Functional Outcome Of Complete Acl Tear Managed With Arthroscopic Acl Reconstruction Using Hamstring Graft - A Prospective Study

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Abstract:
Due to the increased occurrence of Road Traffic Accidents and increased number of persons participating in sports activities, the incidence of ACL injuries has increased and due to increased demands in physical activity and also with the expectations to lead a near normal life nowadays, patients tolerate knee instabilities poorly, thus requiring surgeries. Arthroscopic reconstruction of the injured ACL has become the gold standard and is one of the most common procedures done in orthopaedics and thus it has been extensively studied and outcomes of ACL reconstruction have gained considerable attention. This prospective study of 30 patients was conducted to evaluate the functional outcome of arthroscopic ACL reconstruction using hamstring autograft. Excellent result was seen in 11 patients(36.66%), good result in 14 patients(46.66%), fair result in 3 patients and poor result in 1 patient. In view of the above results obtained from our study we conclude that in young active adults, anatomic single bundle ACL reconstruction with hamstring graft fixation with interference screw gives good functional outcome.

Keywords: Functional Outcome, Complete ACL Tear, Arthroscopic ACL Reconstruction

Introduction:
The knee joint is one of the commonly injured joints and the anterior cruciate ligament is the most commonly injured ligament of the knee[1]. The modern high speed vehicular trauma and sporting life style has led to increased ligament injuries of the knee. The anterior cruciate ligament plays an important role in the function and stability of the knee in association with the other ligaments, capsule, and muscles[2].
The Anterior Cruciate ligament (ACL) is the primary stabilizer of the knee and prevents the knee against anterior translation[3]. It is also important in counteracting rotational and valgus stress[4]. After ACL injury, most patients experience recurrent episodes of instability, pain and decreased function. Osteochondral injuries, degenerative changes and even dislocation is possible following ACL injury.
ACL tears have been termed as the 'Beginning of the end of the knee'[5]. Whilst some patients can be managed non-operatively (isolated ACL injury) with intense physiotherapy, bracing and modification of activity, severe symptoms may require reconstruction of the injured ligament. In patients who are reluctant to undergo surgery, natural history of ACL injury leads to early degeneration of the knee joint5.
Reconstruction of ACL allows the patient to return to a pre trauma activity level and delays the occurrence of associated meniscal injury and onset of osteoarthritis. The incidence of associated cartilage damage in acute tears is reported at 15 - 40% whereas it increases to 79% in chronic tears[6].
Reconstruction is also essential to restore the stability of the knee[7]. A stable knee in turn prevents worsening of existing chondral lesions as well as occurrence of newer lesions. ACL injury is more frequently diagnosed nowadays and with patients requirements of full functional recovery and improvement in surgical technique has led to frequent reconstructions.
Arthroscopic reconstruction of the injured ACL has become the gold standard. Open reconstruction of ACL which was done earlier is not practiced nowadays due to the complications associated such as increased post op pain, stiffness and a lengthy rehabilitation phase.[8]
The “ideal graft” for ACL reconstruction is still a topic of debate. The most commonly used grafts are bone patellar tendon bone graft and hamstring graft. Several studies have demonstrated comparable functional outcomes for both the grafts.

Methodology:
- The proposed study was a hospital based study in Patients attending to the Department of Orthopaedics who are diagnosed with ACL injury and fulfilling the said criteria and willing for the surgery & study will be included in the study.

- No. of cases – 30

METHOD OF COLLECTION OF DATA:

- Detailed history about the trauma and mode of injury was taken in the casualty/OPD.
- Case history was recorded in a specially designed Case Record Form (CRF) by taking history of illness and by doing detailed clinical and radiological examination and relevant investigations.
- Finally after the diagnosis, patients were selected for the study depending on the clinical instability and MRI findings and based on the inclusion and exclusion criteria.
- All routine blood investigations were sent and a pre-anesthetic check-up was done regarding fitness for the surgical procedure.
- All patients were taken for surgery only after an informed and written consent was obtained from the patient and the patient's attender.
- 30 cases with ACL injury were studied as per the inclusion and exclusion criteria.
- Post operative evaluation of clinical and functional outcome using the Lysholm questionnaire and scoring system was done. All the cases are followed for the minimum period of 6 months to 12 months. Results were analyzed both clinically and radiologically using appropriate statistical methods.

Inclusion Criteria:

- Patients with clinical and radiological evidence of complete ACL injury with instability.
- Patient aged between 20 to 50 years.

Exclusion criteria:

- Associated bony avulsion injuries.
- Patients with recurrent ACL tears.
- Patients requiring a concurrent meniscal and cartilage repair.
- Associated with other ligament injuries requiring surgery.
- Osteoarthritic knee.
- Patients with chronic diseases such as diabetes.

