Zagazig University Medical Journal
www.zumj.journals.ekb.eg
https://doi.org/10.21608/zumj.2023.247985.3003 Volume 30, Issue 8.1, NOV. 2024, Supplement Issue
Manuscript ID ZUMJ-2311-3003
DOI 10.21608/zumj.2023.247985.3003
ORIGINAL ARTICLE

Comparison between Peroneus Longus and Hamstring Grafts for Anterior Cruciate Ligament Reconstruction

Abdelrahman Ghareeb Abdelgaliel [1]*, Mohamed AbdAlla M. Abdelsalam[1], Mohamed Osama M. El-Hefnawy[1], Adel Mohammed Salama[1]
Orthopedics department, Faculty of medicine, Zagazig University, Egypt.

*Corresponding author: Abdelrahman Ghareeb Abdelgaliel

Email: abdelrahmangh000@gmail.com

Submit Date 11-11-2023
Revise Date 20-11-2023
Accept Date 20-11-2023

ABSTRACT

Background: Improving knee stability and function is known to be possible with anterior cruciate ligament (ACL) reconstruction. The aim of this study is functionally effective anterior cruciate ligament reconstruction either by peroneus longus autograft or hamstring tendon autograft. **Methods:** The study was conducted in Orthopedics department, Zagazig University Hospitals, Zagazig, Egypt. 18 Patients were included in our study divided into two groups; Group A (9): had ACL reconstruction by peroneus longus graft. Group B (9): had ACL reconstruction by hamstring graft.

Results: There is significant improvement in Modified Cincinnati knee rating system, Lysholm and IKDC score Six months Postoperative in both groups. There are no significant changes in Foot and ankle disability index and Ankle hindfoot score in both groups.

Conclusions: Peroneus longus tendon autograft is an appropriate non-knee substitute graft option for ACL repair patients, since it offers a similar outcome to hamstring tendon graft ACL surgery.

Keywords: Anterior Cruciate Ligament Reconstruction; Hamstring graft ; peroneus Longus graft

INTRODUCTION

Anterior cruciate ligament (ACL) tears are the most common type of ligamentous injury to the knee. The stability of the knee joint depends on the ACL, hence injury to it can lead to degenerative changes and subsequent meniscal problems. One of the two cruciate ligaments that helps to stabilize the knee joint is the ACL [1]. ACL is one of the most often injured knee joint structures; the primary ACL case incidence in the general population ranges from 1.5% to 1.7% per year. [2].

ACL restoration is currently the gold standard for restoring knee stability and reducing the chance of subsequent meniscal tears and clinical osteoarthritis [3]. It has been demonstrated that ACL reconstruction, utilising a variety of graft types, including autografts or allografts, improves knee stability and function [4]. The choice of graft is the most crucial aspect of the surgical strategy. The optimal knee stability is provided by the appropriate graft, which also lowers the chance of rupture or re-injury [5]. Anterior cruciate ligament reconstruction (ACLR) is the most common method for using graft material to repair a torn ACL. Since arthroscopy is employed to help, this procedure requires little to no invasiveness [6].

Autografts derived from a range of compatible muscles can preserve the strength and resistance of the original ACL structure. Meanwhile, opinions differ over the optimal graft to repair an injured ACL [6].

A hamstring autograft (HT) can be easily harvested at the donor site with minimal morbidity, and its strength is comparable to that of the native ACL. Additionally, HT graft may cause a noticeable loss of strength in the original location of the HT muscle [7]. The gracilis and semitendinosus tendons of the patient are used to create autogenous hamstring transplants. They are commonly used in surgeries involving ACL restoration. There are several ways to fix hamstring grafts to the femur: cortical buttons, cross-pins, and interference screws. The advantages and disadvantages of these methods in terms of biomechanical performance vary [8].

Given the myriad of challenges associated with the knee joint associated with the previously

discussed muscle transplant, the peroneus longus tendon (PLT) graft has emerged as the method of choice. Furthermore, the advantage of PLT graft is that it prevents further damage to the knee and its surrounding tissues [6]. PLT shows promise as an autograft material for ACL restoration. Harvesting autografts is quick and easy because of its adequate thickness, and the fact that it doesn't interfere with the dynamic knee joint stabilisers lowers the possibility of harvesting issues [9].

Several previous case series indicated using the peroneus longus tendon as the primary option for an autograft in ACL restoration, with excellent clinical outcome and little donor site morbidity, however some investigations differed due to donor site morbidity [10-12].

