

A Realistic View: Return to Sport and Patient Satisfaction following Anterior Cruciate Ligament Reconstruction in the Practice of a Community Subspecialist

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Abstract

Background: There are varying conclusions in the literature on the utility and success of Anterior Cruciate Ligament Reconstruction (ACLR). There are also many different tools used to quantify benefit. In this study, we implemented phone surveys with patients who had undergone primary autograft ACLR. We used the Single Assessment Numeric Evaluation (SANE) rating tool and patient-centered questions regarding return to work and play, in the hope of providing physicians with results that will help them better communicate expected outcomes to patients.

Methods: 187 patients out of the senior authors subspecialist clinic were identified to be at least 1-year post-ACLR. Contact was made with eligible patients in June and July of 2016. After consent was granted, a series of seven questions were asked to determine satisfaction with the surgery, ability to return to work and sport, and the ability to return at pre-injury capabilities.

Results: We found a subjectively high rate of satisfaction of 87.5% as it pertains to work or daily activities and 72.1% as it pertains to sport or recreational activities. An impressive 95.2% of patients stated they were glad they had the surgery done. Interestingly, these positive results are despite the disappointing, but not surprising, 49.0% that were able to return to pre-injury level of sport, and 78.8% that were able to return to their pre-injury level of work.

Conclusion: We have shown that the majority of patients in our study are satisfied with primary autograft ACLR in terms of their ability to work and play. This is despite many not being able to function at a level equal to their pre-injury baseline. The information provided within this work gives sport and musculoskeletal providers helpful material with which to counsel their ACL-deficient patients on expected outcomes.

Introduction

Anterior cruciate ligament (ACL) injuries are very common and are typically treated with surgical intervention in active individuals.¹ There are varying conclusions in the literature on the utility and success of Anterior Cruciate Ligament Reconstruction (ACLR).² There are also many different outcomes used to define success.³ Lynch and colleagues identified a consensus criteria outlining six variables – effusion, giving way, muscle strength and function, activity, participation, and return to sport – as essential markers for a “successful outcome of ACLR”.³ While objective measures seem to be a viable option for measuring the outcome, Kocher and colleagues showed that subjective variables of symptoms and function have the most robust associations with patient satisfaction.⁴

There are two subjective patient surveys that have been validated to measure patient symptoms post-ACLR: the Cincinnati Knee Rating System (CKRS), and the International Knee Documentation Committee (IKDC).^{5,6} Although these surveys are useful and are valuable in identifying areas of patient satisfaction, the extensive resources needed to administer them make them unpopular in most non-academic clinical settings.⁷ Instead, a Single Assessment Numeric Evaluation (SANE) rating tool, in which the patient rates their knee on a scale from 0-100 (where 0 is completely abnormal and 100 is completely normal), has been shown to be an excellent surrogate for CKRS and IKDC total scores in patients post-ACLR.⁷

Another important consideration for patient satisfaction is being able to return to work and sport. This is not surprising, as work and simple recreational sport have been shown to reduce stress and enhance overall well-being.⁸ Ideally, ACLR would enable all patients to return to their pre-injury capabilities, or at a minimum allow them to continue to participate in their chosen sport at a level capable of bringing them satisfaction. In one meta-analysis, 69 studies reported on 7556 participants who underwent ACLR. They found that 81% of patients returned to some sport, and 65% returned to their pre-injury level of performance, but only 55% returned to a competitive level of sport after surgery.² Although this is informative data, to our knowledge, no study has sought to determine the percentage of patients who are satisfied with the level of sport to which they are able to return.

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In this study, we aimed to consider patient experience with ACLR and recovery within the practice of a fellowship-trained community subspecialist. We assessed patient satisfaction using the SANE rating tool, as well as binary measurements of return to sport, return to work, and patient opinion for whether they would have the procedure done again if presented with the same situation. We gathered this data via phone survey with patients who received ACLR with the senior author (JR). Our hypothesis was that patients undergoing ACLR have a high rate of satisfaction with return to sport and activity. Ideally, the results of this study can be used to guide practitioners and patients on what to expect following ACLR.

