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ABSTRACT

Clinical Scenario: There are multiple methods of repairing an anterior cruciate ligament (ACL). Two different procedures that will be compared is with a patellar tendon autograft or with a hamstring tendon autograft. **Focused Clinical Question:** In participants who have an ACL rupture, what is the effect of the patellar tendon repair method compared to the hamstring method on Lysholm Knee Scoring System? **Search Strategy:** The following databases were used included PubMed, CINAHL plus, ProQuest Nursing, and Cochrane. The search terms were ACL reconstruction, patellar tendon, hamstring tendon, lysholm score, ACL, and lysholm knee score. The inclusion criteria included patients with ACL ruptures along with, patellar tendon, hamstring, and Lysholm Knee Score. The exclusion criteria were posterior cruciate ligament (PCL), lateral collateral ligament (LCL), medial collateral ligament (MCL), and meniscus. A total of 872 articles meeting the initial search results and 8 meeting the inclusion criteria. **Evidence Quality Assessment:** The PEDro score were 6/10 to 9/10. The Oxford 2011 Levels of Evidence Score ranged from a level 2 to a level 4. **Results and Summary of Search:** Both the patellar tendon autograft and the hamstring tendon autograft had good outcomes. There were no significant differences between the patellar tendon autograft and hamstring tendon autograft with the Lysholm Knee Scoring System. The primary strength of each study was that there were good follow up numbers where the lowest was 70% follow up and the highest was 100% follow up. One of the main weaknesses, included that the studies did not have many blinding factors for the subjects or the ones performing the surgery. **Clinical Bottom Line:** The patellar tendon autograft and the hamstring tendon autograft are good options for an ACL repair as there were no major concerns or differences between the two types of grafts. The strength of the recommendation (SORT) score was a B. **Implications:** Either the patellar tendon or the hamstring tendon would be appropriate to use. The decision is ultimately up to the surgeon and the patient due to the patellar tendon autograft and hamstring tendon autograft having the same outcome. Using the patellar tendon autograft or the hamstring tendon autograft will not affect the return to play protocol that the athletic trainer will have. **Word Count:** 367

CLINICAL SCENARIO

- There are multiple methods of repairing a ruptured ACL.
- The studies used compared randomized participants who have ruptured their ACL.
- Two of the possible methods include a patellar tendon autograft and hamstring tendon autograft.
- The comparison of each autograft was done by looking at the Lysholm Knee Scoring System.
 - This is composed of: limping, support, restraining, instability, pain, swelling, climbing stairs, and squatting.¹⁻⁹
- An ACL rupture can occur due to the tibia translating anteriorly and any rotation that causes stress to that area.-starky
 - This is typically a non-contact injury with rotation the main cause.
- An ACL rupture has an increased rate in happening in females compared to males.⁴
- An ACL rupture has an increased rate in happening in younger children compared to adults.^{4,5}
- According to the Lysholm Knee Scoring System, either the patellar tendon autograft and hamstring tendon autograft will be beneficial.¹⁻⁹

FOCUSED CLINICAL QUESTION

- In participants who have ruptured their ACL, what is the effect of the patellar tendon repair method compared to the hamstring method on Lysholm Knee Scoring System?

SEARCH STRATEGY

- PubMed, CINAHL Plus, ProQuest Nursing, and Cochrane Library were the databases used.
- Search terms used:
 - ACL reconstruction; patellar tendon; hamstring tendon; lysholm score; ACL; lysholm knee scoring
- Inclusion criteria:
 - ACL; patellar tendon; hamstring tendon; lysholm knee score
- Exclusion criteria:
 - PCL; LCL; MCL; meniscus

EVIDENCE QUALITY ASSESSMENT

- PEDro scores ranged from 6/10 to 9/10
- Oxford 2011 Levels of Evidence Score ranged from level 2 to level 4.

RESULTS AND SUMMARY OF SEARCH

- No differences between the patellar tendon autograft and the hamstring tendon autograft according to the Lysholm Knee Scoring System.
- There were obvious differences between the pre-op and post-op for each tendon but not between the different tendons used.
- The strengths was that there were two different interventions and also a second group to compare each intervention.
- The main weakness was the blinding of each participant and the examiner throughout all the studies.
- The patellar tendon autograft or the hamstring tendon autograft will work.

Table 1. Comparison of the patellar tendon autograft and hamstring tendon autograft using the Lysholm Knee Scoring System.

