

Functional Outcomes of ACL Reconstruction with Autologous Peroneus Longus Tendon Using Button Fixation on Both Femur and Tibial Sides

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ACL reconstruction; Peroneus longus

1. Abstract

1.1. Background: The purpose of our study is to assess functional outcomes of ACL Reconstruction with autologous Peroneus Longus tendon using button fixation on both femur and tibial sides.

1.2. Method: In this study, 54 patients with ACL injuries operated for ACL reconstruction using Peroneus longus tendon and button fixation at both femur and tibial side. All the patients were followed for at least 1 year and they all underwent a minimum of 4 weeks of physiotherapy postoperatively.

1.3. Results: Post reconstruction functional outcomes were assessed using IKDC scoring system. According to subjective IKDC scoring, 69 (75%) results were excellent, 12(15%) were good, 6(7.5%) were satisfactory and 2(2.5%) were bad.

1.4. Conclusion: ACL reconstruction with autologous Peroneus Longus tendon using button fixation on both femur and tibial sides has excellent functional outcomes.

2. Introduction

Anterior Cruciate Ligament (ACL) is small band inside the knee joint spanning from femur to tibia and act as internal stabilizer, preventing hyperextension, anterior tibial translation and internal tibial rotation giving knee a rotational stability. Study has shown that ACL carries mechanoreceptors that are sensitive to change in direction of movement, position of the knee joint, changes in acceleration, speed, and tension [1].

Anterior cruciate ligament tears are the most common knee injuries in adult population with the rise in participation in sports as well as road traffic accidents. Anterior Cruciate Ligament (ACL) rupture is a disastrous condition that can cause instability, chronic pain and early degenerative changes [2, 3]. There is a tenfold in-

crease in the incidence of knee osteoarthritis after ACL tear as a natural course [4]. More than fifty percent of patients with an ACL injury will develop symptomatic osteoarthritis in the following ten to twenty years [5]. To improve knee functions and stability ACL reconstruction is gold standard surgery today

A torn anterior Cruciate Ligament (ACL) usually occurs as a result of an acute noncontact deceleration injury, forceful hyperextension, or excessive rotational forces about the knee [6, 7].

Anterior cruciate ligament can be reconstructed through open and arthroscopic techniques. Arthroscopic ACL reconstruction is the standard technique to treat ACL tear [8, 9]. This procedure has reduced postoperative morbidity and enables early active physiotherapy [10]. The most commonly used grafts are Bone-Patellar Tendon-Bone (BPTB), hamstring or peroneus longus auto grafts. Although both the techniques have advantages and disadvantages, hamstring auto graft technique is preferred, due to low morbidity of donor site and excellent biomechanical graft properties [11]. The most devastating complication is the graft rupture after ACL reconstruction which requires a revision surgery.

3. Method

The research ethics committee of Hayatabad Medical Complex Peshawar authorized this prospective observational study. Every patient gave their informed permission. All of the patients in the Outpatient department who had an anterior cruciate ligament injury were treated with arthroscopic reconstruction utilising a peroneus longus auto-graft. They were assessed and followed up on a regular basis. Between January 2010 and January 2020, 54 patients had ACL restoration. The study included both male and female participants who had ACL reconstruction surgery. They were all over the age of 18 and eager to take part in the research. It was

planned to take informed consent. The study excluded individuals with a recurrent ACL tear, a contemporaneous fracture, an accompanying posterior cruciate ligament injury, a medial or lateral collateral ligament injury, or who refused to provide free informed permission. In every case, a thorough clinical history and physical examination were conducted. The Lachmann test, anterior drawer test, and pivot shift test were among the particular tests used to assess ACL tears. Other common tests include the varus and valgus stress test, the Mc Murrays test, the posterior drawer test, and the reverse pivot shift test. Standard AP and lateral views of the afflicted knee were included in the radiographs. In all patients, an MRI of the afflicted knee was performed.

