Comparative Study Between Quadriceps Tendon Vs. Hamstrings Tendon in Anatomical Single Bundle Anterior Cruciate Ligament Reconstruction

Karam Ali Eldamarawy[*], Ahmed Samir Elkalyoby, Khaled Fawzy Mostafa, Abdel-Aziz El-Singergy

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Abstract

Background: During the past several years, there has been a rise in ACL reconstructions due to improved diagnostic techniques and a greater awareness of anterior cruciate ligament (ACL) ruptures. To assess the clinical effects of anatomic single bundle ACL restoration utilising quadriceps versus hamstring tendon, a prospective randomised experiment is being done.

Methods:ACL repair using an autogenous hamstring or arthroscopic assistance was performed on 30 individuals with ACL deficiencies (group 1)or quadriceps tendon graft in this randomised controlled research (group 2).

Results: With regard to age, amount of activity, degree of laxity, kind of trauma, side of damage, and accompanying injuries, there were no discernible variations between the two groups. Patient's subjective evaluation, ligament inspection, discomfort at the harvest site, one-leg hop test, overall evaluation of the IKDC, Lysholm system, and Tegner Activity Scale, evaluation of laxity using the KT-1000 arthrometer, and measurement of the circumference of the thigh.

Conclusions: High levels of functional and athletic activity are made possible by ACL repair with hamstring or quadriceps tendon transplantation.

Keywords: Anterior cruciate ligament, hamstring, and quadriceps reconstruction.

Orthopedics Department, Faculty of Medicine, Cairo University, Cairo, Egypt

***Corresponding Author:** Karam Ali Eldamarawy; **Email:**Damarawi201@yahoo.com

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INTRODUCTION:

It is commonly established that anterior cruciate ligament (ACL) knee injuries rupture cause functional instability, which impairs daily activities, raises the possibility of meniscal damage and accelerates the ageing of the knee 1. Often, conservative therapy is ineffective in restoring knee stability, necessitating surgical reconstruction [1].

In these surgeries, different grafts are needed since ruptured ligaments cannot be repaired in their natural state. The use of arthroscopic method has greatly enhanced the process, and quadriceps tendon and hamstring tendon grafts are presently used most frequently in ACL replacement (gracilis and semitendinosus) The surgeon's preferences and experience, tissue accessibility, patient activity level, co-morbidities, past surgical operations, and patient characteristics all have an impact on the graft that is chosen.

There is a belief that ACL repair using the hamstring tendon is linked to decreased postoperative morbidity, including anterior knee discomfort, a quicker recovery of quadriceps function, and a quicker return to full range of motion, particularly knee extension. The drawbacks of this method, however, include Hamstring weakness during semitendinosus harvest and osseous tunnel tendon healing [2].

Follow-up advantages of utilising quadriceps tendon as an ACL transplant source restoration include preservation of hamstring structure and function, a decrease in the frequency of anterior knee discomfort, and numbness[3].

In order to restore anatomic single bundle ACL, this study compared the clinical outcomes of using quadriceps tendons against hamstring tendons.

PATIENTS AND METHODS:

In 30 patients, this prospective randomised comparison research was carried out age less than 40 years old who have acute or chronic ACL tears

Associated meniscal injury, from April 2016 to August 2017, in KasrElainy hospital. The study was done after being approved from the Ethical Committee KasrElainy University Hospitals. The patients provided signed consent after being fully briefed.

Exclusion criteria were multi-ligamentous knee injury, revision ACL surgery, arthritic knee, lower limb malalignment and deformity, and chondral lesions.

Two groups of patients were assigned to them. Hamstring tendon (HT) graft is used in Group 1 for repair, while quadriceps tendon (QT) graft is used in Group 2.

All patients underwent a thorough history-taking process, clinical examination (based on IKDC score), radiographic assessment (plain X-ray and MRI), and evaluation using rating scales (Tegner activity scale, Lysholm knee score, and IKDC score).

