

Return to Sports Following Anterior Cruciate Ligament Reconstruction

Reconstruction – Short Term Follow Up

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ABSTRACT

Objective: To determine the factors which will help in return to the sports the following anterior cruciate ligament reconstruction and compare the study results to the previous international results.

Study Design: Prospective descriptive case series study.

Place and Duration of Study: This study was carried out at the Department of Orthopedic Surgery, King Abdul Aziz Hospital Jeddah from June 2011 to May 2014.

Patients and Methods: 40 patients were included in this study. These patients were admitted in the Department of Orthopedic Surgery one day before and performed arthroscopic assisted ACL reconstruction at King Abdul Aziz Hospital Jeddah with anterior cruciate ligaments tear and \pm meniscal injuries. Those patients having associated meniscal injury were included and dealt arthroscopically. The patients were excluded from the study who had associated fracture and also posterior cruciate injuries.

Results: The mean age of patients was 22.0 ± 8.0 years. All the patients were male and soccer players. The mode of injury was sports. The hamstring tendons were taken and applied as grafts in all the cases. Rehabilitation protocol was carried out in the postoperative period in routine rehabilitation clinics. The factors responsible for the determination of the return include age of the patients, how complex injuries, the psychological motivation and delay in surgery. The data was collected and analyzed with the self-generated questionnaire performance taking the help of Lyshlohm Knee Scoring System. The psychologically strong patients with will and wish were excellent in return to their sports activity.

Conclusion: Rehabilitation compliance for the young psychologically motivated individuals operated early were having best score with excellent return to sports. So these factors should be considered before the consideration of ACL reconstruction.

Key Words: Anterior cruciate ligament (ACL), Knee arthroscopy, Bone tendon Bone grafting (BTBG)

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INTRODUCTION

The incidence of ACL return in adults is reportedly 6% of all the injuries.¹ The population based studies show the increasing incidence in the young population of KSA. The indication for the reconstruction of such patients includes the instability, pain and will or wish of patient to return to sports activity at pre-injury levels. The incidence of subsequent meniscal and subchondral/chondral level damage is around 65-70% in patients who after the injury are not willing for surgery. In KSA most of the patients are male with history of sports injuries at any of the levels. All patients are very much enthusiastic to return to the pre-injury levels of sports but the incidence of re-injury to the same knee or

contralateral knee injury range from 20-30%. It was examined that the information is lacking regarding the appropriate criteria for releasing such patients to unrestricted sports activity in postoperative period. In the review of the literature three objective criteria were used for all to release for such sports activities. The most common is the lower limb muscle strength and parameters for knee motion and swellings. Return to participate in sports at pre-injury level is an important outcome measure when evaluating the success of reconstruction of ACL reconstructed patients. When studied to review the literature we found that two out of three individuals returned to their pre-injury level of sports participation and approximately half of them return to the competitive sports.¹ In Cohort studies only 6 of 48 studies in the original reviews that report was return to sports was considered at pre-injury levels as primary outcome.²⁻³ The WHO though intervention classification of functioning, disability and health has

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called for emphasis of health outcome evaluation to be on an individual ability to participate in society. The primary aim of our study is to determine the factors which help to improve the outcome for return of those patients to pre-injury levels of sports activity.

MATERIALS AND METHODS

The 40 patients were included in the study. Cases who were evaluated before surgery by a self generated questionnaire and were underwent the surgery on their turn in the department. Before surgery rehabilitation especially the quadriceps strengthening exercises were carried out. On the day of surgery the patients were given general anesthesia. Tourniquet was applied with inflated pressure up to 350mmHg. Before the application of tourniquet examination under anesthesia was carried out and the clinical findings were confirmed by the operating surgeon. The hamstring tendons harvested and prepared with pre-tensioning of the semitendinosus and gracilis tendons graft. Arthroscopy was carried out and the clinical findings were matched with MRI reports. Any associated meniscal injury also noted and documented. The tunnels were made and graft applied. Femoral side of graft enclosed with endobutton of appropriate size and the tibial side anchored with absorbable screw. Arthroscopic Normal saline lavage carried out and wound closed in layers. ASD done. Knee immobilizer applied and patients shifted to ward with knee immobilizer on and were discharged on 2nd day of surgery. The patients were and called in the clinic after 10 days for wound/knee examination and stitches removal. The rehabilitation programme which was standard in the physical therapy department of the hospital was initiated post operatively. Patient kept on follow up in the clinic on regular appointments. After 6 weeks of the rehabilitation the patients were advised to do the flexion also beyond 90° and full weight bearing later at 2 months of follow up. They were advised to do brisk walking as tolerated. The quadriceps strengthening exercises were key to success in the patients who were having ACL reconstruction. It is expected that patients having good quadriceps functional strength also had very good postoperative rehabilitation and outcome.

