

Predictors of Preoperative Disability and Activity Level in Patients With Osteoarthritis of the Knee

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Summary:

Univariate and multivariate determinants of patient disability and activity level in patients with DJD of the knee were established. Although some variables were associated with disability and activity level, stiffness and joint space narrowing had the most robust associations.

Abstract:

Purpose:

The purpose of this study was to identify determinants of patient disability, as determined by Lysholm score, and patient activity level, as determined by Tegner Activity Level, in patients presenting for evaluation of degenerative joint disease (DJD) of the knee.

Methods:

A cohort of patients (n=242, Average age = 55.8 (range 29 to 82); 101 female & 141 males), who were diagnosed with DJD of the knee on initial exam, was studied prospectively. All patients had complete demographic, subjective and objective data from the initial exam. The dependent variables were Lysholm score (0-100) and Tegner Activity level, graded ordinally on a 1-10 scale. Univariate analysis and multivariable modeling were performed to identify determinants.

Results:

Data on 299 knees was analyzed (57 bilaterals). Prior surgeries were reported in 58% of the knees and 80% had joint space narrowing on radiographic examination. For demographic variables, there were no significant differences in Lysholm for age, gender, or prior surgery ($p > 0.05$). Tegner was significantly associated with age and gender ($p < 0.05$). Tegner was also associated with number of prior surgeries, with knees operated on 2 or more times having significantly lower scores ($p < 0.05$).

For objective variables, there was a significant difference in Lysholm for the presence of joint space narrowing, extension deficits and flexion deficits ($p < 0.05$). Tegner was not associated with joint space narrowing, however it was associated with extension deficits and flexion deficits. There were significant differences in patient satisfaction for associated lateral meniscus tear, presence of osteophytes, and concurrent symptomatic plica excision ($p < 0.05$). Patients were significantly less satisfied with outcome for lack of passive extension, presence of arthrofibrosis, increased KT1000 manual maximum of involved leg, pivot-shift, presence of effusion, and tenderness at the medial joint line and patella ($p < 0.05$). For subjective symptoms at follow-up, patients were significantly ($p < 0.05$) less satisfied with outcome if there were symptoms of pain, swelling, partial giving-way, full giving-way, locking, noise, stiffness, or limp. For subjective functional assessment at follow-up, patients were significantly less satisfied with outcome for lower activity level, lower sports level, lower work level, lower ADL level, lower symptom-free activity level, unemployment, or if there was difficulty with walking, squatting, ascending or descending stairs, running, jumping, cutting, or twisting. Satisfaction was not significantly associated with IKDC ligament subscore ($p > 0.05$), but was significantly associated with Lysholm knee score, overall IKDC knee score, IKDC subjective subscore, IKDC symptoms subscore, and IKDC range of motion subscore ($p < 0.05$). Independent multivariate determinants (model adjusted

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R²=0.83) of patient satisfaction included Lysholm score, overall subjective knee function, IKDC range of motion subscale, patella tenderness, full giving-way, flexion contracture, and swelling.

Conclusions:

Univariate and multivariate determinants of patient disability and activity level in patients with DJD of the knee were established. Although some variables were associated with disability and activity level, stiffness and joint space narrowing had the most robust associations.