IKDC evaluation system

2000

IKDC KNEE EXAMINATION FORM

Patient Name:_____ **Date of Birth**:_____/_____/_____ (Day Month Year)

Gender: : F : M **Age**:_____ **Date of Examination**:_____/_____/_____ (Day Month Year)

Generalized Laxity:	: tight	: normal	: lax	
Alignment:	**A** obvious varus	**A** normal	**A** obvious valgus	
Patella Position:	**P** obvious baja	**P** normal	**P** obvious alta	
Patella Subluxation/Dislocation:	: centered	: subluxable	: subluxed	: dislocated
Range of Motion (Ext/Flex):	Index Side: passive_____/_____/_____		active_____/_____/_____	
	Opposite Side: passive_____/_____/_____		active_____/_____/_____	

SEVEN GROUPS		**FOUR GRADES** A Normal	B Nearly Normal	C Abnormal	D Severely Abnormal	*Group Grade A	B	C	D
1.	**Effusion**	**E** None	**E** Mild	**E** Moderate	**E** Severe	**E**	**E**	**E**	**E**
2.	**Passive Motion Deficit**								
	ΔLack of extension	L <3°	° 3 to 5°	° 6 to 10°	° >10°				
	ΔLack of flexion	L 0 to 5°	° 6 to 15°	° 16 to 25°	° >25°	°	°	°	°
3.	**Ligament Examination** (manual, instrumented, x-ray)								
	ΔLachman (25° flex) (134N)	-1 to 2mm	3 to 5mm(1°)) <-1 to –3	6 to 10mm(2°)) <-3 stiff	>10mm(3°)				
	ΔLachman (25° flex) manual max	-1 to 2mm	3 to 5mm	6 to 10mm	>10mm				
	Anterior endpoint:	A firm		A soft					
	ΔTotal AP Translation (25° flex)	0 to 2mm	3 to 5mm	6 to 10mm	>10mm				
	ΔTotal AP Translation (70° flex)	0 to 2mm	3 to 5mm	6 to 10mm	>10mm				
	ΔPosterior Drawer Test (70° flex)	0 to 2mm	3 to 5mm	6 to 10mm	>10mm				
	ΔMed Joint Opening (20° flex/valgus rot)	0 to 2mm	3 to 5mm	6 to 10mm	>10mm				
	ΔLat Joint Opening (20° flex/varus rot)	0 to 2mm	3 to 5mm	6 to 10mm	>10mm				
	ΔExternal Rotation Test (30° flex prone)	<5°	° 6 to 10°	° 11 to 19°	° >20°				
	ΔExternal Rotation Test (90° flex prone)	<5°	° 6 to 10°	° 11 to 19°	° >20°				
	ΔPivot Shift	P equal	P +glide	P ++(clunk)	P +++(gross)				
	ΔReverse Pivot Shift	R equal	R glide	R gross	R marked				
						R	R	R	R
4.	**Compartment Findings**			crepitation with					
	ΔCrepitus Ant. Compartment	C none	C moderate	C mild pain	C >mild pain				
	ΔCrepitus Med. Compartment	C none	C moderate	C mild pain	C >mild pain				
	ΔCrepitus Lat. Compartment	C none	C moderate	C mild pain	C >mild pain				
5.	**Harvest Site Pathology**	**H** none	**H** mild	**H** moderate	**H** severe				
6.	**X-ray Findings**								
	Med. Joint Space	M none	M mild	M moderate	M severe				
	Lat. Joint Space	L none	L mild	L moderate	L severe				
	Patellofemoral	P none	P mild	P moderate	P severe				
	Ant. Joint Space (sagittal)	A none	A mild	A moderate	A severe				
	Post. Joint Space (sagittal)	P none	P mild	P moderate	P severe				
7.	**Functional Test**								
	One Leg Hop (% of opposite side)	O ≥90%	9 89 to 76%	9 75 to 50%	9 <50%				
	****Final Evaluation**					*	*	*	*

Lysholm evaluation system:

Limp	None	**5**

	Slight or periodic Severe and constant	**3** **0**
Support	None Stick or crutch needed. Weight bearing impossible	**5** **2** **0**
Locking	None None but catching sensation present. Occasional Frequent At examination	**15** **10** **6** **2** **0**
Stairs	No problem Slight problem One step at a time Impossible	**10** **6** **3** **0**
Instability	Never Rarely during athletic activity Frequent during athletic activity Occasional during daily activity Often during daily activity Every step	**25** **20** **15** **10** **5** **0**
Pain	None Inconstant and slight during strenuous activity Marked during or after walking for more than 2 km. Marked during or after walking for less than 2 km. Constant	**25** **20** **10** **5** **0**
Swelling	None After strenuous activity After ordinary activity Constant	**10** **6** **3** **0**
Squatting	No problem Slight problem Not beyond 90° of knee flexion Impossible	**5** **4** **2** **0**