Author	Follow-Up: Hamstring Tendon	Follow-Up: Patellar Tendon	Significance of Follow Up
Papalia ¹	87.4	93.17	P=0.1428
Ejerhed ²	90	95	P>0.05*
Lautamies ³	94	92	P>0.05*
Shakke ⁴	85	86	P=0.81
Rudroff ⁶	88	90.4	P>0.05*
Konrads ⁷	89.3	89.2	P=0.53
Bjornsson ⁹	80.7	79.4	P=0.91

Table 1. This table has the values of what each autograft has to offer. The data was collected by using the Lysholm Knee Scoring System. The scoring system was taken before the surgery and the follow up. The table shows data from the follow up portion. Each participant was randomized. The outcome of this shows that either the patellar tendon autograft or the hamstring tendon autograft would work for an ACL reconstruction. (P>0.05: the studies used did not give a definite p value)

SECTION 1 - LIMP

- I have no limp when I walk. (5)
- I have a slight or periodical limp when I walk. (3)
- I have a severe and constant limp when I walk. (0)

SECTION 2 - Using cane or crutches

- I do not use a cane or crutches. (5)
- I use a cane or crutches with some weight-bearing. (2)
- Putting weight on my hurt leg is impossible. (0)

SECTION 3 - Locking sensation in the knee

- I have no locking and no catching sensation in my knee. (15)
- I have catching sensation but no locking sensation in my knee. (10)
- My knee locks occasionally. (6)
- My knee locks frequently. (2)
- My knee feels locked at this moment.. (0)

SECTION 4 - Giving way sensation from the knee

- My knee gives way. (25)
- My knee rarely gives way, only during athletics or vigorous activity. (20)
- My knee frequently gives way during athletics or other vigorous activities. In turn I am unable to participate in these activities. (15)
- My knee frequently gives way during daily activities. (10)
- My knee often gives way during daily activities. (5)
- My knee gives way every step I take. (0)

SECTION 5 - PAIN

- I have no pain in my knee. (25)
- I have intermittent or slight pain in my knee during vigorous activities. (20)
- I have marked pain in my knee during vigorous activities. (15)
- I have marked pain in my knee during or after walking more than 1 mile. (10)
- I have marked pain in my knee during or after walking less than 1 mile. (5)
- I have constant pain in my knee. (0)

SECTION 6 - SWELLING

- I have swelling in my knee. (10)
- I have swelling in my knee on 1y after vigorous activities. (6)
- I have swelling in my knee after ordinary activities. (2)
- I have swelling constantly in my knee. (0)

SECTION 7 - CLIMBING STAIRS

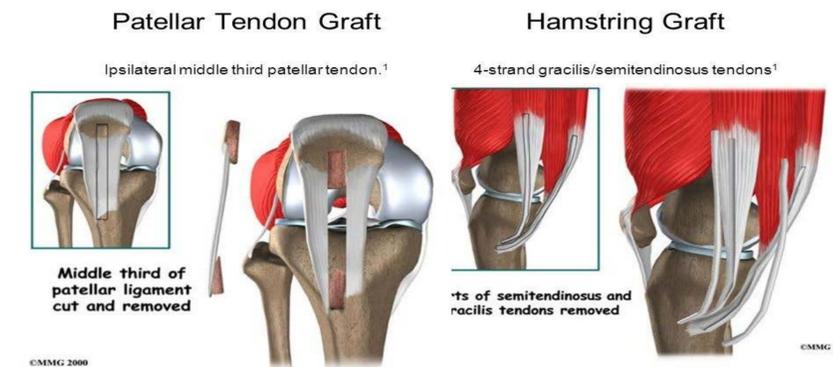
- I have no problems climbing stairs. (10)
- I have slight problems climbing stairs. (6)
- I can climb stairs only one at a time. (2)
- Climbing stairs is impossible for me. (0)

SECTION 8 - SQUATTING

- I have no problems squatting. (5)
- I have slight problems squatting. (4)
- I cannot squat beyond a 90deg. Bend in my knee. (1)
- Squatting is impossible because of my knee. (0)

Figure 1. Lysholm Knee Scoring Scale. This is out of 100 points. (file:///C:/Users/mr9518er/AppData/Local/Microsoft/Windows/InetCache/IE/9DY1N71/lysholmkneescoringscale.pdf)

ACL Repair Anatomy



ACL Reconstruction Anatomy and Methods. - ppt video online download. Slideplayercom. 2018. Available at: <http://slideplayer.com/slide/7285426/>.

CLINICAL BOTTOM LINE

- There is not a significant difference in the Lysholm Knee Scoring System between the patellar tendon autograft and hamstring tendon autograft.
- The strength of the recommendation (SORT) is a B.

IMPLICATIONS

- The patellar tendon autograft and the hamstring tendon autograft are good options for an ACL reconstruction.
- There is no significant difference between the patellar tendon and hamstring tendon.
- The tendon choice should be based on what the patient's activity level is wanted.

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