The use of peroneus longus autograft in primary ACL reconstruction is a safe procedure with an excellent outcome. Peroneus longus tendon autograft can be recommended as an alternative graft in single-bundle ACL reconstruction.

Therefore, this study aimed to evaluate the anterior cruciate ligament reconstruction either by peroneus longus autograft or hamstring tendon autograft.

METHODS

The study was conducted in Orthopedics department, Zagazig University Hospitals, Zagazig, Egypt. Inclusion criteria encompassed individuals of both genders aged between 18 and 45 years, with a traumatic ACL rupture and no concurrent ligament repair.

Exclusion criteria involved patients with any pathological condition affecting the lower extremities, fractures surrounding the knee, chondral damage, or related ligament injuries, who were not included in the study.

Operative techniques; 18 Patients were included in our study divided into two groups; group A (9): had ACL reconstruction by peroneus longus graft and group B9)): had ACL reconstruction by hamstring graft.

A routine preoperative clinical evaluation was done noting soft tissue and distal neurovascular status. lachman test and anterior drawal test done. Tegner Lysholm knee scoring scale and modified Cincinnati knee rating system were used for preoperative scoring for two groups. Foot and Ankle Disability Index (FADI) score and International Knee Documentation Committee (IKDC) score.

Magnetic resonance imaging, Routine laboratory investigations including complete blood count, liver and renal function tests, bleeding profile, and blood glucose.

Operative details included diagnostic arthroscopic evaluation to confirm ACL tear and assess articular chondral abnormalities and meniscal diseases.

Peroneus longus tendon graft; tenodesis for the peroneus longus and peroneus brevis tendons was performed, and the peroneus longus tendon was stripped proximally with a tendon stripper to at least 5 cm from the fibular head in order to prevent peroneal nerve injury. This allowed for the harvesting of the peroneus longus tendon graft. The longitudinal skin incision was made at 2 to 3 cm (2 finger-breadths) above and 1 cm (1 finger-breadth) behind the lateral malleolus. To get the right graft size, a conventional technique for graft preparation were followed (Figure 1).

Hamstring tendon graft; a 3-cm incision made one fingerbreadth medial and two fingerbreadths distal to the tibial tubercle directly above the pes anserinus tendons is used to harvest the semitendinosus and gracilis tendons **(**Figure 2).

Postoperative evaluation and follow up; six months after the procedure, the postoperative evaluation was carried out to allow the patient sufficient time to recover from their ACL injury, finish the rehabilitation programme, and resume athletic activities. We fill out the Tegner Lysholm knee scoring scale, the modified Cincinnati knee rating system, the Ankle hindfoot score, the IKDC score, and the Ankle Disability Index score for two groups.

Statistical analysis

Software from SPSS was used to analyse the data (USA). The parametric data are represented by the mean, standard deviation, or percentage.

RESULTS

We conducted an intervention at Orthopedics department, Zagazig University Hospitals, Zagazig, Egypt on 18 cases: Group A (9): undergoing ACL reconstruction by peroneus longus graft and Group B 9)): undergoing ACL reconstruction by hamstring graft.We found that the mean age in group A was 29.80 ,group B was 27.60 . BMI mean in group A was found 26.6 but for group B it was 27.9. There is no significant difference between the two groups regarding demographic data (Table 1).

There is no significant difference between the two groups regarding injury characteristics (Table 2). There is no significant difference between the two groups regarding Foot and ankle disability index, Modified Cincinnati knee rating system, IKDC score, Ankle hindfoot score and Lysholm score six months Postoperative (Table 3).

There is no significant difference between the two groups regarding Anterior drawer test pre and post-operative (Table 4).

Table (1): Demographic data among the studied patients

	Group A N=9 Peroneus longus graft	Group B N=9 Hamstring graft.	P value
Age Mean ± SD	29.80 ±7.5	27.60 ± 8.1	0.646
Gender Male Female	8(88.8%) 1(11.2%)	7(77.7%) 2(22.3%)	0.830
BMI (kg/cm2) Mean ± SD	26.6 ± 3.2	27.9 ± 1.9	0.795

Table (2): Injury characteristics among the studied patient

Variables	Group A N=9 Peroneus longus graft	Group B N=9 Hamstring graft	P value
Duration from injury to intervention (in months) Mean ± SD	15.10 ± 6.23	14.70 ± 6.68	0.891
Mechanism of injury Sports injury Traffic accident	7(77.8%) 2(22.2%)	6(66.7%) 3(33.3%)	0.794
Side Left Right	4(44%) 5(55.6%)	3(33.3%) 6(66.7%)	0.681

Table (3): The functional outcome of patients comparison between group A and group B.

