



FUNCTIONAL OUTCOME AMONG PATIENTS WITH ARTHROSCOPIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION WITH ENDO-BUTTON AT GHURKI TRUST TEACHING HOSPITAL POST 6 MONTHS-A SINGLE CENTERED SURVEY

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ABSTRACT

Background of the Study: To assess the functional outcome among patients with arthroscopic ACL reconstruction with endo-button at Ghurki Trust Teaching Hospital post 6 months.

Methodology: A single centered survey was conducted on 67 patients with arthroscopic AC Ligament reconstruction using Hamstring auto-graft (Semitendinosus-Gracilis tendons) after 6 months and evaluated for functional outcome. The data was collected from Ghurki Trust Teaching Hospital. The sampling procedure utilized was non-probability sampling. Functional outcome was assessed using subjective form of IKDC score. Data was analyzed using SPSS version 23.

Results: Out of 67 patients, all were male. The pre-operative subjective IKDC scoring was less than 30 and post-operative mean IKDC scoring is 73.92. On the basis of findings of study, significant improvement was observed after ACL reconstruction post 6 months.

Conclusion: ACL reconstruction shows significant improvement in knee function and significant recovery of preoperative functional status.

Keywords: Anterior cruciate ligament reconstruction, international knee documentation score, functional outcome, arthroscopy, endobutton, hamstring tendon, ligament injury

Introduction

AC Ligament considered as passive primary restraint against anterior tibial translation on femur ACL gives rotational stability in both planes frontal and transverse^{1,3}. AC ligament is most commonly injured ligament in knee joint. The most common mechanism of injury is non-contact and the involved forces are valgus and internal rotation⁴. ACL injuries are particularly common in sports (basketball, soccer, and skiing) due to motions that require a lot of deceleration (pivoting, jumping, abrupt stops, and changing directions quickly)^{5,6,7,2}. The annual incidence for ACL injuries are at least 0.8 per 1000 persons between 10 -64 years of age. In all Knee injuries, approximately 25% are ACL injuries⁸. ACL rupture results in increase the risk of early

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performance degenerative changes in joint, subsequent injury to meniscus, with athletic difficulty^{9,2}. Since majority non-operative managements and procedures gives functional outcome which are not acceptable²⁶. In ACL injuries, treatment choice is ACL reconstruction. For knee with deficit ACL, the treatment choice remains arthroscopic assisted ACL reconstruction¹⁰. Because it is anatomically more correct, successful and morbidity rate associated with this procedure is low¹¹. The tendons of Semitendinosus and Gracilis (STG) become the method of choice in ACL reconstruction. For STG tendons graft, widely use device is femoral fixation Endo-Button (Smith and Nephew) system¹² because it appeared as sufficiently resistant, rigid and reliable¹³. Surgical technique of Endo-button reduces the potential risk of interference screw fixation. This technique reduces the need for second incision, also adjustable to a range of graft materials (allograft or auto graft BPTG and hamstring). Because of its easy use and early fixation strength, many of surgeons favor this fixation device. Functional outcome are defined as ability of a patient to perform activities of daily living as result of any health care services¹⁴. Functional outcomes reported by patients such as quality of life related to health and disability help to make a difference between the varieties of treatments effectiveness and helps to choose the best possible treatment for patient. Individual recovery is the area of focus in functional outcome especially in vocational areas and social functioning rather than on symptom resolution¹⁵. AC Ligament reconstruction goals are to help the patient with ACL deficient knee to gets functionally stable joint, symptoms free and possible recovery of activity that present before injury^{7,5}. Sustained ACL injury substantially increases the future risk of early degenerative changes in the knee joint in young people and adolescents demonstrated by different researches¹⁶. Methods of reconstruction are also influenced the rehabilitation. Arthroscopic assisted ACL reconstruction allows the early weight bearing but open ACL reconstruction requires long period of post immobilization. Assessment of functional outcomes is done by subjective form of International knee documentation score (IKDC). Subjective IKDC is patient oriented questionnaire and utilized for evaluation of functions, symptoms in activities of daily living in people with different type of knee disorders (Meniscal, patellofemoral dysfunction, ligamentous and osteoarthritis). It has 18 items and possible score range 0–100, where increasing score indicate less limitation in activities of daily living, sports and more symptoms absence¹⁷. The goal of ACL Rehabilitation (ACLR) programs is to track patients' improvement in terms of muscular strength, bilateral and unilateral balance, coordination, range of motion, and overall mobility²⁴. The rehabilitation period is strictly dependent on individuals. In general, patients can resume regular everyday activities after 2-3 months (short-term rehab), while a longer period of 6 to 9 months allows for a return to sport (long-term rehab)²⁵. The objective of this study was to assess the functional outcome among patients with ACL reconstruction in Ghurki Hospital post 6 months. The rationale was to provide a window of opportunity to design and incorporate a well-planned, individualized rehabilitation plan according to patient needs and demands.

