

Older Age Is a Risk Factor for Ulnar Diaphyseal Nonunion

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Purpose: Nonunion remains a common complication following ulnar diaphyseal fractures, with recent data suggesting up to 32% nonunion rates with nonoperative treatment. There is increasing evidence to support that early surgical intervention may be warranted when risk factors for nonunion are recognized. Therefore, this study aimed to systematically evaluate risk factors for ulnar diaphyseal nonunion.

Methods: This is an a priori planned secondary analysis from a large randomized controlled trial (RCT) comparing open reduction and internal fixation (ORIF) with nonoperative treatment (below-elbow casting) of ulnar diaphyseal fractures. Participants with isolated, closed AO/OTA type 22-A and B injuries, without extension into the proximal or distal radioulnar joints were eligible for participation in a multicenter, open-label, parallel RCT. Time to union (modified RUST [Radiographic Union Score for Tibia] fractures score) was captured until 12 months post-injury and rate of cross-over from nonoperative to operative management was captured. A multivariable logistic regression model was used to evaluate risk factors for nonunion.

Results: A total of 99 participants were randomized across 11 participating sites (41.0 years; 73% male). There were a total of 9 nonunions, with 8 being in the nonoperative treatment arm (88.9%). Seven participants required surgical intervention for their symptomatic nonunion. Age, sex, smoking status, body mass index (BMI), and AO/OTA classification were evaluated in the regression model. Age was a significant ($P = 0.03$) risk factor for nonunion (odds ratio [OR]: 1.004, 95% confidence interval [CI]: 1.001-1.009), whereas the other variables were nonsignificant. The mean age in the nonunion group was 54.6 (± 14.0) years, compared with those who had uncomplicated healing 39.9 (± 14.3) years.

Conclusion: Early identification of risk factors for nonunion is important in guiding decision-making in ulnar diaphyseal fracture management. This evaluation of data from a large RCT confirms that older age is a risk factor for nonunion, such that for every year of age, the odds increase by a factor of 1.004, and that nonoperative treatment carries a higher risk for nonunion compared to ORIF.