperative treatment in frail and/or elderly patients. In the general population of older patients, and in those of moderate functional demands, no evidence exists guiding treatment. The aim of this investigation was to explore patient and treatment factors associated with outcome after displaced olecranon fractures in individuals $\geq$ age 70 years.

Methods: This was a retrospective cohort study with prospective data collection of patients older than age 70 years with isolated, closed, olecranon fractures. Operative patients were treated with 2.7/3.5 mm pre-contoured olecranon plates ($n = 68$) or tension band wiring ($n = 6$) with progressive mobilization after 2 weeks while nonoperatively treated patients ($n = 39$) were immobilized for a median of 3 weeks followed by mobilization. Frailty was quantified using the Frailty Rating Scale. Outcomes included Quick Disability of the Arm, Shoulder, Hand (QuickDASH), arc of motion, PROMIS global health, and complications. Mean time from injury to outcome collection was 16 ± 2 months.

Results: Mean QuickDASH (i.e., disability) was lower in the operative cohort (MD -8.3 ; 95% CI: $0.4-16.2$; $p = 0.021$) although the difference was not clinically meaningful. Subgroup analysis by clinical frailty scale revealed no differences in the managing well, mildly frail, or moderately to severely frail subgroups. Logistic regression analysis of patients treated with plate fixation revealed proximal fragment fixation with three or more screws to be associated with reduced proximal fragment escape ($\beta = -5.493$, SE = 1.277 , OR = 0.004 , 95% CI: $<0.001-0.050$, $p < 0.001$) independent of sagittal plane fragment size, comminution, and triceps reinforcement. In the nonoperative treatment group, increasing duration of immobilization was associated with decreased arc of motion.

Conclusion: In patients not considered to be “fit” or “very fit”, surgical management is unlikely to result in meaningful improvements in disability relative to nonoperative management. Randomized studies comparing plate fixation or suture-based techniques to nonoperative management in moderately functional older individuals are needed to further refine treatment indications.