Does a Delay in Treatment of Displaced Pediatric Lateral Condyle Fractures Increase the Risk of Complications?

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Purpose: This review was conducted to investigate factors associated with complications and the impact of timing of operative treatment on displaced lateral condyle fractures.

Methods: A consecutive series of lateral condyle fractures treated at a Level I pediatric trauma center between 2008-2014 were retrospectively reviewed. Fractures treated surgically that had at least 6 weeks of follow-up were included in this study. The maximal radiographic displacement (in AP, lateral, or oblique view) as well as the time from initial injury to surgical intervention were recorded. Univariate and multivariate statistical analysis was performed analyzing the correlation of maximal displacement and timing to surgery with the rate of specific complications of loss in early motion or delayed union. Logistical regression modeling was performed for 3 groups: those with mild displacement (>4 mm), moderate displacement (4-7 mm), and significant displacement (>8 mm). From this, an odds ratio (OR) was calculated.

Results: 408 patients (mean age 4.88 years, 68% males) met the inclusion criteria. 82 patients had complications: 66 with early stiffness, 2 with arthrofibrosis, 9 nonunion/delayed unions, 1 with osteonecrosis, and 4 with infection. Factors associated with the studied complications were older age (5.95 vs 4.63, P <0.01), increased fracture displacement (10.3 mm vs 7.8 mm, P <0.01), and total time immobilized (38.27 days versus 31.52 days, P = 0.001). When surgical treatment was greater than 1 day post-injury, the incidence of these complications was higher in those with >8 mm of displacement. In logistic regression modeling controlling for age and maximum displacement as independent variables, an increase in complication rate was seen (OR 1.317 and 1.117, P value 0.000, 0.001) when fractures underwent subacute fixation.

Conclusion: Both amount of initial displacement and time to surgical fixation of pediatric lateral condyle fractures affect the risk of specific complications including early stiffness and delayed union.The results of our study suggest that early intervention may be warranted for displaced lateral condyle fractures.