Methodology

A Case series type of Descriptive study was performed at Ghurki Trust and Teaching Hospital, GTTH for a period of Six months from April 2019 to October 2019. About sample size of 67 patients are taken by using the WHO sample size calculator considering values such as 17% prevalence (P) (18), 95% confidence interval (1- α) and 0.09 precision (d). Participants aged above 16 with arthroscopic AC Ligament reconstruction using hamstring autograft (Semitendinosus-Gracilis tendons) with Endo-button femoral fixation post 6 months, who had preoperative subjective IKDC score less than 30 were included in study. Participants with history of infection, operation on either knee previously, other concurrent fracture, PCL, collaterals ligament injury and meniscus injury were excluded from this study. Patients were evaluated for functional outcome using subjective form of IKDC score. A prior consent was taken from participants. Data entry and statistical analysis was done by SPSS version 23. The study variables were presented in the form of descriptive statistics. Ethical permission was taken from the Committee of ethics at LCPT. Questionnaire in form of information sheet that briefly describe the aims and it also included the

consent sheet and assure the participants that their responses will be kept confidential. The IKDC Subjective Knee Form was divided into three sections: symptoms including swelling, pain, stiffness, giving way, and locking, sports, current knee function and knee function after knee injury (not included in the total score)¹. Number of items of IKDC, 18 (7 items for symptoms, 1 item for sport activity, 9 items for daily activities, and 1 item for current knee function)²². Both inter- and intra-observer reliability were highest for IKDC (0.79 and 0.86 respectively)²³.

Results

About 67 participants took part in this study and all were male. When both right and left sides were compared the results showed 2.77:1. About 50 patients (74.6%) and 18 (26.86%) had right and left sided injury respectively as mention in Table 1. When looked on the mode of injury, majority of participants about 36 (52.94%), injury mode were RTA, sports injury 17 (25%) participants and 15 (22.05%) participant's injury mode were others like falls as mention in Table 1. Participants of 17 to 60 years age range were included in study with mean age 28.46 years as mention in Table 1.

Characteristics	Average
Age (years)	28.46
Right sided ACL	50 (74.6%)
Left sided ACL	18 (26.86%)
Right sided : Left sided	2.77:1
Injury modes	
RTA	36 (52.94%)
Sports injuries	17 (25%)
Others	15 (22.05%)

