Re-Injury Rates, Return to Play Status And Patient Reported Outcomes at a Minimum of 2-Year Post ACL Reconstruction in Adolescent Athletes

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Objectives

- Suffering a repeat anterior cruciate ligament (ACL) injury after initial repair is a feared outcome.
- Current re-injury rates are for adolescents are between 20 and 35%
- The fear of re-injury in addition to other contributing factors such as age at time of injury, sex, and functional limitations have all been identified as causes for adolescents not to return to sport.
- Gold standard for patient reported outcomes is the IKDC which assess function and the ACL-RSI which assess psychological readiness to return to play.
- Purpose of this study tor report mid-term ACLR re-injury rates, patient reported outcomes scores and return to play status for adolescent patients

Methods

- A chart review with follow-up phone calls to patients two-years post ACL reconstruction was approved the Connecticut Children's IRB.
- Patients were included if they were adolescent athletes between the ages of 13 and 18 years old and treated at our facility by one of the two fellowship trained, board certified orthopedic surgeons between December 2006 and December 2016.
- Patients were contacted by phone and were consented for the follow-up data collection. Patients were given the opportunity to complete the questionnaires either over the phone or by email.

Methods

- Study questions included:
  - Patient pre-injury primary sport and level of competition
  - If they returned to their primary sport and if so at what level of competition
  - If they experienced subsequent ACL injury
  - If they did not return to sport they were asked for the reason
  - Patients were then asked to complete the IKDC and ACL-RSI
- Descriptive statistics were calculated for all relevant parameters. Paired two-tailed T-tests were performed to assess differences in patient reported outcomes from their release visit to the follow-up survey.

Table 1. Patient Demographics.

N	74
Sex, f	46 (62%)
Age at surgery (yrs)	15.9 ±1.5
Age at follow-up (yrs)	19.9 ± 2.0
Average time post primary ACLR (yrs)	4.0 ± 2.0

Results

- 74 adolescent athletes (Table 1) completed the survey for a response rate of 24.5%.
- 89% of the population had a hamstring autograph
- 24.3 % of the population (18 patients) experienced re-injury
  - 5 patients had graft tears
  - 10 patients had a contralateral ACL tear
  - 3 patients had a bilateral ACL injury
- Of the patients reinjured 72% defined themselves as competitive
- Patient reported outcomes (Table 2) were not statistically different between the reinjured and healthy (ACL-RSI p=0.153, IKDC p=0.163)

Table 2. Results of patient reported outcomes between groups.

	Additional ACL injury	No Additional ACL injury
N	18	56
Sex, f	12 (67%)	33 (59%)
RTPS (yes)	15 (83%)*	42 (75%)
Same level	9 (60%)	23 (55%)
Higher level	6 (40%)	14 (33%)
Lower level	0	5 (12%)
ACL-RSI	65.1 ± 29.3	76.6 ± 23.6
IKDC	83.6 ± 15.9	89.4 ± 12.4

* Two patients returned to their primary sport after their initial ACLR, but discontinued their primary sport after suffering a third ACL injury.
RTPS – Return to Primary Sport

Discussion

- Study results demonstrate a 73% return to sport rate and a re-injury rate of 24% for adolescents post ACLR
- Of the patients that were unable to return to sport 30% reported changes in life such as starting work or college
- 25% of the patients in this cohort that did not return to sport cited they were fearful of re-injury. Another 25% reported poor knee function. Therefore 50% of the return to sport decisions are influenced by either physical or psychological factors.
- This study is not without limitations. A response rate of 24.5% may have created an inadvertent selection bias. Another limitation is that the small sample reduces our ability to perform subgroup analyses on factors such as competition level.

Conclusion

- 24% of adolescent patients went on to sustain a second ACL injury after their primary reconstruction. Despite this high rate of repeat injury, the vast majority of adolescent athletes were able to return to their primary sport after a second ACL injury. A repeat ACL injury is a devastating event to an athlete, but our results suggest these second events do not strongly influence PRO score.

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