4. Surgical Method

Antibiotics were administered half an hour before the procedure. Following anaesthetic induction, a tourniquet is applied to the upper thigh and the patient is positioned in a supine position. Under anaesthesia, specific clinical examinations are conducted. Anterior-medial and anterior-lateral portals were created using incisions. Diagnostic arthroscopy performed to confirm ACL tear. We started with harvesting peroneus longus graft. Graft was fixed in both femoral and tibial side with buttons.

5. Results

Between January 2010 and January 2020, 54 individuals had ACL reconstruction surgery. All patients were examined after a year of follow-up. There were 52 (92.2%) males and 2 (3.7%) females among the 54 patients. Patients with right-sided ACL injuries accounted for 64.8 percent of the total, whereas left-sided ACL injuries accounted for 35.1 percent of the total. The patients' ages ranged from 18 to 56, with a median age of 25. Patients' functional outcomes were measured using pre- and post-operative IKDC rating. The mean preoperative IKDC score was 41 and the mean postoperative IKDC score was 81 (Table 1 and 2, Figure 1).

Table 1:

Total Patients = 80	
Male	Female
52 (92.2%)	2 (3.7%)

Table 2:

Side of ACL Injury	
Left Side	Right Side
35.10%	64.80%

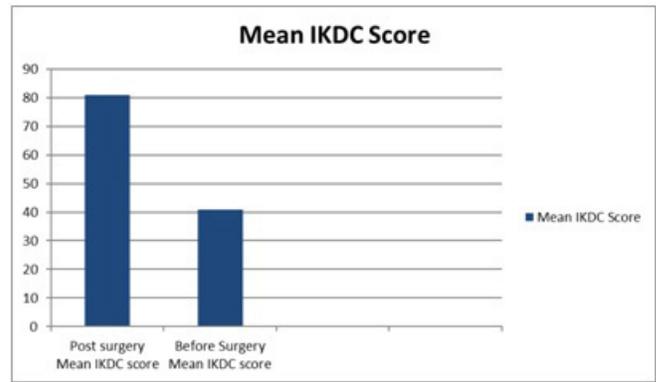


Figure 1:

6. Discussion

The most successful and typical surgical procedure for anterior cruciate ligament restoration is arthroscopic surgery. The purpose of this therapy is to re-establish knee stability. The best time to do surgery is still a topic of controversy in the literature. According to Smith et al's systemic reviews, the clinical outcomes for early (less than 3 weeks) and delayed (more than 6 weeks) ACL reconstruction were nearly identical; nevertheless, this result contains flaws, such as non-randomization and a lack of suitable blinding [12]. All of the patients in our study had their ACLs repaired using a Peroneus Longus autograft with an button at the femoral end and tibial tunnel's opposite end. Cooley et al reported in a study on ACL restoration employing quadrupled folded semi-tendinosus graft that this procedure produces outstanding clinical outcomes and that patients can return to almost pre-injury activities. 12 Degeneration of the articular surfaces occurs infrequently, and reoperation rates are low. The endobutton is not directly attached to the graft; instead, a fibre wire thread connects the endobutton to the graft. Increased anterior knee joint laxity is linked to this suspensory fixation [13]. In this study, we discovered that 5 patients had grade 1 laxity after 6 months and 2 patients had grade 2 laxity at the conclusion of the final follow-up. The majority of ACL tears, according to this study, occur as a result of sports or car accidents.

The subjective IKDC score in this study is 90 points, which is consistent with Siebold et al's 90 points using hamstring autograft and endobutton and Aglietti et al's 85 and 82 points using double strand hamstring autograft [14, 15]. After reconstruction, 90 percent of ACL tear patients reported their knees to be normal or near normal (groups a and b), which is similar to the 94 percent reported by Johma et al at 5 years follow-up using either BPTB graft or hamstring, and the 92 percent reported by Siebold et al using endobutton [14, 16].

7. Conclusion

ACL reconstruction using Peroneus Longus auto graft with femoral and tibial button fixation is an effective method of reconstruction in term of good functional recovery and good IKDC score.

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