

Bone-Patellar Tendon-Bone ACL Reconstruction in the Teenage Population is Safe and Effective

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INTRODUCTION: Anterior cruciate ligament (ACL) reconstruction using the bone-patella tendon-bone technique used has long been the gold standard. However many physicians are reluctant to use this technique in the adolescent population because of fear of causing growth plate arrest. After 14 years in boys and 12 to 13 years in girls, there is minimal growth remaining around the knee (1). Therefore, there should be no suspected issues using the bone-patella tendon-bone technique in this population. The hypothesis is that bone-patellar tendon-bone graft usage in ACL reconstruction is safe and effective in the adolescent population.

METHODS: This study is a retrospective chart review with prospective surveying. Approval from the institutional review board (IRB) was granted. A database of patients was sorted through based on age and prior surgical history. The study population consisted of 139 patients who ranged from 13-18 years old at the time of his/her ACL repair. The presence of leg length discrepancy and X-ray images were used when determining the safety of the procedure and when patients returned to active sports. The presence of a revision surgery was used to determine efficacy. Patients were evaluated in the office at a minimum of 2 years. Exclusion criteria consisted of patients with completely open growth plates who had not entered puberty (pre-menarche for females, early Tanner stage for males) and significant height difference compared to parents. Andrews technique of free handing the femoral tunnel was utilized to avoid the growth plate as much as possible during these operations. Those without sufficient data or those without a follow-up appointment completed a survey via telephone. Data reported as means.

RESULTS SECTION: In total, 139 patients met the inclusion criteria. The mean age at the time of surgery was 16.16 years old. Out of the 139 patients, 67 had at least 24 months of follow up in person. The average follow-up time was 1470 days. 13 patients were lost to follow-up. No patients had any complications with their growth plates. 135 patients returned to the same level of sports. One patient who was 13 years old at the time of surgery required a revision 2.5 years after surgery.

DISCUSSION: Overall, bone-patellar tendon-bone autograft usage in the adolescent population is safe and effective. There were no major adverse effects reported. Patients had sufficient follow-up to determine if any long-term side effects were to arise. Patients did not suffer from leg length discrepancies and the failure rate was acceptable. One limitation of this study was the callback response rate, leading to fewer patient telephone survey responses than predicted.

SIGNIFICANCE/CLINICAL RELEVANCE: (1-2 sentences): The bone-patellar tendon-bone technique for ACL reconstruction is safe and effective in the teenage population. This study provides clinical relevance regarding encouraging the use of this technique.

REFERENCES:

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ACKNOWLEDGEMENTS: None.