

## Effects of graft pretensioning in anterior cruciate ligament reconstruction

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R�sum� en anglais	<p>Purpose Graft pretensioning is used in anterior cruciate ligament (ACL) reconstruction to prevent secondary slackening. Its effects on collagen fibrillar ultrastructure are not known. In this study, we hypothesized that graft pretensioning in ACL reconstruction creates ultrastructural changes detectable in scanning electron microscopy (SEM). Methods A prospective comparative study was carried out on 38 ACL reconstructions using a 4-strand semitendinosus graft. Samples were harvested intra-operatively before and after pretensioning for 30 s, 2 or 5 min. The images produced in SEM were analyzed using an original semi-quantitative «CIP» score taking into account collagen cohesion, integrity, and parallelism. Intra- and inter-tester reliability for the CIP score were tested. Results The CIP scores decreased by 3.5 (1.6) points after pretensioning (<math>P &lt; 0.05</math>). Significant differences were found in the 5, 2 min and 30 s subgroups for the global CIP score. Relative decrease (Delta CIP) was significantly higher in the 2 and 5 min subgroups after pretensioning in comparison with the 30 s subgroups. Intra- and inter-tester reliability for the CIP score were 0.85 and 0.92 (<math>P &lt; 0.05</math>). Conclusion Pretensioning ACL grafts resulted in alteration of the collagen fibrillar ultrastructure, detectable using SEM. These results confirm the existence of collagen ultrastructural changes after pretensioning that may be related to its duration. Level of evidence Prospective comparative study, Level II.</p>
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