RESULTS

The patient data was entered in the self generated performa. The entries were made from the start of study to the end of one year follow up. The factors were categorized in the tabulated form for all the patients. The Lysholm Scoring System was utilized both in preoperative and postoperative one year follow up and the values were compared. All the 40 patients were followed up in the clinic on regular basis. The young patients were more motivated and psychological strong to make the decision of rehabilitation. All the patients

were soccer players out of them 80% were the competitive young players and 20% were non regular soccer players (Table 1). In these 40 patients meniscal injuries were also found. 55% of the patients were having non-complex injuries. 45% of the patients were having complex injuries (Table 2). Out of these complex injured patients 61% having medial meniscal tear and 39% having lateral meniscal tears which were dealt arthroscopically. There were more young patients with mean age 22.0±8.0 years (Table 3). Most of the patients were operated within the two years interval from the injuries as 52% within the one year time, 37% between 1-2 years interval from their initial injuries. The infection rate in the study was very low 2 (5%) which were treated in the form of second surgery of arthroscopic lavage and I/V antibiotics.

Table No.1: Level of sports activity

Type of sports	No. of Patients	Percentage
Competitive soccer players	32	80.0
Non regular occasional soccer players	8	20.0

Table No.2: Frequency of type of injury

Type of Injury	No. of Patients	Percentage
Noncomplex injury (without associated meniscal tear)	22	55.0
Meniscal tear	18	45.0
Medial meniscus	11	61.0
Lateral meniscus	7	39.0

Table No.3: Age distribution of patients

Age in years	No. of Patients	Percentage
<20	12	30.0
20-23	23	57.5
>23	5	12.5

Table No.4: Outcome

Interval from surgery	Infections	Range of movements at 1 year
<1 year 21 (52.5%)	No infection 38 (95%)	<90° 3 (7.5%)
1-2 years 15 (31.5%)	Mild to moderate 2 (5%)	0-100° 5 (12.5%)
>2 years 4 (10%)	No severe infection	0-120° 32 (80%)

Table No.5: Lysholm Scoring System

Score	No. of Patients	Percentage
94	30	75.0
83	8	20.0
71	2	5.0

In one patient the infection was superficial and healed with antibiotics. These patients remained in the hospital for 5-7 days. At one year follow up the range of movements was significantly good to excellent in more than 90% (Table 4). In the Lysholm Scoring System most of the patients fall in the category of good to excellent type 95% in comparison to their previous scores when they were evaluated in the same performance before surgery. Lysholm scoring was good to excellent in 75% patients, good in 20% and 5% fair (Table 5). In our study most of the patients return to the pre-injury level (n=32) and some non compliant patients have problem of knee swelling, pain so were not interested to participate in competitive sports (Table 6).

Table No.6: Return to sports of pre-injury level

Pre-injury level	No. of Patients	Percentage
Return	32	80.0
Non return	8	20.0

DISCUSSION

When I can play doc? This is the question which is most frequently asked even by the patients, their parents and team mates, so it implies to meet the expectations of the athletes and it demands swift surgical approach and accelerated rehabilitation protocols to follow. Measures by this standard of the sports medicine made a giant advancement in the reconstruction of ACL. The surgery has progressed from open ACL reconstruction with BTB to minimal invasive arthroscopic surgery in such patients from extended casting to minimal bracing, from in patient admitted patients for many days to using Hamstring tendons day surgery or one day stay and at the end the accelerated rehabilitation programme resulting the best outcome in the shortest possible time duration.

Interval from injury to the arthroscopic surgery can be reduced to few weeks time of the injury. The follow up studies of our patients in the form of return to competitive sports and risk of re-rupture in one year follow up time should be considered. For athletes who want to return to pivoting sports, they should start the activity when they are able to achieve full range of motion (4-8 weeks) after rehabilitation. Some studies suggest that good to fair functional outcome and return to the pre-injury sports level – within next one year^{2,3,4,5} but have not even studied the rupture or contralateral knee injuries or plain.

A few studies are very much in interest to return the patients in follow up of first year as they are treating the specific population.⁶ In some long term follow up studies with mixed sports population. Fink et al found that 44% of patients return rate in surgically treated patients.⁷ In non-treated (conservative) patients in very long studies of 14 years follow up 6% of surgically treated patients were able to play the competitive sports

in comparison to the conservative patients, in which only 1% were able to resume the sports at competitive levels.⁸

In short follow up period of -3 years 65% were actively participating the soccer at pre-injury level in comparison to the conservatively treated patients in whom only 20% were able to play soccer but not at competitive levels. It has been considered at the longer follow up that returning to competitive sports for patients who had been treated surgically in the form of ACL reconstruction rate is higher to return to pivoting sports activity than the patients without a reconstructive procedures results in considerable risk of injuries to the meniscus and cartilages.³ It is also noticed that these after further damage to the patients knee and its structures with continued sports activity is a noticeable concern in non-operated cases.⁹ The studies shows the rate of redo surgery or surgery for the other structures in knee is higher in conservatively treated patients. International literature showed 32% of the non-operated patients had an extra-surgery for meniscus or cartilage damage as compared to 12% for post ACL reconstructed cases.⁵

CONCLUSION

The ACL reconstruction with arthroscopic assisted hamstrings grafts are the ideal treatment and most of the young, psychologically motivated patients return to the sports close to the pre-injury levels. All the factors should be kept in mind before making the decision of surgery in such patients.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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