Methods

Ethics approval was obtained from the local research department Research Ethics Board (REB) (Regina Qu'Appelle Health Region REB-16-52) prior to the start of this project. Patients were identified through the Electronic Medical Record (EMR) of JR using a database search of billing codes from November 2010 to June 2015. 187 ACLR were identified from this process. Patients were excluded if their procedure was a revision (n = 12), featured an allograft (n = 23), or if they were less than one-year post surgery. Thus, 152 patients remained for our primary metrics. Patients were then contacted via telephone by the data collector (MS), explained the study and verbal consent was documented. Consenting participants were then asked a series of questions:

- 1) Have you returned to your pre-injury level of work or daily activities?
- 2) Have you returned to a level of work or daily activities that you are satisfied with?
- 3) Have you returned to your pre-injury level of sport or recreational activities?
- 4) Have you returned to a level of sport or recreational activities that you are satisfied with?
- 5) How would you rate your knee on a scale from 0-100 with 0 being completely abnormal and 100 being completely normal?
- 6) Are you glad you had the surgery performed?
- 7) Knowing what you know now, would you have had the surgery performed again?

Contact was made with eligible patients in June and July of 2016. Five separate attempts at contact, on different days, were made and if the patient still could not be reached, they were excluded from the study.

Results

After excluding ineligible patients from the original list including 40 (26.3%) who were unable to be reached, 112 patients with primary autograft ACLR were successfully contacted. 8 of these patients had some form of graft failure. They were not included in our results because some of them had already recovered from revision surgery while others were still

in the process of recovery, which would have made our results inconsistent. Therefore, 104 patients were included in our study as the final cohort.

Patient Demographics

Our patient demographics contained 53.8% males, 46.2% females, and average age was 27.5 years old (range 15-48). The mean time between surgery and contact via phone survey was 37.6 months.

Telephone Survey Results

Table 1.

	Yes	No	Percent of Patients Who Said Yes (%)
Have you returned to your pre-injury level of work or daily activities? (yes/no)	82	22	78.8%
Have you returned to a level of work or daily activities that you are satisfied with? (yes/no)	91	13	87.5%
Have you returned to your pre-injury level of sport or recreational activities? (yes/no)	51	53	49.0%
Have you returned to a level of sport or recreational activities that you are satisfied with? (yes/no)	75	29	72.1%
How would you rate your knee on a scale from 0-100 with 0 being completely abnormal and 100 being completely normal? (Rating Scale)	Mean: 81.6 Range: 4/100-100/100 4.1		
Are you glad you had the surgery done? (yes/no)	99	5	95.2%
Knowing what you know now, would you have had the surgery done again? (yes/no)	95	9	91.3%

Discussion

We have gathered data demonstrating patient satisfaction with their ACLR at least one-year post-operative follow up. We observed a high rate of subjective satisfaction of 87.5% as it pertains to work or daily activities and 72.1% as it pertains to sport or recreational activities. Patients rated their knee on the SANE rating at an average of 81.6/100. An impressive 95.2% of patients stated they were glad they had the surgery done and similarly, 91.3% of patients said they would do it again. Interestingly, only 49.0% were able to return to pre-injury level of sport and 78.8% were able to return to their pre-injury level of work. Although these results are disappointing, they were not unexpected.

Our results are similar to the meta-analysis performed by Ardern and colleagues, which found that 81% of patients returned to some sport, 65% returned to their pre-injury level of performance, and only 55% returned to a competitive level of sport after surgery.² Studies that have been published following the meta-analysis show similar statistics, including Ro-

driguez et al., who found that at 36 months follow up, 91% of patients had returned to recreational sport but only 52% had returned to sport at the same level.¹⁰ Subsequently, Ardern et al. went on to evaluate athletes who had not recovered at 1 year follow up and followed them for a subsequent year. At the year 2 follow up, 66% were playing sport, with 41% playing at their pre injury level of sport.¹¹ Finally, return to play rates for high school and collegiate football athletes were similar (63% and 69%, respectively). Based on player perception, 43% of the players were able to return to sport at the same self-described performance level.¹²

