Risk Factors for Pubic Ramus Fracture Nonunion After Conservative Treatment of Pelvic Ring Injuries: A Retrospective Cohort Multicenter Study

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Purpose: Our objective was to determine the incidence of nonunion, clinical and radiological outcomes, and risk factors for nonunion in conservatively treated pubic ramus fractures among patients diagnosed with pelvic ring injury.

Methods: We included 546 patients (192 men, 354 women) diagnosed with pubic ramus fracture, treated conservatively. Clinical and radiological evaluations were compared between union and nonunion groups. Logistic regression and Kaplan-Meier analyses were used.

Results: At the final follow-up, 527 (96.5%) and 19 (3.5%) patients had union and nonunion of fractures, respectively. The union and nonunion groups exhibited statistically significant differences in posterior injury (P = 0.040), bilateral ramus fracture (P<0.001), initial displacement (P<0.001), and clinical result (P<0.001). In the multivariate logistic regression analysis, initial displacement (odds ratio, 4.727; P = 0.005) was analyzed as a risk factor for nonunion. According to the Kaplan-Meier analysis, the median initial displacement of nonunion occurrence was 17.9 mm (standard error, 1.211; 95% confidence interval, 15.526-20.274), and nonunion patients were included if the displacement was >15.9 mm (standard error, 1.305) on the 75th percentile.

Conclusion: Conservative treatment is ineffective in some ramus fracture cases with pelvic ring injury. As ramus nonunion causes functional deterioration, active treatment is required if the displacement is ≥16 mm.