Variables	Group A (n=9) Peroneus longus graft	Group B (n=9) Hamstring graft.	P value
Foot and ankle disability index Six months Postoperative Mean ± SD	99±0.34	99.70±0.44	0.852
Modified Cincinnati knee rating system Six months Postoperative Mean ± SD	89±7.1	85±6.9	0.910
Lysholm score Six months Postoperative Mean ± SD	95±6.2	94±10.5	0.670
IKDC score Six months Postoperative Mean ± SD	92.5±9.8	93.4±6.2	0.794
Ankle hindfoot score Six months Postoperative Mean ± SD	99.75 ± 0.44	99.72 ± 0.34	0.871

Table (4): Comparison of Anterior drawer test between the two groups

Variables	Group A (n=9) Peroneus longus graft		Group B (n=9) Hamstring graft.		P value
Pre-op					
Grade 0	0	0.00	0	0.00	0.437
Grade 1	0	0.00	0	0.00	
Grade 2	1	11.1%	2	22.2%	
Grade 3	8	88.9%	7	89.8%	
Six months					
Grade 0	7	89.8%	6	66.7%	0.631
Grade 1	2	22.2%	3	33.3%	
Grade 2	0	0.00	0	0.00	
Grade 3	0	0.00	0	0.00	

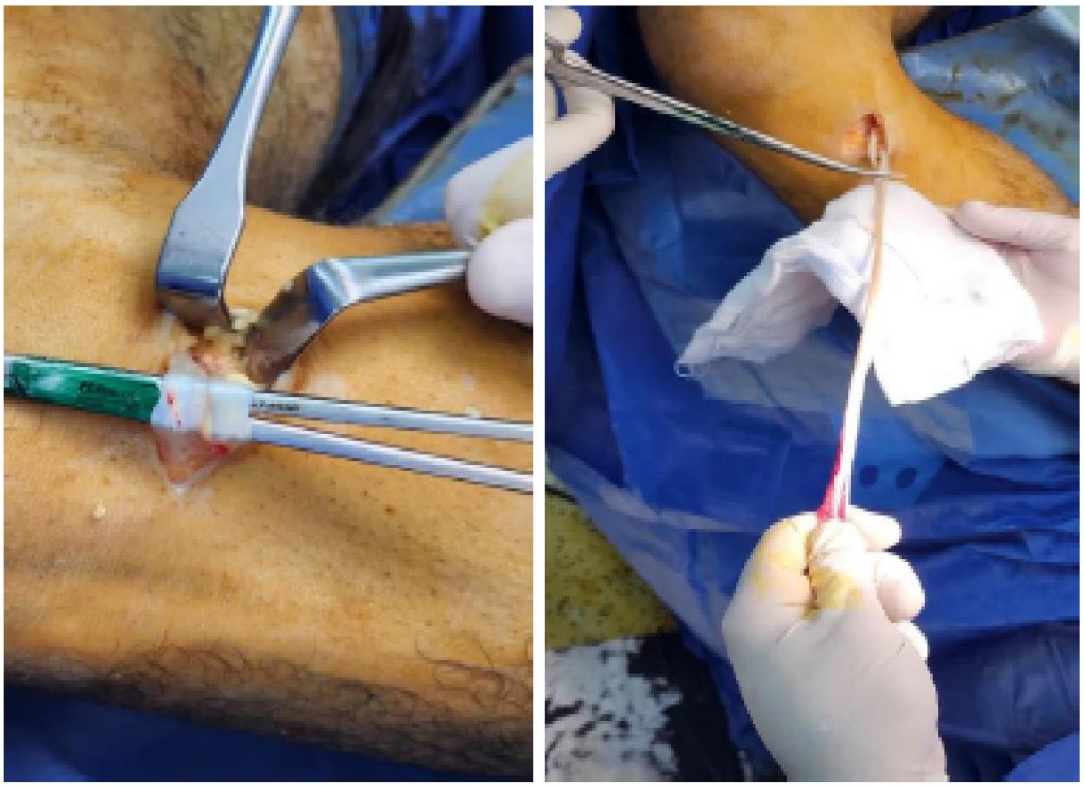

Figure (1): Hamstring graft harvesting among the studied patients.

