ISAKOS CONGRESS 2025 | MUNICH GERMANY June 8–11

Comparable Clinical Outcomes & Graft Integrity Achieved in ACL Reconstruction in Patients Over 50 Years of Age

: A Propensity Score-Matched Comparative Study

Joo-Hwan Kim, MD, MS.

Joon Ho Wang, MD, Ph.D.

Sungkyunkwan University

Samsung Medical Center

Seoul, Korea

Faculty Disclosure Information

- Nothing to disclosure

Background

- *Growing number of people striving to **maintain an active lifestyle**.*
- *The incidence of ACL ruptures and subsequent ACL reconstructions is **rising among middle-aged patients.***
- The number and activity of ***the mesenchymal stem cells, which play a crucial role in ACLR,*** are also affected by aging***.***
- ***Aging*** has been reported to be associated with a ***decline in muscle strength, muscle mass and overall physical function.***

Purpose

- ***To compare the clinical outcomes and graft integrity of primary single-bundle ACLR in patients aged 50 and older with those in patients under 50***

Methods

From 2012 to 2022

Inclusion criteria

(1) Single bundle ACLR

(2) Patient age ≥ 50 years

Exclusion criteria

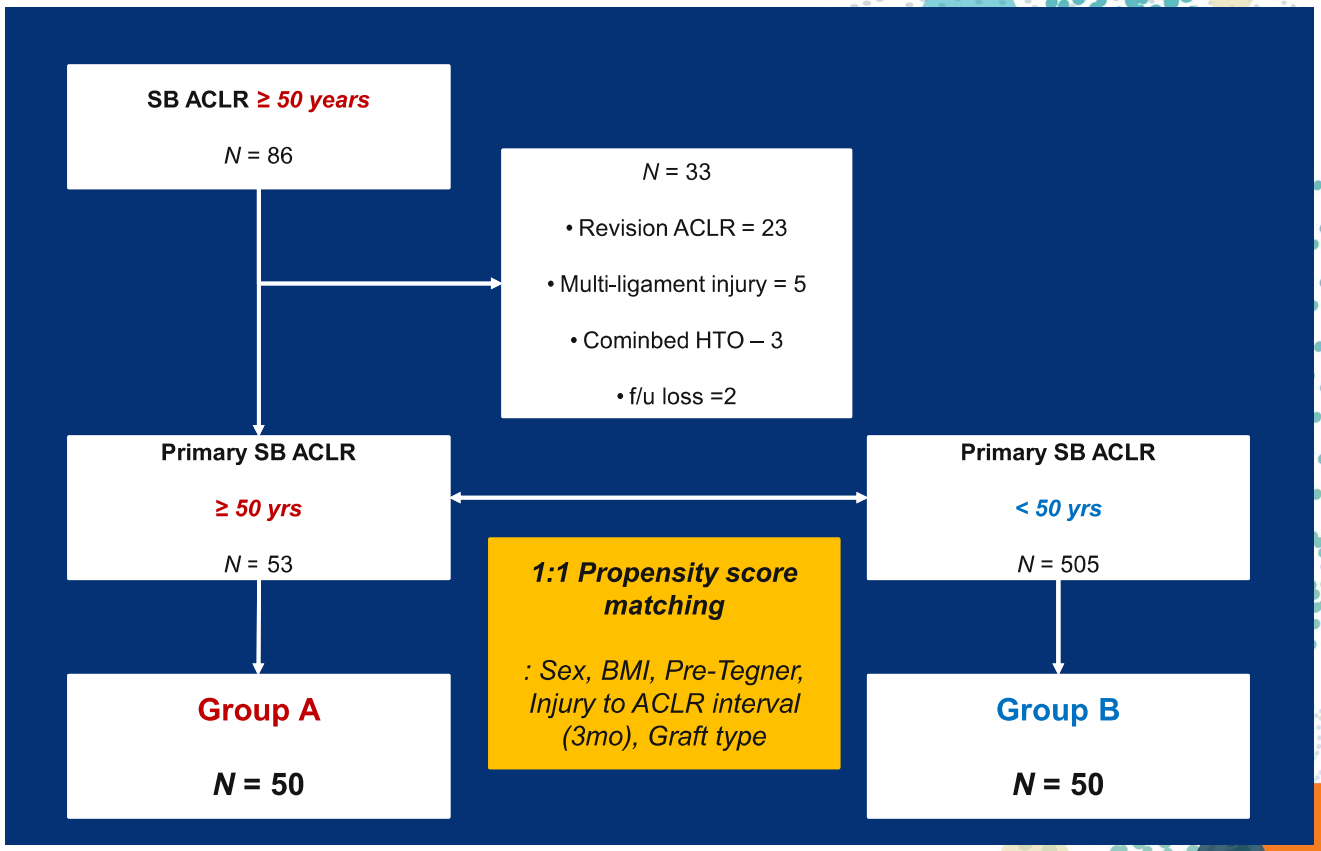
(1) Revisional ACLR

(2) Multi-ligament injury or Knee dislocation

(3) Combined procedure (ex. Osteotomy) or previous surgery

(4) Follow-up loss

(5) Open physis, Age < 18



Methods - *Clinical outcomes*

Graft failure

MRI or arthroscopy confirmed

Patient reported outcomes

IKDC subjective score

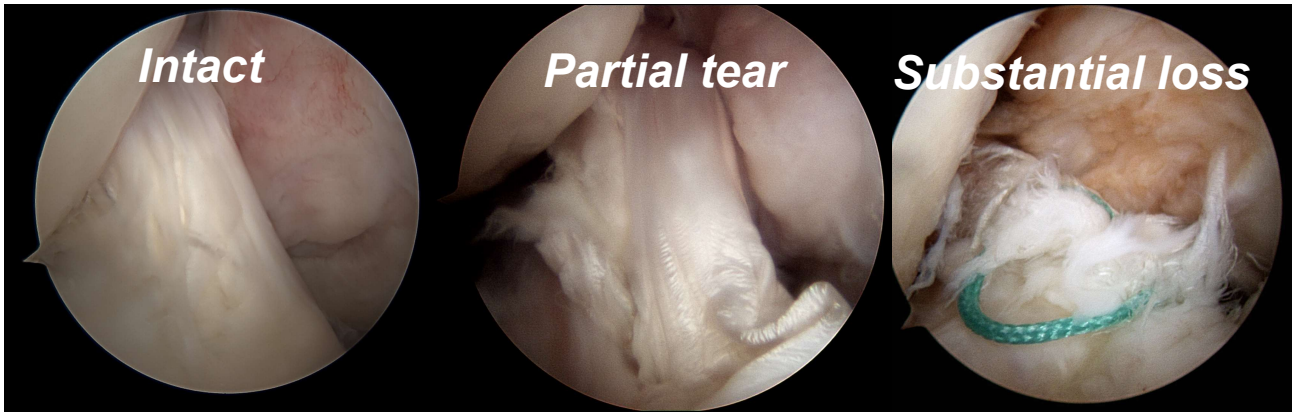
Lysholm score

Tegner activity scale

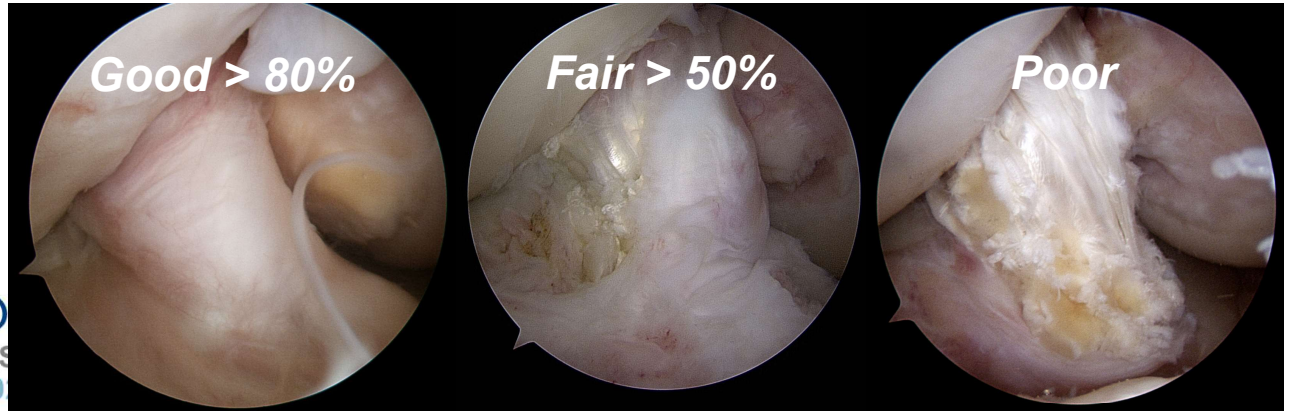
KOOS score

Methods - *Graft integrity*

2nd look Arthroscopy – graft continuity



