

## Comparison of Surgical Fixation versus Nonoperative Management of Closed Geriatric Olecranon Fractures

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**Purpose:** Operative versus nonoperative management of geriatric olecranon fractures is controversial. Recent comparative Level-I evidence suggests unacceptably high complication rates in operatively treated olecranon fractures when compared to nonoperative management in patients 75 years or older. Therefore, the primary purpose of this study was to compare complication rates between operative versus nonoperatively managed geriatric patients with closed olecranon fractures. Overall cost between the 2 groups was also analyzed as a secondary outcome.

**Methods:** In a population-based study, we searched a private payer insurance database using diagnosis codes to identify patients over 75 years of age who presented with a closed fracture of the olecranon. Patients were divided into 2 cohorts based on codes for open reduction and internal fixation or closed treatment. The occurrence of a complication within 1 year was determined, including malunion, infection, debridement, revision surgical fixation, ulnar nerve injury, and conversion from nonoperative to operative management. Cost data from the payer perspective, including facility fees, physician fees, physical therapy, and clinic visits, were analyzed to compare total cost between the 2 groups. Prior to our database search, a power analysis was conducted based upon the complication rate profile recently published in a prospective randomized controlled study comparing operative and nonoperative management of geriatric olecranon fractures. We determined that the minimum sample size required to detect a 10% decrease in complication rate from the recently cited rate of 82% was 199 patients managed with surgical fixation. Differences in complication rate between groups were analyzed using a Fisher exact test with statistical significance set at  $\alpha < 0.05$ .

**Results:** A total of 3040 patients meeting inclusion criteria were identified. Accordingly, there were 1888 (62%) patients managed nonoperatively and 1152 (38%) patients managed with surgical fixation of their olecranon fracture. The overall complication rate for nonoperative management compared to surgical fixation was 10.5% versus 11.9%, respectively, without significant differences between groups ( $P = 0.26$ ). There was a significantly lower complication rate in surgically managed patients in this study when compared to the recently published complication rate of 82% in the literature ( $P < 0.0001$ ). The average overall cost of surgical fixation was  $\$8257 \pm \$2625$  compared to  $\$2002 \pm \$336$  for nonoperative treatment.

**Conclusion:** Despite recent evidence, this study shows that the overall complication rate is similar between surgical fixation and nonoperatively treated geriatric olecranon fractures, although total cost is higher in the operatively managed group.