Tegner Activity Scale:

Level 10	Competitive sports- soccer, football, rugby (national elite)
Level 9	Competitive sports- soccer, football, rugby (lower divisions), ice hockey, wrestling, gymnastics, basketball
Level 8	Competitive sports- racquetball or bandy, squash or badminton, track and field athletics (jumping, etc.), down-hill skiing
Level 7	Competitive sports- tennis, running, motorcars speedway, handball Recreational sports- soccer, football, rugby, bandy, ice hockey, basketball, squash, racquetball, running
Level 6	Recreational sports- tennis and badminton, handball, racquetball, down-hill skiing, jogging at least 5 times per week
Level 5	Work- heavy labor (construction, etc.) Competitive sports- cycling, cross-country skiing, Recreational sports- jogging on uneven ground at least twice weekly
Level 4	Work- moderately heavy labor (e.g. truck driving, etc.)
Level 3	Work- light labor (nursing, etc.)
Level 2	Work- light labor Walking on uneven ground possible, but impossible to back pack or hike
Level 1	Work- sedentary (secretarial, etc.)
Level 0	Sick leave or disability pension because of knee problems

All patients had general or spinal anaesthesia for their procedures. Upon the induction of anaesthesia, an antibiotic was administered, and the results were compared to the contralateral side and the prior preoperative evaluation , if pivot shift testing clearly demonstrated ACL insufficiency, a decision was made to harvest the graft before diagnostic arthroscopy, if the clinical examination was doubtful, diagnostic arthroscopy must be done first.

The hamstring tendon semitendinosus (ST):

a 2 cm medial, 1.5-inch, oblique incision at the tibial tuberosity was utilised for ST. A little gap was allowed for blunt dissection to flow through, and the tendon's muscular belly was immediately palpable. The tendons were then removed from the muscle belly using a tendon stripper by keeping the stripper in place and gradually dragging the tendon out of the wound. The tendon was meticulously gauze-wrapped soaked with saline and garamycin. The ST tendon was prepared in a double or tribled fashion. First the tendon was folded in a double loop. The free ends of the loop where the graft was then suspended on a graft tensioner and bothend was sutured with Ethibond No.2 for about 3 cm. 3 Ethibond No.5 wires were passed through the U tip of the graft to be used for pulling on the graft. The graft was pre-sized using a sizing tube.

Central third quadriceps free tendon:

To remove the autograft, a 3 cm longitudinal incision is made over the quadriceps tendon, proximally centred from the superior pole of the patella. The tendon is cut into a 90-110 mm long, 8-10 mm wide, and 7-8 mm thick portion. Ethicon No. 2 was used to restore the synovial membrane. Ethion No. 5 was then used to size and prepare the graft on both ends , first the tendon was cleaned from fat, and each free end of the graft was tagged by Ethibond suture No. 2 that was woven in an ascending and descending fashion to secure the loop ends firmly. The graft was pre-sized using a sizingtubes.

Arthroscopic Reconstruction:

The three-portal method was employed. At the margins of the patellar tendon, the primary There were created anteromedial (AM) and antelateral (AL) portals. By creating the (AL) portal at the level of the inferior pole of the patella, the ACL tibial footprint is entirely visible from above. An auxiliary AM portal (AAM), which is located about 1 cm below and medial to the primary AM portal, was finally built under the direct observation of the arthroscope and with the use of a spinal needle.

The main AM portal was used to introduce instruments, while the AL portal was used to install the scope. The AAM portal was then used for instrumentation while the femoral footprint was visible through the AM portal. At the tibial and femoral impressions, debridement of the notch retained 1 to 2 mm of ACL fibres. The remaining fragments of the useless ACL were cut out with thermo-cautery.