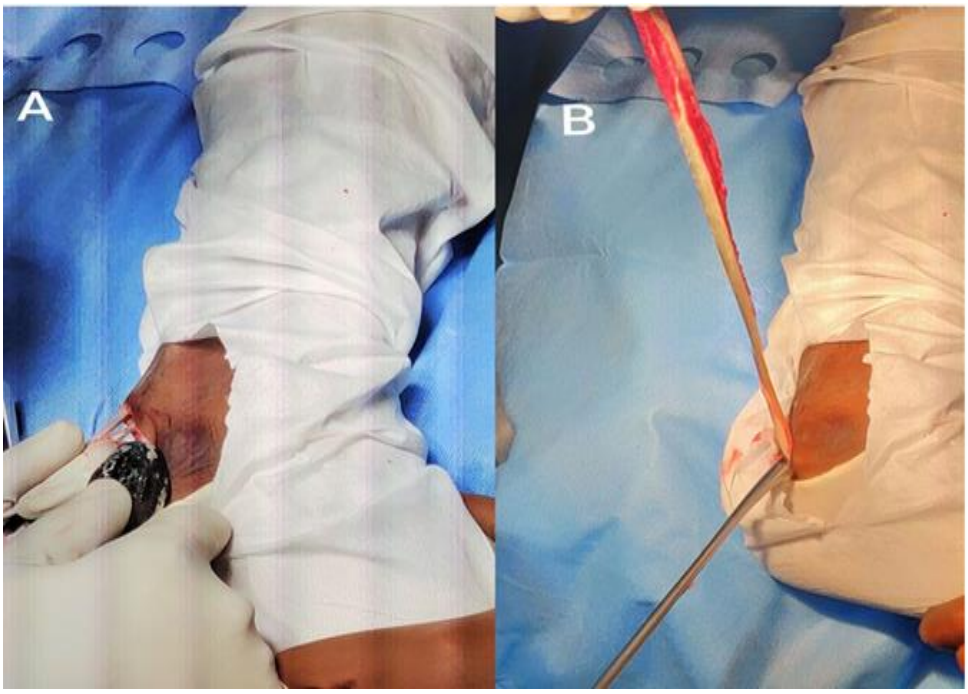

Figure (2): Peroneus longus graft harvesting among the studied patients.

DISCUSSION

With an estimated 200,000 injuries in the US each year, anterior cruciate ligament (ACL) injuries are among the most common knee ailments. The current gold standard for regaining knee stability and lowering the likelihood of symptomatic osteoarthritis and secondary meniscal tears is ACL reconstruction, which calls for either an artificial [13].

Around the world, the most common graft option for ACL restoration is hamstring tendon (HT) autograft. There is currently no internationally recognised gold standard for graft selection for use in ACL restoration, however other autografts include bone-patellar tendon-bone and quadriceps tendon [14]. ACL restoration has recently looked into using the peroneus longus tendon (PLT) autograft, which is taken just proximal and posterior to the lateral ankle, as an alternative autograft [15].

Nowadays, all commonly used autografts are taken from the knee, which has a number of possible drawbacks. These include the possibility of knee laxity or quadriceps-hamstring imbalance following the harvest, as well as the possibility that the HT autograft won't be enough to make a viable graft in cases of multiple ligament injuries [16].

Allograft and artificial graft options are unavailable in several nations. The PLT autograft may provide an extra workable option in certain circumstances. The Turkish group initially reported the use of PLT autografts in ACL restoration [17].

When selecting the type of graft and reconstruction procedure, the graft's strength and stiffness are crucial factors to take into account. It is commonly acknowledged that an enduring alternative for ACL restoration is a four-strand hamstring tendon autograft [18]. The unpredictable diameter and length measurements, however, are a drawback. The patient's condition is connected to the size of the hamstring tendon graft [19].

The aim of this study was to evaluate functionally effective anterior cruciate ligament reconstruction either by peroneus longus autograft or hamstring tendon autograft.

In the current study we found that 18 cases: Group A (9): undergoing ACL reconstruction by peroneus longus graft and Group B (9): undergoing ACL reconstruction by hamstring graft. We found that the mean age in group A was 29.80, group B was 27.60. BMI mean in group A was found 26.6 but for group B it was 27.9. We revealed that the mean duration from injury to intervention in patients of group A was 15 and 14.70 for group B. There was no significant difference between the two groups regarding demographic data. In agreement with our results, Murley et al. [20] showed that the peroneus group consisted of 11 females and 28 males. The average features of the patients were as follows: height of 169.13 ± 8.81, body weight of 71.23 ± 14.17, age of 25.10 ± 9.16, and BMI of 20.96 ± 3.44. 8.56 ± 0.82 was the measured intraoperative peroneus longus diameter. A significant association ($p < 0.05$) was found using Spearman's correlation analysis between the

intraoperative peroneus longus diameter and the patient's height, body weight, and BMI.

