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Comparison of Core Muscle Endurance, Proprioception, and Surgery Satisfaction among Individuals with Anterior Cruciate Ligament Reconstruction with Hamstring Tendon Autograft or Fresh-Frozen Allograft and Healthy Individuals: A Cross-Sectional Study

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Faculty Disclosure Information

- The authors have declared that there are no conflicts of interest for this presentation

Objective

- New studies are conducted daily to determine the best graft among various graft types in anterior cruciate ligament reconstruction (ACLR). Frequently preferred hamstring tendon autografts or fresh-frozen allografts have been compared, particularly using subjective tests and functional jump tests [1,2].
- Comparing the two graft types in terms of parameters that are directly related to the functional performance of the individual, such as core endurance and knee proprioception may help to understand the differences in terms of the results of graft types. Thus, it may guide clinicians in understanding the functional parameters that should be considered for graft types after surgery and in creating specific rehabilitation plans.

Purpose

- **The study aimed to compare core muscle endurance, proprioception, and surgery satisfaction among individuals who underwent ACLR with either hamstring tendon autograft or fresh-frozen allografts and healthy individuals.**

Methods

- A total of 52 individuals undergoing ACLR and 30 healthy individuals were assessed. Individuals who underwent ACLR with hamstring tendon autograft (Group 1) or fresh-frozen allograft (Group 2) and a health control (HC) with similar activity levels were included in this study.

Methods

Inclusion criteria

1. Unilateral ACLR
2. 18-65 years of age
3. Type of surgery hamstring tendon autograft or fresh-frozen allografts, without or with a concomitant partial meniscectomy or meniscal repair
4. 12-48 months passed time since surgery

Exclusion criteria

1. Total meniscectomy or revision surgery
2. Multi-ligamentous knee injury/surgery
3. Chondral surgery
4. Combined ligament injury
5. Contra-lateral knee ligament injury.

Methods

- The surgical groups were evaluated 12-60 months after surgery.
- The proprioception was assessed with a dual inclinometer in closed kinetic chain positions.
- Surgical satisfaction was assessed using a Visual Analog Scale (VAS).
- Core muscle endurance was assessed by the trunk flexor endurance test, side bridge test, trunk extensor test, and prone bridge test.

- Statistical analysis was performed using Statistical Package for Service Solutions (SPSS) version 23.0 (SPSS, Chicago, IL).

Results

- **There were 23 individuals in Group 1, 29 individuals in Group 2, and 30 individuals in HC. All participants were male. Demographic comparisons are presented in the table.**

	Group 1 (n=23)	Group 2 (n=29)	Health control (n=30)	p
Age (years)	31.13±8.85	33.07±5.49	33.77±7.09	0.414
BMI (kg/m2)	26.65±3.66	27.95±4.07	26.11±2.60	0.118
Dominant side Right/Left (n)	22/2	26/4	27/3	0.825
Surgical side Right/Left (n)	17/7	16/14	-	0.190

Results

	Group 1 (n=23)	Group 2 (n=29)	Health control (HC) (n=30)	Group 1-Group 2	Group 1 - HC	Group 2 - HC
Proprioception - surgical side	2.20±1.92	3.15±2.52	1.76±2.15	0.136	0.437	**0.026***
Proprioception - other side	1.88±2.13	2.13±2.51	1.89±1.90	0.517	0.978	0.479
Surgical satisfaction	8.02±2.27	6.80±2.61	-	0.073	-	-
Trunk flexor endurance	100.33±71.42	86.22±64.20	103.55±72.66	0.449	0.871	0.332
Trunk extensor endurance	62.77±44.03	56.97±29.56	76.41±51.45	0.566	0.307	0.078
Side bridge - surgical side	41.84±23.81	41.70±28.32	50.07±24.55	0.985	0.202	0.226
Side bridge - other side	41.68±22.73	42.43±22.25	46.20±19.94	0.906	0.440	0.503
Prone bridge	44.50±22.37	44.33±21.45	48.51±22.57	0.978	0.518	0.466

Conclusions

- This study showed that no graft type was superior to another in terms of core muscle endurance, proprioception, and surgery satisfaction after ACLR.
- However, the proprioception was still found to be lower in individuals who underwent surgery with allograft compared to healthy controls.
- This should be taken into consideration when returning to the level of physical activity after surgery.

References

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