

Clinical And Radiological Predictors Of Medial Patellofemoral Ligament Reconstruction

Thomas Neri, MD, FRANCE

Bertrand Boyer, MD, PhD, FRANCE

Frederic Farizon, FRANCE

Remi Philippot, MD, PhD, FRANCE

Laboratoire Interuniversitaire Biologie Motricité, University hospital of Saint etienne
Saint etienne, FRANCE

Summary:

The objective was to isolate, through a clinical series of 107 patients, the clinical and radiological predictors that can significantly influence the clinical results of the MPFL ligament

Abstract:

Introduction: Among the numerous techniques available, medial patellofemoral ligament (MPFL) reconstruction is increasingly used for the surgical treatment of objective patellar instability. Although the value of this technique has been demonstrated, few studies have assessed predictors of good clinical results. The main objective of this study was to isolate, through a clinical series of 107 patients, the clinical and radiological predictors that can significantly influence the clinical results of the MPFL ligament.

Methods: One hundred and seven patients (110 ligament reconstructions) presenting an objective patellar instability, were evaluated with a mean follow-up of 55 months (24 to 91). The standardized procedure comprised MPFL reconstruction using the gracilis tendon. Complementary distal bone graft was associated if a preoperative tibial tubercle-trochlear groove (TT-TG) distance exceeded 20 mm or a patella alta. Functional IKDC and Kujala scores were preoperatively assessed and at end of follow-up. Plain X-ray with radiological assessment of patellar height and tilt (Laurin angle, Merchant angle, Maldague classification) and a CT scan measurement of the patellar tilt (quadriceps contracted and relaxed) and TT-GT distance were performed preoperatively and at 6 months. Femoral tunnel position was assessed following the criteria formulated by Schöttle. The amount of femoral tunnel widening was measured by means of the 3D CT scan image at 6 months. Predictors were determined from univariate and multivariate analyzes integrating clinical and radiological criteria pre and postoperative. The variables of interest were defined as the difference in functional scores between pre and postoperative.

Results: Clinical factors, such as age, Body Mass Index, number of dislocation, time between the first dislocation and surgery, did not influence functional scores (all $p > 0.05$). For technical factors: association with a bone graft or incorrect positioning of the femoral tunnel, also had no effect on clinical outcome ($p > 0.05$). It was the same for preoperative radiological factors: radiological and CT scan tilt, TT-TG distance, patellar height (all $p > 0.05$). For postoperative radiological factors, patellar height and tilt were not predictors. However, the correction of patellar tilt with quadriceps contracted ($p = 0.013$) and relaxed ($p = 0.003$) and the TT-GT distance correction ($p = 0.023$) were predictors of good clinical results.

Discussion and Conclusion: For the MPFL ligament reconstruction, predictors of clinical improvement of the patient were patellar tilt and TT-GT distance correction at CT scan.