Tibial tunnel placement:

With the knee unlocked and flexed 90 degrees, the tibial tunnel was prepared, and the scope was then introduced through the AL portal. With the guide positioned at a 55 angle, the guide aimer was passed via the AM portal. Halfway between the medial and lateral tibial spines and the centres of both native ACL bundles, the C guide arm was positioned in the middle of the footprint. The graft harvest incision opened into the tibial tunnel at a distance of about 4 cm distal to the articular surface of the tibia and 1.5 cm medial to the tuberosity. The guide was removed after entering the joint, and the tibial tunnel was reamed according to the size of the graft.

Femoral tunnel placement: The chief portal was used to insert the scope such that the femoral footprint could be directly seen. The (AAM) portal is used for tunnel drilling and instrumentation. The resident's ridge was made horizontal and in line with the femoral shaft by flexing the knee 120 degrees. The landmark dividing the native ACL bundles may be felt by probing: the bifurcate ridge. To make the femoral tunnel 40 mm long, a rosette reamer adjusted for the graft's size should be employed. Using a guide pin, a no. 2 Vicryl suture was threaded through the tunnel, leaving the looped tip within the knee. Last but not least, perform a scope examination during full range of motion (ROM) to determine if the ceiling of the notch or the PCL is being impacted.

That patient was instructed to utilise ice treatment as much as was comfortable and to bear weight using crutches as much as was comfortable. Analgesics were administered as needed for two to three days, and then Diclofenac sodium 50 mg tablets were given twice daily for one week beginning on the second day. antibacterial precautions for a week. radiographs of the knee to verify that the tunnels are positioned properly. After 24 hours, the dressing was changed, and the wound was examined. The patient was discharged within 24 hours. The second week after surgery was when the physical therapy programme began.

Follow up:

After returning to full range of motion, progressing After 1–2 weeks, the patient attempted to walk with one crutch, working his way up to full weight bearing

and increasing muscle contraction through full range of motion. Crutches can be reduced early for patients who are aiming to complete daily living activities, from 4 to 12 weeks, with adequate hamstring/quadriceps control. a follow-up assessment After surgery, all patients underwent evaluations every two weeks up to the second postoperative month and then monthly for the next six months.

Statistical analysis

The study was conducted using SPSS v19, descriptive analysis (frequency and percentage for categorical data and mean and standard deviation (SD) for scale data). Inferential statistics were used to determine the statistical significance between groups A and B for each variable using independent Student's T tests for scale data and the Chi square test for categorical data.

Results:

In our trial, 30 patients were enrolled but 4 patients (2 patients group 1 and 2 patient group 2) missed follow-up after 6 months.

Preoperative clinical data of both groups showed no statistically significant differences in age distribution between them. Both groups' patients are all male.

Table 1: characteristics of patients in groups 1 and 2

		Group 1 (n = 13)	Group 2 (n = 13)	P Value
Age (years)	18-20	2 (15.5%)	1 (7.5%)	0.742
	21-25	5 (38.5%)	6 (46%)	
	26-30	6 (46%)	6 (46%)	
	31-35	0	0	
Type of trauma	Contact Injury	10 (76.5%)	9 (69%)	0.743
	Pivoting non-contact sport	3 (23.5%)	4 (31%)	
Affected side	Right	7 (53.5%)	8 (61.5%)	0.945
	Left	6 (46.5%)	5 (38.5%)	
Associated injuries	Torn Medial Meniscus	3 (23.5%)	5 (38.5%)	
	Torn Lateral Meniscus	2 (15.5%)	1 (7.5%)	
Duration:				0.968
3-6 month		3 (23.5%)	2 (15.5%)	
6-9 month		6 (46%)	5 (38.5%)	
9-12 month		2 (15.5%)	3 (23.5%)	
12-18 month		1 (7.5%)	2 (15.5%)	
18-24 month		1 (7.5%)	1 (7.5%)	

The subjective preoperative and postoperative evaluations did not differ statistically significantly between the two groups.

Table 2: Patients' subjective assessment:

	Preoperative			Postoperative		
	Group 1 (n = 13)	Group 2 (n = 13)	P Value	Group 1 (n = 13)	Group 2 (n = 13)	P Value
Normal (A)	0	0	0.745	12(92.5%)	11(84.5%)	0.576
Nearly normal (B)	0	0		1 (7.5%)	2 (15.5%)	
Abnormal(C)	10 (76.5%)	9 (69%)		0	0	
Severely abnormal(D)	3 (23.5%)	4 (31%)		0	0	

There were no statistically significant variations in effusion or passive motion deficit between the two groups.

