



Reconstruction of cruciate ligaments with peroneus longus tendon: Functional and clinical outcome of donor ankle and foot

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Research

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Abstract

Introduction: To compare the functional and clinical outcome of donor foot and ankle post peroneus longus tendon harvest in cruciate ligament reconstruction.

Materials and methods: Patients with cruciate ligament injury underwent peroneus longus tendon autograft harvest in this prospective trial. After 6 months following peroneus harvest, the foot and ankle disability index (FADI) was used to evaluate the ankle morbidity at the donor location.

Results-In this study sample of 25 patients, the ankle and foot functions of donor site are grossly preserved in almost all the patients which was evaluated by FADI score pre operatively and post operatively. FADI score of donor site ankle was 99.23 ± 0.77 .

Conclusion: The peroneus longus tendon has the benefit of being the easiest autograft to harvest and having the fewest problems, making it the most promising option for cruciate ligament restoration. Due to the lack of postoperative biomechanical morbidity, it might be regarded as the first option.

Keywords: peroneus longus, FADI score, ankle morbidity

INTRODUCTION

It is routine practice to rebuild the cruciate ligament. Surgery is intended to repair the knee's functional instability. Anteroposterior translation and rotational subluxation are both resisted by the normal CL, which also offers functional stability in both of these areas. There are several surgical approaches and graft materials that may be used for ACL and PCL repair. The common peroneal nerve runs through the space between the peroneus longus tendon's attachments to the head and body of the fibula to the front of the leg. A superficial muscle called the peroneus longus arises from the head and upper two-thirds of the lateral side of the fibula. The tendon of the peroneus longus, which runs behind the lateral malleolus in a groove with peroneus brevis [1]. A new advancement in the field of arthroscopic cruciate ligament restoration is the use of Peroneus Longus Tendon (PLT) autograft as an alternative to the traditional autograft. The strength and average thickness are substantially identical to those of the native ACL, which is one of its benefits [2,3]. The stability of the ankle is unaffected by removing the PLT. With the majority of studies demonstrating positive clinical outcomes and little ankle morbidity at the donor location, the peroneus longus tendon is a possible graft of preference in knee stabilizing procedures.

MATERIALS AND METHODS

This prospective study was conducted in department of orthopedics in D Y Patil University, Pimpri, from August 2020 to July 2022. Ethical clearance was taken from Hospitals Ethics Committee. A bilingual, written consent was obtained from all the cases before they were included in the study. The inclusion and exclusion criteria were described below:

INCLUSION CRITERIA

EXCLUSION CRITERIA

- Age is 18 year-55 years
- Patients with ACL or PCL tear with clinical signs of instability.
- Previous history of ankle fractures/early arthritic changes
- Previous history of infection around ankle.
- Patients with generalized ligament laxity.
- Previous history of ankle ligament injuries like Anterior talofibular ligament tear/sprain.

- Peroneus longus tendon subluxation.
- Congenital anomalies of ankle and foot.
- Patients with footdrop or nerve injuries of the lower limb.

Prospective cohort study of patients meeting inclusion criteria who underwent cruciate ligament reconstruction between August 2020- July 2022. Routine theatre setup - arthroscopic instruments available at D.r. DY Patil Medical college. Routine blood investigation-Available at institute. Clinical examination will be done on OPD basis during follow up. A consent explaining all the advantages and possible complications will be taken from the patient and the FADI score will be calculated.

A total of 25 patients are enrolled into the study, of which 19 are males and 6 females. The patients were taken into consideration after the exclusion criteria was fulfilled.

Surgical procedure- Surgery was performed in supine position under spinal anesthesia. After clinical examination under anesthesia, padded tourniquet was applied at the proximal thigh region. After confirming cruciate ligament tear by performing diagnostic arthroscopy, peroneus longus tendon harvested from the ipsilateral side.

1 cm above the lateral malleolus, a 2 cm-3 cm longitudinal incision is made. Peroneus longus and brevis were found on the surgical field, and the incision was made there, through the skin and subcutaneous tissue. Peroneus longus tendon was then identified and removed using a closed tendon stripper [4].

RESULTS

Mean (SD) age of the study participants 32.48(7.98), median is 33 years with the minimum of 21 years and maximum of 49 years (Table 1).

Table 1. Out of total study participants 80 percent were males and 20 % were females

Gender	Number	Percentage
Male	20	80%
Female	5	20%
Total	25	100%

FADI score total has 26 components in which there is inclusion of pain criteria as well. Max score can be 104. In our patients average postoperative FADI score was 103.2 after 6 months follow up (Table 2).

Table 2. Calculation of the mean, standard deviation and range to 100%.

	Mean	SD	Min	Max
FADI	99.23	0.7218	98.07	100

DISCUSSION

A prospective study was done in our tertiary centre to evaluate the functional outcome of donor ankle and foot post peroneus longus tendon harvest.

In our study we have taken the patients into consideration after the elimination of exclusion criteria.

Mean (SD) age of the study participants 32.48(7.98), median is 33 years with the minimum of 21 years and maximum of 49 years. Out of which 80% were males and 20% were females.

In our study we have calculated the FADI score pre operatively and post operatively. Pre operatively all the patients in our study had no ankle and foot morbidity. Post-operative peroneus longus tendon harvest follow up was taken at 2 weeks, 6 weeks, 12 weeks and 24 weeks (6 months).

Post operatively at 24 weeks, 40% were having pain at the harvesting site, 20% patients were having posterolateral swelling over the harvest site while

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performing heavy activities like climbing up and down the hills and other 40% had no complaints. So therefore, peroneus longus as a graft in cruciate ligament reconstruction shows good functional score and minimal donor site morbidity.

In another study done by Dhruv Sharma states that peroneus longus was the most promising autograft for arthroscopic ACL with excellent ankle function based on AOFAS and FADI scores [5]. Riky Setawan along with Rhatomy, according to IKDC, Modified Cincinnati, and Lysholm scores, that PCL reconstruction employing peroneus longus tendon autograft results in satisfactory functional outcome of the knee with ankle preservation based on AOFAS and FADI score at 2 years follow-up [6].

CONCLUSION

In our study, based on FADI score, peroneus longus tendon is the most promising autograft when compared to other grafts like hamstrings, patellar tendon and tendoachilles. 6 months follow up with the help of FADI score showed excellent results where there is very minimal effect on ankle and foot morbidity.