

Paper #55

Predictors of Cartilage Loss in Individuals with Degenerative Meniscus Tear: Data from the Osteoarthritis Initiative

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Summary:

This was a retrospective cohort study using data from the Osteoarthritis Initiative investigating the roles of a degenerative meniscus tear and meniscectomy on cartilage loss. The study showed that meniscectomy caused greater cartilage loss after 36 months than both healthy compartments and compartments with a degenerative meniscus tear.

Abstract:

Background

Degenerative meniscus tears and meniscectomy have both been identified as risk factors for knee osteoarthritis. Determining how each risk factor influences cartilage loss can clarify the punitive cost attached to meniscectomy compared to non-operative treatment for a degenerative meniscus tear. The purpose of this study was to 1) determine the risk of cartilage loss in individuals with meniscus tear and meniscectomy and 2) determine demographic and MRI-specific factors that modify the risk of cartilage loss in individuals with meniscectomy.

Methods

We conducted a cohort study using data from the Osteoarthritis Initiative (OAI). The surgery group included individuals who underwent meniscectomy between baseline and 12 months. The control group included individuals that had MRI evidence of a degenerative meniscus tear and were matched to individuals in the surgery group by age, gender, BMI, presence of radiographic OA at baseline, and compartment of tear. Tibiofemoral cartilage was graded at baseline and 36 months follow-up in each of 14 subregions according to a modified version of the Whole Organ MRI method. We conducted a subregion-based multilevel logistic regression analysis to assess the effects of meniscectomy on the risk of cartilage loss at 36 months. We also used multilevel logistic regression to determine which demographic factors (age, sex, BMI) and MRI-specific factors (surrounding baseline cartilage loss, meniscal extrusion, root degeneration, type of tear) had a significant interaction effect with meniscectomy on the risk of cartilage loss.

Results

A total of 55 matched pairs were included in this study. 81% of individuals exhibited cartilage loss in at least one sub-region at 3 years' follow-up while 28% of all sub-regions exhibited cartilage loss. Arthroscopic partial meniscectomy increased the risk of cartilage loss compared to meniscus tear alone (OR 3.06, 95% CI 1.70-5.52). Individuals with obesity (OR = 4.50, 95% CI 1.94-10.5), root degeneration (OR 6.41, 95% CI 1.44-28.5), and females (OR = 4.88, 95% CI 2.18-10.9) who underwent meniscectomy were at even greater risk of cartilage loss at 36 compared to similar individuals with an untreated meniscus tear.

Conclusions

Arthroscopic partial meniscectomy increases the risk of cartilage loss after 36 months compared to untreated meniscus tears. Obesity, root degeneration, and female gender amplify the increased risk for cartilage loss. These

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findings are important in clarifying the relationship between meniscus tears, meniscectomy, and the development of knee osteoarthritis.