We felt it was important in our study to distinguish those who had returned to their pre-injury capabilities and those who had returned to a level that they found satisfactory. ACL injuries can be a traumatic and devastating event that may prevent the patient from returning to their previous level of work or sport, regardless of the treatment they receive. With knowledge of these numbers, the patient will be better informed with regards to the goal of returning to their pre-injury capabilities, as well as a realistic outlook of returning to a satisfactory level. Another noteworthy finding is that although over half could not return to pre-injury athletic function, and over twenty percent could not return to pre-injury work function, 95.2% are glad they had the surgery performed, and 91.3% state they would have it done again. We are unsure as to why exactly this difference exists; however, we postulate that the patients understood that the ACL injury changed their baseline status, and thus were pleased with the intervention bringing them back to a level of functionality with which they were satisfied. Finally, the SANE rating tool, which is a simple and effective tool, produced a mean of 81.6/100 for these patients. This is comparable to another study evaluating 279 young (13-23) female athletes employing the SANE rating tool at 12 months post-injury, who averaged 86.9/100.¹³ Our patients varied significantly in age (15-48) and athletic ability, so this is far from a homogenous sample. We feel, however, with a sample of 104 participants, this represents a generalizable patient group for the practice of a community sports surgeon. As the patient's goal should be to return to his or her personal baseline, the rating is individualized to them, and is therefore applicable to anyone across this demographic.

It was noted by MS while speaking with patients that many felt that they did not have an option other than operative management. It is the practice of JR to always offer both operative and non-operative options; however, when asked for counsel by a patient, he without question leans toward operative management if re-establishing an active lifestyle is desired. Although the literature suggests that operative management has superior outcomes compared to rehabilitation,¹⁴ non-operative options may allow the patient to return to sport, and should be considered in certain patients.¹⁵ Additionally, it should be noted that many unsatisfied patients who were contacted stated, unprompted, that they feel more

could have been done for physical rehabilitation and placed the responsibility on themselves, rather than any of the providers involved in their care.

While there are many subjective patient descriptions of sub-optimal surgical outcomes, including impaired functional performance, knee instability and pain, reduced range of motion, quadriceps strength deficits, neuromuscular dysfunction, and biomechanical maladaptations,¹⁶ one complaint that came up with some consistency was the sentiment, "I feel fine physically, but I'm apprehensive to push myself maximally". This mental disturbance is not a new concept. Previously, it has been shown that the most cited reason for not returning to sport is due to fear of reinjury.^{12,17} Overall, practitioners should consider these psychological concerns in order to best counsel the patient in the pre- and post-operative periods, enabling and encouraging patients to push themselves within reason, safety, and post-op guidelines.

Limitations

In this retrospective phone interview study, 26.3% of eligible patients were not able to be reached, despite five attempts. As a result, there is a potential for non-response bias, in which frustrated or dissatisfied patients would not answer or return messages regarding our study. Conversely, response bias can occur if patients are fond of JR as their treating surgeon and want to provide answers that reflect these feelings. Interviewer bias is another factor that needs to be considered, as the interviewer is a medical student who could unwittingly seek to elicit responses which would confirm JR's hypothesis. The investigators of this study are confident that this bias is not of significant concern due to an environment of openness and honesty. This study excluded the eight patients who had a failure of the graft. Since patients who have had a failure are more likely to have a negative experience, including their responses could have shifted the data. Lastly, digit preference should be considered as a limitation since most of the SANE ratings arbitrarily ended in a 5 or a 0.

Conclusion

There are many ways to determine the success of ACLR from the perspective of both the physician and the patient. Although multifaceted rating tools and surveys are useful from an epidemiology perspective, simpler modalities such as the SANE rating tool and patient-centered questions provide us with results that can be easily translated by community clinicians into terms that are easily understood by the general public. In our study, we have shown that the majority of patients are satisfied with the end result of ACLR, in terms of their ability to work and play post-operatively. This is despite many not being able to function at a level equal to their pre-injury baseline. Future research could build on this by using non-binary measurements of these parameters and by using a homogenous population to better characterize specific pa-

tient outcomes. It is our hope that the information provided within this work will give sport and musculoskeletal providers helpful material with which to counsel their ACL-deficient patients on expected outcomes. Also of note is that patient apprehension post-ACLR may be a major factor in patient inability to return to baseline function, and if providers are able to counsel in this area with simple encouragement, results may be improved.

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