These results were compatible with Xu et al. [21] revealed that following their ACLR procedure, 130 patients (range 24–31 months) with hamstring tendon (n = 65) and peroneus longus tendon (n = 65) underwent at least two years of follow-up. Between the two groups, there were no appreciable variations in injury or demographic data (P>0.05).

On the other hand, Parkinson et al. [22] stated that 156 patients were involved in this investigation. 38 women and 118 males were present. The average BMI was 25.0 (16.7–34.6), the average weight was 76 kg (54–110 kg), the average height was 174.1 cm (152.0–192.0 cm), and the average age was 29.5 years (14–51 years). Age, height, BMI, and weight were all statistically significant differences between the two groups. When the samples were divided by gender, the mean PLT graft diameters were 8.5 and 7.8mm and the mean graft lengths were 8.6 and 8.2 cm for men and women, respectively.

In the present study we found that there is no significant difference between the two groups regarding injury characteristics, (Duration from injury to intervention (in months), Mechanism of injury, Side, Associated injuries). This was in accordance with, Xie et al. [23] who showed that Under KT-1000 with 89 N anterior force, no significant side-to-side changes (>2 mm) were detected in any of the instances between the abnormal and normal knees. The KT-1000 measured an average anterior translation of 1.28 mm. Also, Crawford et al. [24] reported that, it has never been documented before that the graft diameter was related to the length of the damage. A thinner PLT graft was more common in patients who had experienced an ACL rupture longer than three months ago (P=.012). This finding could be explained by the skeletal muscle's disuse atrophy following ACL damage.

Moreover, Nazem et al. [25] illustrated that 48 patients, 19 (39.58%) suffered injuries from car accidents, 17 (35.41%) from sports-related injuries, 7 (14.5%) from assaults, and 5 (10.41%) from domestic accidents. Caplan et al. [26] stated that Sports were the mechanism of injury for 19 patients, traffic accidents for 7, and other reasons for 5. Intraoperative measurements and documentation of the peroneus longus tendon graft's diameter revealed a mean diameter of 8.74 ± 0.56 mm (range, 8.00–10.00 mm). Six months following surgery, no patient's Lachman test results showed any translation.

Angthong et al. [12] reported that The study group has an average age of 35.4 years; the youngest member is 18 years old, and the oldest is 51 years old. Male patients make up 63.3% of the total, 19 more than female patients, who make up 36.7% with 11 people. Sports injuries account for 40% of cases, everyday activities accidents account for another 40%, and traffic accidents account for 20% of cases.

In the current study we found that there is no significant difference between the two groups regarding Graft diameter and Thigh muscle circumference either Preoperative or postoperative. On the other hand, Cristiani et al. [27] showed that The comparison of the diameter of the 4-strand PLT and 4-strand HT revealed a mean diameter of 8.8±0.7 mm for PLT (Peroneus longus tendon) and 8.2±0.8 mm for HT.

Shi et al. [28] noted that Two-strand peroneus longus tendon mean diameter was 8.71 ± 0.4 (range 8-9 mm), whereas four-strand hamstring tendon autograft mean diameter was 7.65 ± 0.6 (range 6.5-8.5 mm), with a significant difference (P<0.001) between the two groups. In the second group, some patients underwent a five-strand hamstring autograft, with an autograft diameter of 7 mm.

Biau et al. [29] reported that Four-strand hamstring tendon grafts had a diameter of less than 7.0 mm. The length was 9.3 cm (range, 9.0 to 10.0 cm), and the average diameter was 6.2 mm (6.0 to 6.5 mm). Because of this, the hamstring tendon grafts in these patients were deemed unqualified, and we obtained extra half-PLT grafts for augmentation. These six-strand grafts had an average diameter of 9.6 mm, with a range of 9.5 to 10.0 mm.