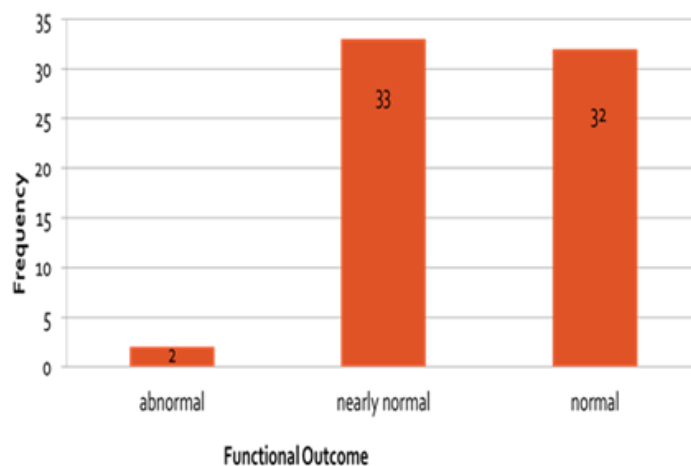
Table: 1 Patient Demographics

Majority of patients about 50 (73.5%) and 53 (77.9%) can perform light to moderate activities without significant knee pain and swelling in knee respectively as mention in Table 2. About 58 (85.3%) patients had no complaint of knee lock and catch and 51 (76.1%) can perform light to moderate activities without significant giving way in knee as mention in Table 2. Most of study population about 52 (76.4%) can participate in light to moderate activities on regular basis which shows why majority of patients can perform light to moderate activities without any problem in knee after ACL reconstruction because their regular activities are in light to moderate category before injury.

Presenting complain	Severity	Mean
Not significant knee pain	Light to moderate	50 (73.5%)
Not significant swelling in knee	Light to moderate	53 (77.9%)
Knee lock or catch	No	58 (85.3%)
Not significant giving way in knee	Light to moderate	51 (76.1%)
Participants highest regular base activity	Light to moderate	52 (76.4%)

Table: 2 Presenting Complaints of Study Population

After ACL reconstruction, majority of study population had minimally to moderate difficulty in kneeling on front of knee, squatting, sit with knee bent, jump and land on involved leg and stop and start quickly. The study population (n=67) had pre-operative subjective IKDC score less than 30 with mean 25 and mean post-operative subjective IKDC score was 73.92 which showed improvement in patient function after ACL reconstruction (Table 3).



According to grading system of IKDC out of 67 sample size, 32 patients were in Grade A (Normal), 33 patients in Grade B (Nearly Normal), 2 patients in Grade C (Abnormal).

Discussion

Improvements in research and advancements in arthroscopy techniques make the ACL reconstruction a successful procedure. In current study, mean IKDC score is 73.92 compare with pre-operative subjective IKDC score was less than 30 concluded that functional outcome after reconstruction was improved. This research results are close to those of previous researches. The previous study (19) results show that mean pre-operative IKDC scoring was 42.45 and mean post-operative IKDC score was 81.87, which showed significant improvement after Arthroscopically assisted AC ligament reconstruction. ACL reconstruction offers a significant improvement in knee function and complications are minimal with significant recovery of preoperative functional status. In comparison, current study is somewhat similar to¹⁹, both shows the significant improvement in functional outcome after reconstruction. But differences in value of IKDC scores, because in current study pre-operative IKDC score is low less than 30 as compare with¹⁹ pre-operative IKDC score which is high 42.45. In another study²⁰, results show that in about 30 patients, 80% patients in Grade A, 16.6% in Grade B and 3.33% in Grade C, according to IKDC grading system. The majority of patients showed two grades improvement in outcomes. In comparison, current study results are somewhat similar with²⁰ study, it shows that out of 67 patients, 49% in Grade A, 48% in Grade B, 2.9% in Grade C. Both studies results show the improvement in functional outcome. In another previous study¹³, the results indicate that endobutton fixation device show no complications. On IKDC score, 92.4% patients are in A& B normal and nearly normal and 7.8% were in grade C and D abnormal and severely abnormal. The Endobutton fixation device for graft in femoral tunnel is providing good mechanical stability. In comparison, current study results are somewhat similar with¹³ study, in current study 97% patients are in grade A and B and 3% are in grade C. In this study, mean subjective IKDC score of 73.92 are somewhat similar with¹⁹ 81.87 and²¹ 86.4.

Conclusion

ACL reconstruction with endobutton shows improvement in knee function and recovery of preoperative functional status.

AUTHORS' CONTRIBUTION:

The following authors have made substantial contributions to the manuscript as under:

Conception or Design: Maria Abdul Karim

Acquisition, Analysis or Interpretation of Data: Maria Abdul Karim, Hufsa Tariq

Manuscript Writing & Approval: Hafiz Muhammed Asim

All authors acknowledge their accountability for all facets of the research, ensuring that any concerns regarding the accuracy or integrity of the work are duly investigated and resolved.

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