Table 3: Effusion, Deficiency of Passive Motion (Lack of Extension, Lack of Flexion).

	Preoperative			Postoperative		
	Group 1 (n = 13)	Group 2 (n = 13)	P Value	Group 1 (n = 13)	Group 2 (n = 13)	P Value

Effusion						
Normal	0	0	0.745	12(92.5%)	11(84.5%)	0.576
Near Normal	0	0		1 (7.5%)	2 (15.5%)	
Abnormal	10 (76.5%)	9 (69%)		0	0	
Severely Abnormal	3 (23.5%)	4 (31%)		0	0	
Lack of Extension						
Normal	10 (76.5%)	11 (84.5%)	0.850	12 (92.5%)	13 (100%)	0.542
Near Normal	3 (23.5%)	2 (15.5%)		1 (7.5%)	0	
Abnormal	0	0		0	0	
Severely Abnormal	0	0		0	0	
Lack of Flexion						
Normal	11 (84.5%)	10 (76.5%)	0.824	12 (92.5%)	13 (100%)	0.542
Near Normal	2 (15.5%)	3 (23.5%)		1 (7.5%)	0	
Abnormal	0	0		0	0	
Severely Abnormal	0	0		0	0	

Ligament examination: There were no statistically significant differences between the two groups for the Lachman test or the Pivot Shift Test.

Table 4: Ligament examination

	Preoperative			**Postoperative**		
	Group 1 (n = 13)	**Group 2 (n = 13)**	**P value**	**Group 1 (n = 13)**	**Group 2 (n = 13)**	**P value**
Lachman test						
A	0	0	0.705	12 (92.5%)	11(84.5%)	0.543
B	0	0		1 (7.5%)	2(15.5%)	
C	4 (31%)	5 (38.5%)		0	0	
D	9 (69%)	8 (61.5%)		0	0	
Pivot shift test grade						
A	0	0	0.690	12 92.5%)	11 (84.5%)	0.543
B	0	0		7.5 (2%)	2 (15.5%)	
C	11 (4.5%)	10 (76.5%)		0	0	
D	2 (15.5%)	3 (23.5%)		0	0	

A stands for no displacement, B for 5 to 10 mm, C for 5 to 10 mm, and D for >10 mm.In Pivot shift test grade, A: defined as normal flexion without glide, clunk. B: glide suggesting increased translation. C: shift, clunk, D: gross or visible reduction**.**

Harvest site pain: Patients were asked on the IKDC form to rate the presence and intensity of donor site symptoms (tenderness, irritation, or numbness) while at rest. Between the two groups, there was no statistically significant difference.