In the current study we found that there is no significant difference between the two groups regarding Lysholm score, Modified Cincinnati knee rating system, IKDC score, Foot and ankle disability index and Ankle hindfoot score six months Postoperative evaluation. These results were compatible with Magnussen et al. [30] who revealed following ACLR surgery, the majority of patients in each group had acceptable functional results (P<0.001); nevertheless, there were no discernible changes in functional scores between the two groups. Cao et al. [31] reported that with 83.96% of patients demonstrating good to excellent results by Lysholm score and 75.82% of cases exhibiting normal or nearly normal IKDC subjective score, the functional outcomes employing PLT (Peroneus longus tendon) autograft were favourable.

Also, Rahr-Wagner et al. [32] stated that The study group's average Lysholm score following surgery is 95.13 ± 3.98 (highest score is 99, smallest is 80), with a statistically significant difference from the Lysholm score prior to surgery, which is 59 (highest score is 69, smallest is 56).

In the current study we found that There is significant improvement in Modified Cincinnati knee rating system, Lysholm and IKDC score Six months Postoperative in both groups. There are no significant changes in Foot and ankle disability index and Ankle hindfoot score in both groups. In agreement with our results, Angthong et al. [12] reported that PLT group had a notably elevated mean Lysholm score (p=0.02) and IKDC subjective score (p=0.03). The weighted mean PLT autograft diameter in 7 trials involving 361 patients was 8.42 mm, which is consistently larger than 4-strand HT. Bi et al. [33] stated that PLT harvesting doesn't seem to have any clinically noticeable effects on ankle and foot function. Following PLT harvest, there was no difference in the Foot and Ankle Disability Index (FADI) and a minor drop in the American Orthopaedic Foot and Ankle Society (AOFAS) (0.31, 95% CI 0.07–0.54) when compared to pre-operation data.

In the present study we found that There is no significant difference between the two groups regarding Anterior drawer test pre and postoperative. There is a significant difference between pre and postoperative Anterior drawer test in both groups. Cao et al. [31] showed that The anterior drawer test findings obtained after the procedure were used to assess the knee's stability. The proportion of negative results was 96.7%, level 1 was 3.3%, and level 2 was no longer present. It was 96.7 positive compared to the Lachman before surgery.

So, the present study demonstrated that peroneus longus tendon autograft might be considered a safe and practical autograft source for arthroscopic anterior cruciate ligament reconstruction with respect to its strength, larger graft diameter, satisfactory ankle function, and prevention of potential complications of hamstring autograft obtained from the knee region.

Our study has some limitations. Because the follow-up period was relatively short, we could not evaluate the long-term clinical efficacy or long-term complications. Due to the small sample size, the results might not be generalizable to a larger population.

The clinical relevance of our study is that the peroneus longus as an alternative graft in ACLR can be recommended because it shows good functional results compared to the hamstring tendon with less donor site morbidity.

CONCLUSIONS

The Modified Cincinnati knee rating system, Lysholm, and IKDC subjective scores show postoperative improvement for both hamstring and peroneus longus autografts. Moreover, the FADI score did not significantly change after surgery. These results suggest that PLT autograft is a good alternative non-knee graft option for patients having ACL restoration. No decline in muscle strength was seen during eversion and first ray plantarflexion of the ankle joint in patients undergoing ACL restoration using a peroneus longus graft autograft.

Based on our findings, we recommend for further studies on large geographical scale and on larger sample size to emphasize our conclusion.

Conflicts of interest: The authors declare that they have no conflicts of interest.
Funding sources: The authors have no funding to report.

REFERENCES

1. **ACL reconstruction [Internet].** Mayoclinic.org. 2021 [cited 2023 Sep 8]. Available from: https://www.mayoclinic.org/tests-procedures/acl-reconstruction/about/pac-20384598.
2. Raines BT, Naclerio E, Sherman SL. Management of anterior cruciate ligament injury: what's in and what's out? Indian J Orthop. 2017;51(5):563-75.
3. Rothrauff BB, Jorge A, de Sa D, Kay J, Fu FH, Musahl V. Anatomic ACL reconstruction reduces risk of post-traumatic osteoarthritis: a systematic review with minimum 10-year follow-up. Knee Surg Sports Traumatol Arthrosc. 2020;28(4):1072-84.
4. **Raines BT, Naclerio E, Sherman SL (2020)**. Management of Anterior Cruciate Ligament Injury: What's In and What's Out? Indian J Orthop. 51: 563-75.
5. Ardern CL, Österberg A, Sonesson S, Gauffin H, Webster KE, Kvist J. Satisfaction with knee function after primary anterior cruciate ligament reconstruction is associated with self-efficacy, quality of life, and returning to the preinjury physical activity. Arthroscopy. 2016 Aug;32(8):1631-8.e3.
6. Rhatomy, S., Kisworo, B., Prihargono, B., et al. Peroneus Longus Tendon Regeneration after Anterior Cruciate Ligament Reconstruction with Magnetic Resonance Imaging Evaluation." Open

