Paper 104

Title: What is the Natural History of Patellar Dislocation in Skeletally Immature Patients?

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Objectives: Patellar dislocation can occur in isolation or be associated with chronicinstability. The goals of this study are to describe the rate and factors associated with additional patellar instability events (ipsilateral recurrence and contralateral dislocation), as well as the incidence of patellofemoral arthritis among skeletally immature patients following patellar dislocation.

Methods: The study included a population-based cohort of 232 skeletally immature patients who experienced a first-time lateral patellar dislocation between 1990 and 2010. A chart review was performed to collect information related to the initial injury, treatment, and outcomes. Subjects were followed for a mean of 12.1 years to determine the rate of subsequent patellar dislocation (ipsilateral recurrence or contralateral dislocation) as well as clinically significant patellofemoral arthritis.

Results: 104 patients had ipsilateral recurrent patellar dislocation. The cumulative incidence of recurrent dislocation was 11% at 1 year, 21.1% at 2 years, 37.0% at 5 years, 45.1% at 10 years, 54.0 % at 15 years, and 54.0% at 20 years. Patella alta (HR: 10.6, 95% CI: 3.6, 36.1), increased TT-TG distance (HR 18.7, 95% CI: 1.7, 228.2), and trochlear dysplasia (HR 23.7, 95% CI: 1.0, 105.2) were associated with recurrence. Similarly, 18 patients (7.8%) had contralateral patellar dislocation. The cumulative incidence of patellofemoral arthritis was 0% at 2 years, 1.0% at 5 years,2.0% at 10 years, 10.1% at 15 years, 17%% at 20 years, and 39.0% at 25 years. Osteochondral injury was associated with arthritis (HR 25.7, 95% CI: 6.2, 143.8).

Conclusion: Skeletally immature patients have a high rate of recurrent patellarinstability that is associated with structural abnormalities such as patella alta and trochlear dysplasia. In contrast, the rate of subsequent contralateral dislocation is low. Osteochondral injury is associated with arthritis after patellar dislocation, but the overall incidence of symptomatic arthritis with advanced radiographic changes in pediatric patients is low at 12-year follow-up.