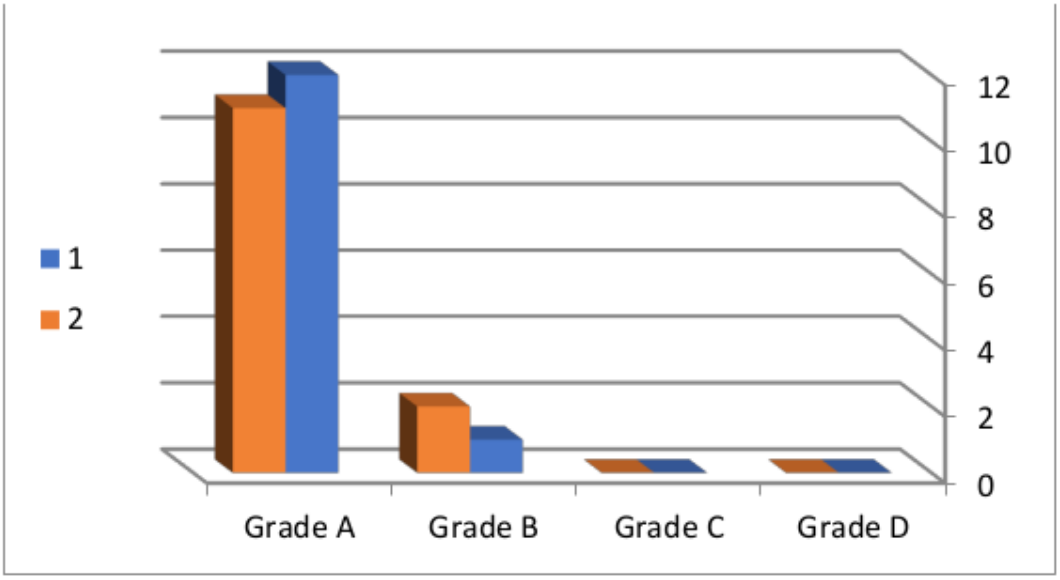

Figure 1: Harvest site pain

One leg hop test Hoping as far as you can and landing on the same leg is what it entails. Each leg had three tries, and the distance was noted. The hop index is determined by taking the best of each limb's three best tries (involved leg divided by the non-involved one x 100). Both groups' differences were statistically insignificant.

Table 5: One leg hop test, Overall IKDC evaluation.

One leg hop test	Preoperative			Postoperative		
	Group 1 (n = 13)	Group 2 (n = 13)	P value	Group 1 (n = 13)	Group 2 (n = 13)	P value
Normal	0	0	**0.704**	11(84.5%)	12(92.5%)	0.679
Near Normal	2 (15.5 %)	3(23.5%)		1 (7.5%)	1 (7.5%)	
Abnormal	10 (76.5%)	9(69%)		1 (7.5%)	0	
Severely Abnormal	1(7.5 %)	1(7.5%)		0	0	
Overall IKDC evaluation						
Normal	0	0	**0.713**	12 2.5**%)**	11(84.5**%)**	0.576
Near Normal	0	0		1 (7.5**%)**	2 (15.5**%)**	
Abnormal	4 (31**%)**	3 (3.5**%)**		0	0	
Severely Abnormal	9 (69**%)**	10 (76.5**%)**		0	0	

Using the Lysholm assessment system, there was no statistically significant difference between the two groups.

'Table 6: Evaluation according to the Lysholm evaluation system

	Preoperative			Postoperative		
	Group 1 (n = 13)	**Group 2 (n = 13)**	**P value**	**Group 1 (n = 13)**	**Group 2 (n = 13)**	**P value**
Excellent(more than 90)	0	0	0.129	7(53.5%)	9(69%)	0.578
Good(82-90)	0	0		6(46%)	4(31%)	
Fair(60-81)	2(15.5%)	1(7.5%)		0	0	
Poor (59 or below)	11(84.5%)	12(92.5%)		0	0	

There was no statistically significant difference between the two groups on the Tegner Activity Scale.

Table 7: Using Tegner Activity Scale, evaluate.

