Non-Operative Versus Operative Treatment of Z-Type Comminuted Clavicle Fractures in Adolescents: A Prospective Substratified Cohort Analysis
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Purpose: This study was conducted to assess clinical, radiographic, and patient-reported outcomes (PROs) in adolescents with comminuted «Z-type» midshaft clavicle fractures by comparing nonoperative and operative subcohorts.

Methods: A subcohort analysis was performed from a prospective observational cohort study at 8 tertiary-care pediatric centers on 909 patients 10 to 18 years old treated for a diaphyseal clavicle fracture, specifically evaluating patients with comminuted Z-type fracture patterns. 82 patients with Z-type comminuted fractures (37 that were treated nonoperatively and 45 treated operatively) were included, 60 (73%) of whom provided 2-year PROs. We compared operative and nonoperative cohorts with regard to complications and validated PROs.

Results: The only significant difference in demographic or fracture characteristics between the two cohorts was shortening, which was greater in the operative cohort (23 mm vs 29 mm, P = 0.01). After controlling for this confounder through both regression and matched subgroup analysis, nonoperative versus operative cohorts showed no difference in rates of nonunion (none), delayed union (0% vs 2%, P = 1.0), symptomatic malunion (3% vs 0%, P = 0.4), refracture (3% vs 4%, P = 1.0), unexpected surgery (5% vs 11%, P = 0.45), or clinically significant complications (5% vs 16%, P = 0.17). There were no differences in PROs between cohorts, even when controlling for fracture shortening.

Conclusion: In this comparative investigation of complications and 2-year PROs in adolescents with comminuted Z-type clavicle fractures, nonoperative and operative treatment demonstrated similar outcomes.