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# Proprioceptive and Clinical Outcomes of Anterior Cruciate Ligament Reconstruction with Remnant Tissue Preservation Technique: A Comparison According to the Preserved Tissue Length

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# Introduction

The anterior cruciate ligament (ACL) remnant may theoretically increase ligamentization process depends on viable tissue on the remnant <sup>1,2</sup>.

There is no consensus in the literature regarding the effects of remnant-preserving anterior cruciate ligament reconstruction (ACLR) on clinical and proprioceptive outcomes and its superiority over the standard surgical procedure.



# Purpose

- To compare the proprioceptive and clinical outcomes of the knee joint after ACLR with two different lengths of preserved remnant tissue.



# Methods

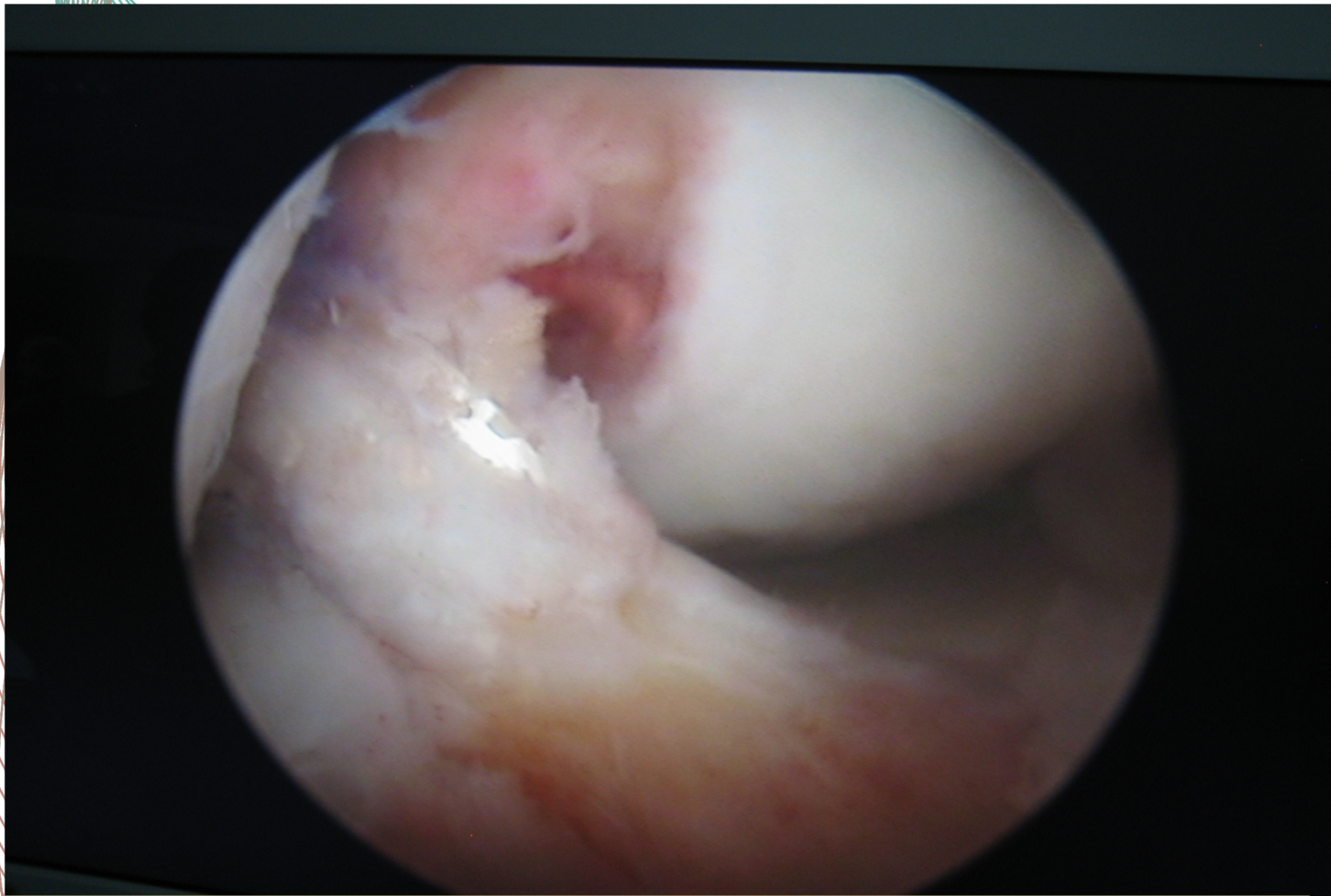


Figure An example of remnant-preservation method

Single-bundle

Remnant preservation method

Hamstring autograft

18 – 40 years old

Patients with accompanying ligament or meniscal injuries were excluded.



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Tegner activity scale  
Lysholm knee scoring scale.  
Joint position sense (JPS)  
test at 20°, 50°, and 70°

61 subjects ACLR  
According to the  
length of the remnant  
preserved

Group 1  
(n = 36)  
 $\leq 1/3$  of the original  
length preserved

Group 2  
(n = 25)  
More than 1/3 of the  
original length  
preserved



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# Results

54 men 7 women

Mean age =  $30.44 \pm 6.92$  years

Mean BMI =  $26.93 \pm 4.30$  kg/m<sup>2</sup>

Mean follow-up time =  $2.58 \pm 0.97$  years



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## Comparison of groups in terms of demographic and clinical characteristics

Variables	Group 1 (n = 36) Mean (SD)	Group 2 (n =25) Mean (SD)	Mean Difference (95 % CI)	P value
Age, years	28.75 (7.63)	30.44 (6.92)	-1.69 (-5.52 to 2.14)	0.381
BMI, kg/m <sup>2</sup>	26.58 (4.89)	27.44 (3.29)	-0.86 (-3.10 to 1.38)	0.446
Lysholm Score	89.25 (10.67)	85.96 (12.93)	3.29 (-2.77 to 9.36)	0.282
Tegner Activity Score	5.25 (1.25)	4.96 (1.33)	0.29 (-0.38 to 0.96)	0.397
Reproduction of Passive Position at 20°	4.12 (1.39)	3.34 (1.47)	0.77 (0.03 to 1.51)	<b>0.042</b>
Reproduction of Passive Position at 50°	3.90 (2.36)	3.24 (1.66)	0.66 (-0.43 to 1.76)	0.231



# Discussion

## Hong et al. 2012<sup>3</sup>

Remnant-preserving ACLR vs standart technique (n = 90).

The IKDC, KT-1000, and proprioception recovery did not differ between the groups.



## The present study

No difference for Lysholm and Tegner scores between the groups.



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# Discussion

## Lee et al. 2008 <sup>4</sup>

Prospective study - ACL reconstruction with the remnant-preserving technique (n =16)  
Patients were divided according to the preserved tissue length: more than 20% vs less than 20%.

Proprioception was better in favor of more than 20% group.

## The present study

Significant difference in terms of joint position sense at 20° in favor of patients who had ACLR with more than 1/3 of the original tissue preserved.



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# Conclusion

- Patients who underwent remnant-preserving ACLR obtained similar clinical results regardless of the amount of preserved tissue length.
- Despite having similar clinical scores, preserving more remnant tissue may improve proprioceptive restoration compared to less remnant tissue preserved knee joint.



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