Results:

Table 1: Sports causing ACL injury

Sports	Patients	Percentage
Cricket	5	16.66%
Football	3	10%
Kabbadi	2	6.66%

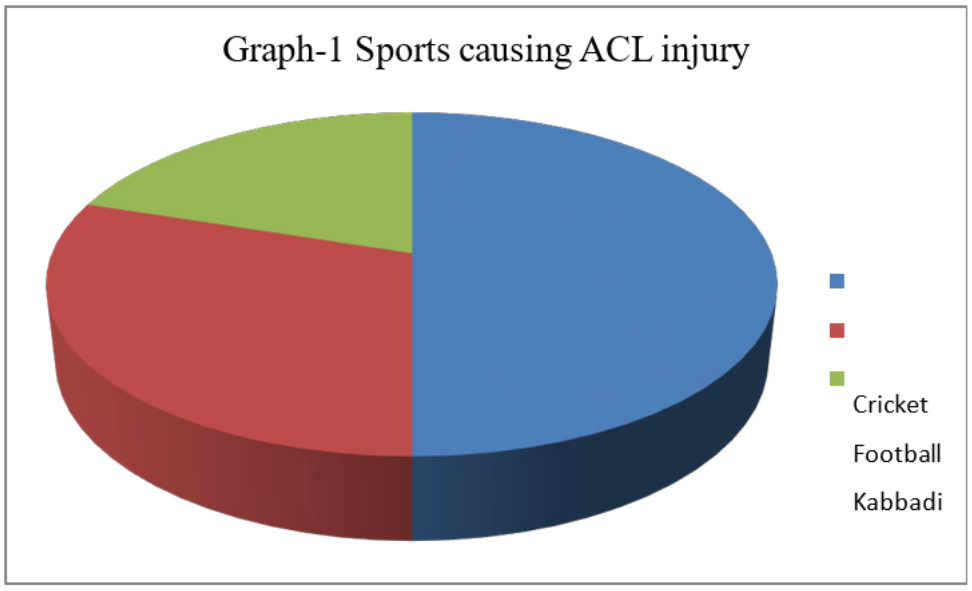

Table 2: Associated Meniscal injuries

Sl no.	Associated injuries	Number of patients	Percentage
1	Isolated ACL tear	12	40%
2	medial meniscus tear	11	36.66%
3	lateral meniscus tear	5	16.66%
4	medial and lateral meniscus tear	2	6.66%

In our study, there was associated meniscal injury in 60 % of patients. The most commonly injured was medial meniscus (36.66%). Isolated ACL tear was present in 12 patients (40%).

Table 3: complications

complications	Number of patients	Percentage
Knee stiffness	2	6.66%
Effusion	1	3.33%
Donor site pain	1	3.33%

Of the 30 patients in the study, 2 patients developed knee stiffness, 1 patient developed effusion and 1 patient developed donor site pain.

Table 4: Lysholm Knee score

Sl. No.	Results	Number of patients	Percentage
1	Excellent	11	36.66%
2	Good	14	46.66%
3	Fair	4	13.33%
4	Poor	1	3.33%

Discussion:

Average duration of follow-up of the present study was 8.7 months with a minimum follow-up period 6 months and maximum follow-up period was 12 months. Average duration of follow-up of D Choudhary et al. was 12 months, Jomha et al. was 84 months, Railey et al. was 24 months, Mahir et al. was 18 months and Ashok Kumar et al. was 17 months.

The most common complication in our study was knee stiffness (6.66% of patients, n=2) of which 1 patient recovered with physiotherapy but stiffness still persisted in the other patient who had poor compliance to the rehabilitation protocol. One patient (3.33%) developed donor site pain at 3 months follow up and was treated with analgesics. One patient developed effusion at 6 weeks follow up which later subsided. There was no complication of graft failure in our study.

In our study, the Lysholm score as evaluated at the follow up of 6 weeks, 12 weeks and 24 weeks. The Lysholm knee score evaluated at 6 months averaged 92.33 with the maximum score being 100 and the minimum score being 63. Overall, 11 patients (36.66%) achieved excellent results, 14 patients (46.66%) achieved good results, 4 (13.33%) patients achieved fair results and 1 patient (3.33%) had a poor result and could not return to pre trauma activity level. Overall 83.33 % of the patients achieved an excellent or good result. Our results are comparable with standard studies of D Choudhary et al., Jomha et al., Railey et al., Mahir et al. and Ashok Kumar et al.

Table 5: Lysholm Knee score: Comparison

Study	Average Lysholm Score
D Choudhary et al. 2005[9]	92

Jomha 1999[10]	94
Railey et al. 2004[11]	91
Mahir et al. 2005[12]	93.5
Present study	92.33

Conclusion:

In view of the above results obtained from our study we conclude that in young active adults, anatomic single bundle ACL reconstruction with hamstring graft fixation with interference screw gives good functional outcome. Arthroscopic anterior cruciate ligament reconstruction with hamstring graft is an excellent treatment option for anterior cruciate ligament deficient knees.

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