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TRANSPHYSEAL ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION IN ADOLESCENTS: A LONG-TERM FOLLOW-UP STUDY.

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OBJECTIVES

The incidence of anterior cruciate ligament (ACL) injury among adolescents increased over the last 20 years. Treatment options are still debated, including both conservative management and several surgical techniques.

The aim of this retrospective study is to record long-term results after transphyseal ACL reconstruction using autologous bone-patellar tendon-bone graft in adolescents, at least 10 years after surgery.



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METHODS

Our internal registry was used to identify all patients aged 14 and 15 who received surgical treatment of an ACL tear by transphyseal ACL reconstruction and were characterized by a follow-up longer than 10 years. In these patients, the International Knee Documentation Committee for Subjective Knee Form (IKDC subjective), Knee Injury and Osteoarthritis Outcome Score (KOOS), and Tegner Activity Score (TAS) were collected, and clinical examination was performed.

ADOLESCENT

TANNER 2-3

- MALES : 13-16 YEARS
- FEMALES 12-14 YEARS
- TRANSPHYSEAL ST RECOSTRUCTION AND METAPHYSEAL FIXATION

TANNER 4-5

- MALES> 16 YEARS
- FEMALES >14 YEARS
- RECONSTRUCTION AS IN ADULT

Tanner Stage	Males	Females
Stage 1: Prepubescent	<ul style="list-style-type: none">• No pubic hair• Bone age younger than 12 years	<ul style="list-style-type: none">• No pubic hair• No breast development• Bone age younger than 11 years
Stage II	<ul style="list-style-type: none">• Minimal pubic hair• Bone age younger than 12 years	<ul style="list-style-type: none">• Minimal pubic hair• Breast buds• Bone age younger than 11 years
Stage III: Pubescent	<ul style="list-style-type: none">• Pubic hair over penis• Voice changes• Bone age of 13 to 14 years	<ul style="list-style-type: none">• Pubic hair on mons• Enlargement of breasts• Axillary hair• Bone age of 12 to 13 years
Stage IV	<ul style="list-style-type: none">• Adult pubic hair• Axillary hair• Bone age of 13 to 14 years	<ul style="list-style-type: none">• Adult pubic hair• Areola enlargement• Bone age of 12 to 13 years
Stage V: Postpubescent	<ul style="list-style-type: none">• As adult• Bone age of 14 to 16 years	<ul style="list-style-type: none">• As adult• Bone age of 13 to 14 years

RESULTS

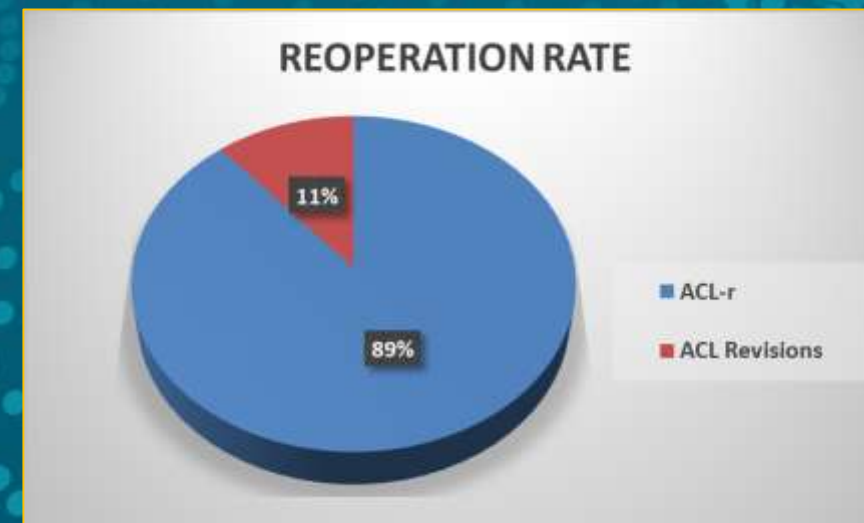
A total of 23 patients were identified, 5 of whom were lost to follow-up. Of the 18 patients included, 11 were females and 7 were males. The mean age at the time of surgery was $15 \pm 0,5$ years, and the mean follow-up time was 14.9 ± 4 (range 10.2 to 24) years.

None of the included patients showed growth disorder in the course of the study. There were 2 patients who suffered another ACL injury (reinjury rate, 11.1%) and needed a revision surgery. 3 patients were symptomatic at the latest follow-up (16.6%).

The IKDC subjective was 96 ± 14.4 , the KOOS was 96.3 ± 12.2 , and the TAS was 7.3 ± 1.4 . Mean side-to-side value (KT-1000 measurement) was 0 mm.

The average rehabilitation time was 8.5 ± 4.2 months. Of the 17 patients who regularly practiced sports before their ACL rupture, one patient did not resume pre-injury sports activity level (5.9%).

UNPUBLISHED DATA – DO NOT COPY OR DISTRIBUTE



CONCLUSIONS

ACL RECONSTRUCTION in patients aged 14 and 15 provides good functionality and stability of the knee joint over the long term. ACL transphyseal reconstruction using autologous bone-patellar tendon-bone graft seems to be an excellent option and an effective, feasible and safe technique in skeletally immature patients.



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