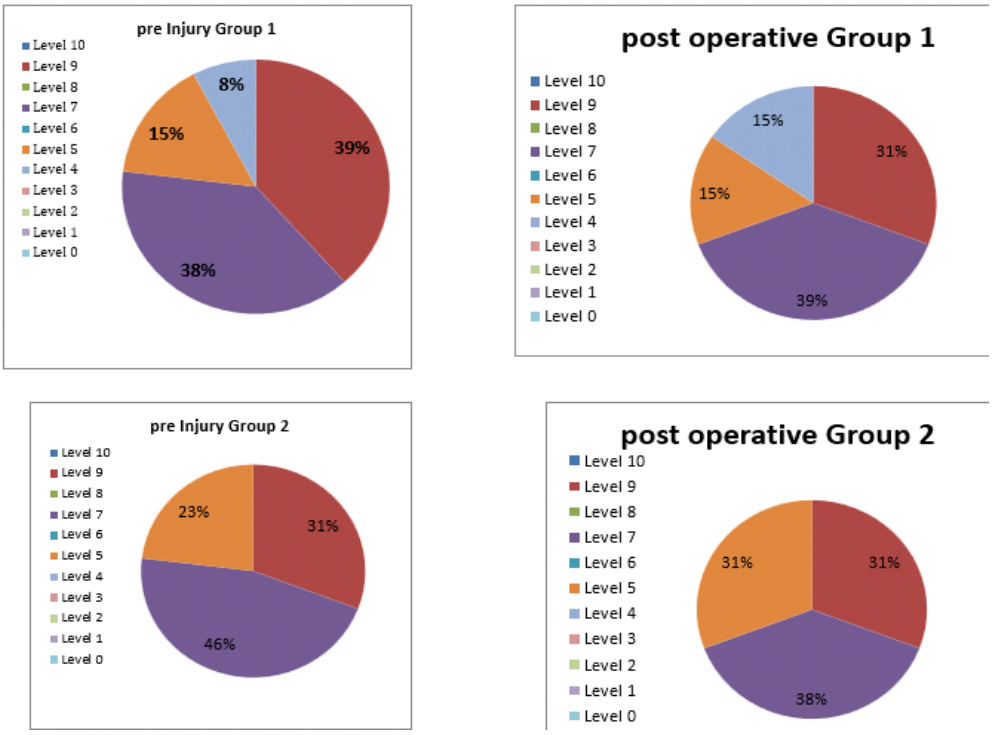

Figure 2: pre-operative, post-operative, Tegner activity scale

The KT-1000 arthrometer was used to quantify laxity, and anterior laxity was found (MEDmetric, San Diego, CA). Knee flexion ranged from 20 to 30 degrees for the patient. while still maintaining symmetrical tibial rotation. At the strongest manual pull, the tibia's anterior displacement was assessed. Both knees were examined, and the results showed that the involved and uninvolved knees differed. A good number suggested that the participating side was translating more. The tibia's increased and reduced mobility in relation to the side that wasn't affected was deemed abnormal. P value for both groups is statistically insignificant.

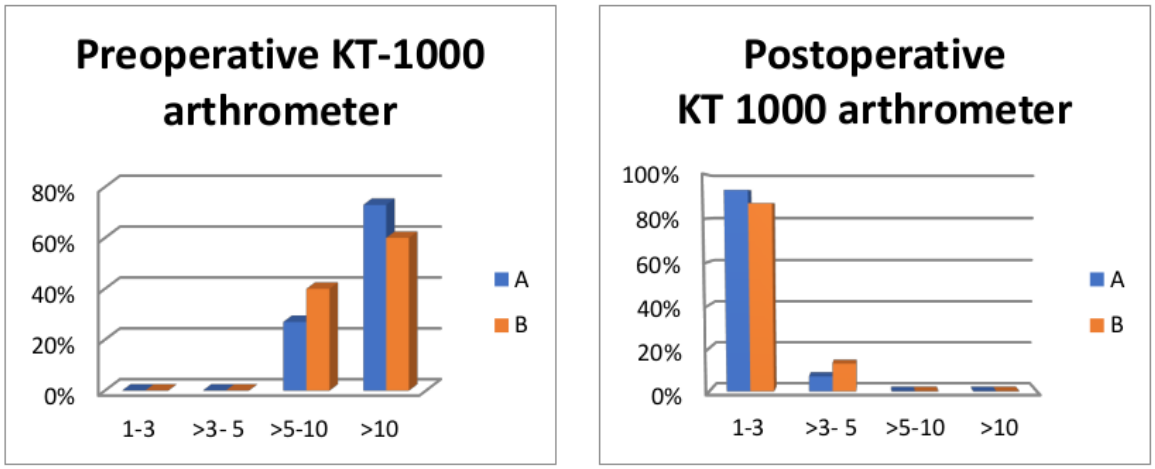

Figure 3: Preoperative and postoperative KT-1000 assessment

The difference was statistically insignificant.

Table 8: Thigh girth measurement:

	A		B		P value
	normal	**Affected**	**normal**	**Affected**	
Mean(cm)	52.9	51.9	53.4	52.37	0.268
SD(cm)	4.24	4.15	3.25	3.31	0.387

About difficulties, Effusion: Up to six weeks after surgery, In three cases in group A and two cases in group B, there was a persistent effusion. Group B patient number three experienced donor site pain over the quadriceps tendon for three to five months; however, by the end of the follow-up period, no patient had reported experiencing that pain. This was treated by repeated aspiration under completely aseptic conditions, depending on the degree of effusion, as well as anti-inflammatory and anti-oedematous medications for two weeks. Patella-femoral discomfort: Patella-femoral discomfort was first noted in two patients in group A and one in group B in the third postoperative month, and it spontaneously vanished after one month. Infection: One instance of group B developed a superficial infection at the site of harvesting, which was treated for one week with broad-spectrum oral antibiotics before being totally cured. One instance group A developed a serious infection in the damaged knee, which was treated with a course of antibiotics based on culture and sensitivity and debridement after two weeks.