Access Macedonian Journal of Medical Sciences, 2020;8(A), 916-20.
7. Angthong C, Chernchujit B, Apivatgaroon A, Chaijenkit K, Nualon P, Suchao-in K. The anterior cruciate ligament reconstruction with the peroneus longus tendon: a biomechanical and clinical evaluation of the donor ankle morbidity. J Med Assoc Thai. 2015;98(6):555-60.
8. Nikose SS, Nikose D, Jain S, Kekatpure A, Saoji K, Chaudhary R, Pisulkar G. Determinants of regeneration and strength of hamstrings after anterior cruciate ligament reconstruction-fate of hamstring tendon. Int Orthop. 2021;45(7):1751-1760.
9. Goncharov E.N., Koval O.A., Dubrov V.E., Bezuglov E.N., Alekhin A.A., Goncharov N.G. Mid-term results of simultaneous reconstruction of anterior cruciate and anterolateral ligaments in athletes. Traumatology and Orthopedics of Russia. 2020; 26.(1):. 62-71
10. Kerimoglu, S., Aynaci, O., Saracoglu, M., et al. Anterior cruciate ligament reconstruction with the peroneus longus tendon. AOTT, 2008; 42(1), 38-43
11. Sasetyo, D. R., Rhatomy, S. and Pontoh, L. A. Peroneus longus tendon: The promising graft for anterior cruciate ligament reconstruction surgery." Asia Pac J Sport Med Arthrosc Rehabil Tec, 2017; 9, 25.
12. Angthong C, Chernchujit B, Apivatgaroon A, Chaijenkit K, Nualon P, Suchao-in K. The Anterior Cruciate Ligament Reconstruction with the Peroneus Longus Tendon: A Biomechanical and Clinical Evaluation of the Donor Ankle Morbidity. J Med Assoc Thai. 2015;98(6):555-60.
13. He J, Tang Q, Ernst S, Linde MA, Smolinski P, Wu S, Fu F. Peroneus longus tendon autograft has functional outcomes comparable to hamstring tendon autograft for anterior cruciate ligament reconstruction: a systematic review and meta-analysis. Knee Surg Sports Traumatol Arthrosc. 2021 Sep;29(9):2869-79.
14. Rhatomy S, Wicaksono FH, Soekarno NR, Setyawan R, Primasara S, Budhiparama NC. Eversion and First Ray Plantarflexion Muscle Strength in Anterior Cruciate Ligament Reconstruction Using a Peroneus Longus Tendon Graft. Orthop J Sports Med. 2019 Sep 27;7(9):2325967119872462.
15. Kumar, P. M., Shevte, I., Phalak, M., Nair, A., & Parth.. Arthroscopic anterior cruciate ligament reconstruction with semitendinosus graft versus peroneus longus tendon graft. Int J Res Orthop, 2020;6(2), 386-92.
16. Escudeiro de Oliveira D, Picchi Zaccharias V, Mayumi Horita M, Gabriel Betoni Guglielmetti L, Duarte Junior A, Baches Jorge P. Anterior Cruciate and Anterolateral Ligament Reconstruction Using Hamstring and Peroneus Longus Tendons: Surgical Technique Description. Arthrosc Tech. 2021 Jan 15;10(2):e397-e402.
17. Joshi S, Shetty UC, Salim MD, Meena N, Kumar RS, Rao VKV. Peroneus Longus Tendon Autograft for Anterior Cruciate Ligament Reconstruction: A Safe and Effective Alternative in Nonathletic Patients. Niger J Surg. 2021;27(1):42-7.
18. Trung DT, Manh SL, Thanh LN, Dinh TC, Dinh TC. Preliminary Result of Arthroscopic Anterior Cruciate Ligament Reconstruction Using Anterior Half of Peroneus Longus Tendon Autograft. Open Access Maced J Med Sci. 2019 20;7(24):4351-6.
19. Vijay C, Santosh MS, Avinash C, Adarsh T. Is Peroneus longus autograft a better alternative to the Hamstring autograft for anterior cruciate ligament reconstruction? – A randomised control study. Journal of Orthopaedics, Trauma and Rehabilitation. 2022;29(1).
20. Murley GS, Tan JM, Edwards RM, De Luca J, Munteanu SE, Cook JL. Foot posture is associated with morphometry of the peroneus longus muscle, tibialis anterior tendon, and Achilles tendon. Scand J Med Sci Sports. 2014;24(3):535-41.
21. Xu C, Zhao J, Xie G. Medial patella-femoral ligament reconstruction using the anterior half of the peroneus longus tendon as a combined procedure for recurrent patellar instability. Asia Pac J Sports Med Arthrosc Rehabil Technol. 2016 26;4:21-26
22. Parkinson B, Robb C, Thomas M, Thompson P, Spalding T. Factors That Predict Failure in Anatomic Single-Bundle Anterior Cruciate Ligament Reconstruction. Am J Sports Med. 2017;45(7):1529-36.
23. Xie G, Huangfu X, Zhao J. Prediction of the graft size of 4-stranded semitendinosus tendon and 4-stranded gracilis tendon for anterior cruciate ligament reconstruction: a Chinese Han patient study. Am J Sports Med. 2012;40(5):1161-6.
24. Crawford DC, Hallvik SE, Petering RC, Quilici SM, Black LO, Lavigne SA, Lapidus J, Marshall LM. Post-operative complications following primary ACL reconstruction using allogenic and autogenic soft tissue grafts: increased relative morbidity risk is associated with increased graft diameter. Knee. 2013;20(6):520-5.
25. Nazem K, Barzegar M, Hosseini A, Karimi M. Can we use peroneus longus in addition to hamstring tendons for anterior cruciate ligament reconstruction? Adv Biomed Res. 2014 19;3:115.
26. Caplan, N., & Kader, D. F.. Biomechanical analysis of human ligament grafts used in knee-ligament repairs and reconstructions. Classic Papers in Orthopaedics, 2014, 145-7.

