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Posterior Laxity Significantly Increases Over Time after Successful PCL Reconstruction

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Summary:
Restoration of the posterior cruciate ligament (PCL) is crucial to preserve physiological knee kinematics. We found that posterior laxity significantly increased after PCL reconstruction from postoperative values to the final follow-up of at least five years. Thus the direct postoperative result cannot be equated with the final outcome.

Abstract:
Background – Restoration of the posterior cruciate ligament (PCL) is deemed necessary to preserve physiological knee kinematics, but initial results of successful PCL reconstruction appear to deteriorate in the long term.
We hypothesized that postoperative posterior tibial translation (PTT) increases over time after PCL reconstruction and is significantly influenced by patient-specific factors, such as tibial slope, age, gender and body weight or the number of operated ligaments.
Methods – The study comprised 46 patients (10 female, 36 male; 30 ± 9 years), which underwent PCL reconstruction in a single surgeon series. Patients were evaluated preoperatively, at three, six, 12, 24 months and at a final follow-up (FFU) of at least five years by bilateral stress radiographs using a Telos device. Anthropometric and demographic measures included age (years), gender, BMI (kg/m2), tibial slope and the number of operated ligaments.
Results – Mean side-to-side difference of the PTT significantly improved from pre-operative to the three months postoperative values (10.9±3.1 vs. 3.6±3.8 mm; P<.0001). The PTT increased to 4.6±3.7 mm at six, to 4.8±3.3 mm at twelve months, to 4.8±3.2 mm at 24 months, to 5.4±3.4 mm at FFU, respectively. Consequently, there is a significantly increment of the PTT between the onset of weight bearing at three month and the final follow-up (3.6 ±3.8 vs. 5.4±3.4 mm; P =.02). Flatting of the tibial slope resulted in a significantly higher PTT in comparison with a high tibial slope at 24 months and final FU. BMI, age, gender and the number of operated ligaments failed reach statistical significance.
Conclusions – Posterior laxity significantly increased from postoperative values to the final follow-up of at least five years. Thus the direct postoperative result cannot be equated with the final outcome. Additionally, this increment was significantly higher in patients with a flatting of the tibial slope.