2nd look Arthroscopy – graft synovialization



Results

	Group A	Group B	P Value	ASMD*
Number of patients	50	50		
Sex (M/F)	34 / 16	39 / 11	.260	.227
Age, yr	**53.4 ± 3.2**	**29.0 ± 6.4**	**<.001**	
BMI	25.2 ± 2.8	25.0 ± 3.8	.775	.059
Follow-up, mo	37.7 ± 22.8	33.7 ±11.2	.267	
Injury to ACLR			.689	.080
≥ 3mo (%)	27 (51.9)	25 (50.0)		
< 3mo (%)	23 (47.9)	25 (50.0)		
Pre-Injury TAS	5.8 ± 1.5	6.2 ± 1.3	.110	.161
≥ 6 (%)	31 (62.0)	37 (74.0)	.198	
Graft			.422	.161
Autograft (%)	21 (42.0)	25 (50.0)		
Allograft (%)	29 (58.0)	25 (50.0)		

No significant differences in demographic factors between the two groups, except for age.

Results

Group A (≥ 50 years, N=50)

- ***Total 3 graft failure***
- *1 failure d/t re-injury*
- *2 failure w/o definite injury*

Group B (< 50 years, N=50)

- ***Total 2 graft failure***
- *1 failure d/t re-injury*
- *1 failure w/o definite injury*

Results

	Group A	Group B	P-Value
IKDC subjective	80.8 ± 11.5	84.7 ± 11.4	.100
Tegner activity scale (TAS)	4.9 ± 1.5	5.6 ± 1.4	.024
≥ 6	15 (30.0%)	28 (56.0%)	.009
Lysholm	90.4 ± 8.6	90.2 ± 8.1	.941
KOOS			
Pain	91.5 ± 9.9	93.9 ± 6.7	.326
Symptoms	92.9 ± 8.3	92.5 ±7.9	.828
ADL	95.2 ± 6.1	97.8 ± 4.6	.033
Sports	76.9 ± 17.1	81.9 ± 13.5	.044
Quality of life	78.5 ± 17.8	81.5 ± 15.8	.429

Postoperatively, Group A had significantly lower scores compared to Group B in the Tegner activity scale and the KOOS ADL & Sports.

Results

	Group A	Group B	P value
Number of patients	30 (60%)	37 (74%)	.202
Time from operation to second look (months)	21.9 ± 7.2	26.2 ± 12.1	.083
Continuity			**.950**
Intact	23	27	
Superficial tear	7	10	
Substantial loss	0	0	
