Outcomes of multiligament knee reconstruction in high-energy trauma, prospective cohort study involving 78 patients

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INTRODUCTION: Background: Outcomes after multiligament knee reconstruction following high-energy trauma are limited in the literature. The association of multiligament knee injury and patellar ligament injury is rare and literature evidence is limited to guide treatment and the outcomes presented are a matter of debate. Purpose: To evaluate the outcomes of the multiligament knee reconstruction with autologous graft in injuries resulting from high-energy trauma and to compare the outcomes of multiligament knee reconstruction and patellar ligament repair in a single procedure in relation to a group without injury to the patellar ligament submitted to multiligament knee reconstruction. To compare the outcomes of surgical treatment in acute and chronic injuries and showing the outcomes taking into account the Schenck classification

METHODS: Patients undergoing multiligament knee reconstruction resulting from high-energy trauma (motor vehicle accidents) were prospectively evaluated over a minimum follow-up of 2 years. The subjective assessment took into account the Lysholm and the International Knee Documentation Committee (IKDC) scores, the Tegner activity scale and the patient satisfaction with the result. The objective assessment took into account the objective IKDC, the range of motion, stress radiographs and the time to return to work

RESULTS: A total of 89 patients underwent multiligament reconstruction of the knee resulting from high-energy trauma (motor vehicle accidents) between 2017 and 2021. Of the eighty-nine patients, 78 (87.6%) completed the follow-up with an average of 35 months (range, 24 - 51 months), of these 78 patients, 16 had patellar ligament injuries associated. There was a statistically significant improvement in the Lysholm and IKDC scores, as well as in post-operative stress radiographs in relation to pre-operative (p<0.001). Eighty-six percent of patients had normal or close to normal objective IKDC postoperatively, the average range of motion of the knee was 120°, patient satisfaction with the result was an average of 8.55 (scale from 1 to 10) and 93.6% of them returned to work activities at the same pre-injury level in an average time of 4.64 months. In relation to the Tegner activity scale, there was a worsening in the postoperative period (p<0.001) comparing to the pre-injury level, but a minimum detectable difference of 1.0 (MDC- minimal detectable change) was not reached, pre-injury was Tegner 4.03 and postoperative 3.51. There was no significant difference (p>0.05) in the postoperative outcome scores when comparing patients undergoing multiligament knee reconstruction and patellar ligament repair in a single procedure in relation to the group undergoing multiligament reconstruction and without patellar ligament injury. Furthermore, there was no significant difference (p>0.05) in postoperative outcome scores between patients treated in the acute or chronic phases. Patients with KD I and II lesions had higher postoperative Lysholm score values than KD III and IV patients (p<0.001) and a minimum detectable difference (MDC) of 8.9 points was achieved, however, this difference was not achieved when comparing KD III and KD IV injuries. The minimum clinically important difference for IKDC and Tegner scores was not reached, when injuries were compared based on the Schenck classification

DISCUSSION AND CONCLUSION:

Knee multiligament reconstruction in a single-stage with autologous graft and early rehabilitation determined a significant improvement in postoperative outcomes in injuries resulting from high-energy trauma. Furthermore, patellar ligament repair associated with a single-stage multiligament reconstruction of the knee and early rehabilitation was effective in restoring joint stability and knee function with outcome scores comparable to the group without patellar ligament injury. There was no difference in outcome scores when comparing patients undergoing multiligament reconstruction in the acute and chronic phases. The minimum clinically important difference for IKDC and Tegner scores was not reached, when injuries were compared based on the Schenck classification.

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