Evolution of the anteroposterior laxity by GnRB at 6, 9 and 12 months post-surgical anterior cruciate ligament reconstruction

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Objective This study aimed to analyze the evolution of the tibiofemoral anterior laxity during the return to sport after anterior cruciate ligament reconstruction.

Patients and methods Twenty patients (11 women, 9 men) with mean age of 22.4 ± 5.1 years, operated for ACL reconstruction by a hamstring technique, competitors in a pivot-contact sport, were enrolled between September 2014 and March 2016. They were evaluated at 6 (n = 20), 9 (n = 13) and 12 (n = 13) months postoperatively by laximetry to 250N using laximètre GnRB® (GenouROB, Laval, France). The differential between laxity uninjured side and operated side in mm, and the difference in slope of the curve laxity according to the force applied between the two sides percentage, on each testing time, were selected. The average values at each time were computed using a t-test of Student.

Results The average differential laxity increases insignificantly by 1.4 ± 1 mm to 1.7 ± 1.3 mm between 6 and 9 months postoperatively (P = 0.17) and significantly decreased to 0.95 ± 0.5 mm at 12 months postoperatively (P = 0.02). The slope difference increased from 9% to 15% between 6 and 9 months after surgery (P = 0.05). Between 6 and 12 months postoperatively, the difference in slope (9% and 11%, respectively) was not significant (P = 0.1). Residual laxity was significantly greater in women at 6 months postoperatively, 1.9 mm vs. 0.9 mm (P = 0.002); this difference was no longer significant at 9 and 12 months postoperatively.

Discussion/Conclusion Our study reported a significant change in the anterior-posterior laxity between 9 and 12 months postoperatively. These results suggest that the laxity is not only the result of isometric positioning of the transplant but probably also of the transplant ligamentisation phenomena by collagen remodeling to mechanical stress, but also the local muscle condition or exposure to hormonal factors. These results, which show a normalization of laximetry to 12 months postoperatively, make us cautious when a premature return to sport without satisfactory joint control. So, it seems that in sports recovery decision, the analysis of the ligament laxity is a relevant parameter to use.

Keywords Knee ligamentoplasty; GnRB; Return to sport

Disclosure of interest The authors declare that they have no competing interest.
http://dx.doi.org/10.1016/j.rehab.2016.07.045