Synovialization			***.693***
Good	19	27	
Fair	8	7	
Poor	3	3	

Conclusion

- ***Patients aged 50 and older demonstrated comparable clinical outcome and graft integrity following ACL reconstruction***

Reference

- Brown CA, McAdams TR, Harris AH, Maffulli N, Safran MR. ACL reconstruction in patients aged 40 years and older: a systematic review and introduction of a new methodology score for ACL studies. *Am J Sports Med*. 2013;41(9):2181-2190.
- Cinque ME, Chahla J, Moatshe G, et al. Outcomes and Complication Rates After Primary Anterior Cruciate Ligament Reconstruction Are Similar in Younger and Older Patients. *Orthop J Sports Med*. 2017;5(10):2325967117729659.
- Costa GG, Grassi A, Perelli S, et al. Age over 50 years is not a contraindication for anterior cruciate ligament reconstruction. *Knee Surg Sports Traumatol Arthrosc*. 2019;27(11):3679-3691.
- Dahm DL, Wulf CA, Dajani KA, Dobbs RE, Levy BA, Stuart MA. Reconstruction of the anterior cruciate ligament in patients over 50 years. *J Bone Joint Surg Br*. 2008;90(11):1446-1450.
- Ehlinger M, Panisset JC, Dejour D, et al. Anterior cruciate ligament reconstruction in the over-50s. A prospective comparative study between surgical and functional treatment. *Orthop Traumatol Surg Res*. 2021;107(8S):103039.
- Figueroa D, Figueroa F, Calvo R, Vaisman A, Espinoza G, Gili F. Anterior cruciate ligament reconstruction in patients over 50 years of age. *Knee*. 2014;21(6):1166-1168.
- Iriuchishima T, Shirakura K, Horaguchi T, et al. Age as a predictor of residual muscle weakness after anterior cruciate ligament reconstruction. *Knee Surg Sports Traumatol Arthrosc*. 2012;20(1):173-178.