27. Cristiani R, Forssblad M, Engström B, Edman G, Stålman A. Risk Factors for Abnormal Anteroposterior Knee Laxity After Primary Anterior Cruciate Ligament Reconstruction. Arthroscopy. 2018;34(8):2478-84.
28. Shi FD, Hess DE, Zuo JZ, Liu SJ, Wang XC, Zhang Y, Meng XG, Cui ZJ, Zhao SP, Li CJ, Hu WN. Peroneus Longus Tendon Autograft is a Safe and Effective Alternative for Anterior Cruciate Ligament Reconstruction. J Knee Surg. 2019 Aug;32(8):804-11.
29. Biau DJ, Katsahian S, Kartus J, Harilainen A, Feller JA, Sajovic M, Ejerhed L, Zaffagnini S, Röpke M, Nizard R. Patellar tendon versus hamstring tendon autografts for reconstructing the anterior cruciate ligament: a meta-analysis based on individual patient data. Am J Sports Med. 2009;37(12):2470-8.
30. Magnussen RA, Lawrence JT, West RL, Toth AP, Taylor DC, Garrett WE. Graft size and patient age are predictors of early revision after anterior cruciate ligament reconstruction with hamstring autograft. Arthroscopy. 2012 Apr;28(4):526-31
31. Cao HB, Liang J, Xin JY. Treatment of anterior cruciate ligament injury with peroneus longus tendon. Zhonghua Yi Xue Za Zhi. 2012 18;92(35):2460-2.
32. Rahr-Wagner L, Thillemann TM, Mehnert F, Pedersen AB, Lind M. Is the use of oral contraceptives associated with operatively treated anterior cruciate ligament injury? A case-control study from the Danish Knee Ligament Reconstruction Registry. Am J Sports Med. 2014 Dec;42(12):2897-905.
33. Bi M, Zhao C, Zhang S, Yao B, Hong Z, Bi Q. All-Inside Single-Bundle Reconstruction of the Anterior Cruciate Ligament with the Anterior Half of the Peroneus Longus Tendon Compared to the Semitendinosus Tendon: A Two-Year Follow-Up Study. J Knee Surg. 2018;31(10):1022-30.

Citation

Abdelgaliel, A., Abdelsalam, M., El-Hefnawy, M., Salama, A. Comparison between Peroneus Longus and Hamstring Grafts for Anterior Cruciate Ligament Reconstruction. Zagazig University Medical Journal, 2024; (4757-4765): -. doi: 10.21608/zumj.2023.247985.3003