DISCUSSION

The anterior cruciate ligament repair surgery is one of the most common arthroscopic operations. 2 Expectations of a quicker return to sports are rising as ACL repair becomes more predictable and common [2].

While differences in Lysholm score and IKDC scale (Lachman test, Pivot shift test) were not statistically significant in either group when using the KT-1000 knee arthrometer, differences in anterior tibial translation were (p=0.03). The overall results of the current experiment, as evaluated by the IKDC evaluation technique, showed no statistically significant difference between the two groups at 1, 3, 6, and 12 months [2].

For group 2, the results were similar to a finished literary analysis. In contrast to Chen et al. [4], who used a QT graft in 34 patients and reported exceptional results based on Lysholm (94%) and IKDC (91%) scores, Lee et al. discovered that 94% of the knees in 67 patients who used QT had IKDC ratings of A or B.

This outcome was comparable to that of a research by M Soon et al. [5], who discovered that 16.5% of patients with quadruple hamstring ACL reconstructions who adhered to the study procedure reported anterior knee discomfort. In this study, we discovered that group 2 had the fewest harvest site discomfort cases (13.5%) It was similar to a research by Chen et al. in which 34 patients were tracked for 4–7 years and it was found that nine percent of them reported experiencing discomfort during moderate or intense activities. Our findings were in line with those of a research by Han et al [6], who noted a low prevalence of kneeling discomfort utilising QT grafts

of 5.5%. No statistically significant difference in knee swelling between the two groups was seen in this investigation; group 1 had knee swelling of 20%, which was comparable to Pierce et al's study of 13.5%; group 2 had knee swelling of 20%, which was comparable to Chen et al's study of 4%, where 9% of patients reported knee swelling during moderate or strenuous activity.

In this study, we discovered that 7% of patients lost 5 degrees of extension, which is comparable to Chen et alfindings .'s [4], Researchers studied 34 patients who underwent ACL restoration utilising QT and were followed up for 4–7 years. They found that 3% of patients who lost 5 degrees of extension were classified as having a nearly normal condition, while 3% of patients who experienced a loss of 6 degrees were graded abnormally.

Prior to surgery, all patients in both groups had KT-1000 assessments with a side-to-side difference more than 5mm, positive results on the anterior drawer test, and grades 2 or 3 on the Lachman scale. According to Chen et al's study, 86.5 percent of the patients in our study exhibited a side-to-side disparity of 1-3 millimetres, and 94% of patients who had ACL restoration utilising QT showed fewer than 5 millimetres of ligament laxity using KT-1000 arthrometer testing after surgery.

According to Lee et al., using a quadriceps tendon transplant for ACL rehabilitation has produced positive results [7]. Their findings revealed that 94% had postoperative median laxity of 2 mm and were classified A or B. According to Pierce et al., the KT-1000 score had improved in that (87%) of At the 2-year follow-up, 120 patients who had ACL reconstruction with HT had differences of less than 3 mm, which is equivalent to our findings. In our study, there was no statistically significant difference between the ability to resume former levels of activity for 93% of patients in the QT group and 87% of patients in the HT group.

This study indicates that following ACL reconstruction using either HT or QT, the subjective functional result as determined by the Lysholm knee score and the presence of symptoms (pain, edoema, and giving way), as measured by the IKDC system, are identical at the 12-month follow-up. The research by Chen et al. [4] found that on 34 people, 73% had a thigh girth difference between their natural and prosthetic limbs of less than 1 cm. The mean difference in thigh girth between the affected and unaffected limbs at final follow up was 1 cm in the HT group and 1.03 cm in the QT group.

The study had some drawbacks, including a very small sample size and a relatively brief duration of patient follow-up.

CONCLUSIONS:

Restoring knee stability by an ACL repair with a hamstring or quadriceps tendon transplant enables a high degree of functional and athletic effort.

Zero in terms of donations and sponsorship
Zero conflicts of interest

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