ISAKOS CONGRESS 2025 | MUNICH GERMANY June 8–11

Clinical Outcome after Meniscal Repair for Lateral Meniscus Posterior Root Tear Combined with Anterior Cruciate Ligament Reconstruction

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Faculty Disclosure Information

- Nothing to disclosure

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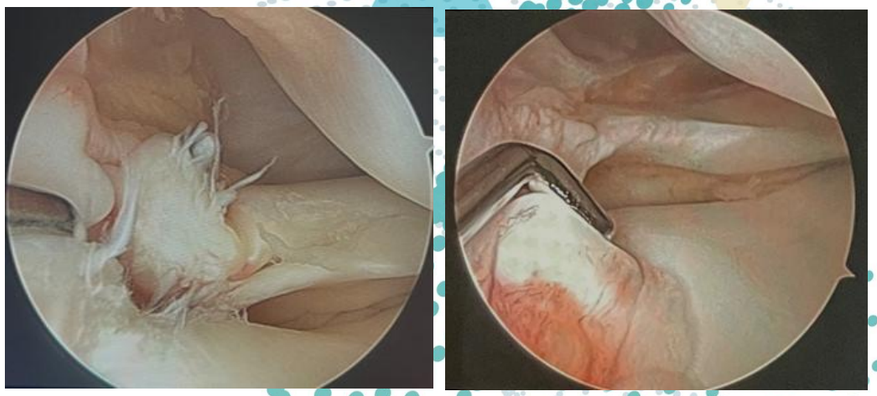
Introduction

✓Lateral meniscus posterior root tear (LMPRT)

- An avulsion injury, a radial tear or a T-shaped tear occurring within 1cm of the LM posterior insertion site.
- 7% to 15% of ACL-injured knees

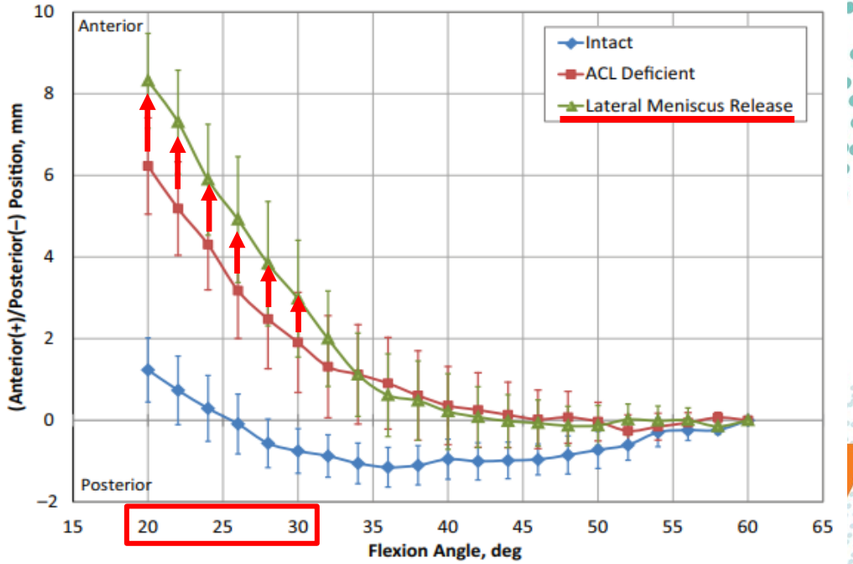


✓ACL injury＋LMPRT

- Anterior tibial translation ↑ during the pivot shift

Shybut TB, et al. *AJSM* 2015

- Meniscal extrusion ↑
- Tibiofemoral contact pressure ↑



Schillhammer CK, et al. *AJSM* 2012

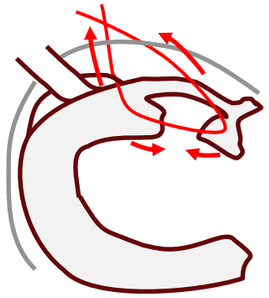
Objective

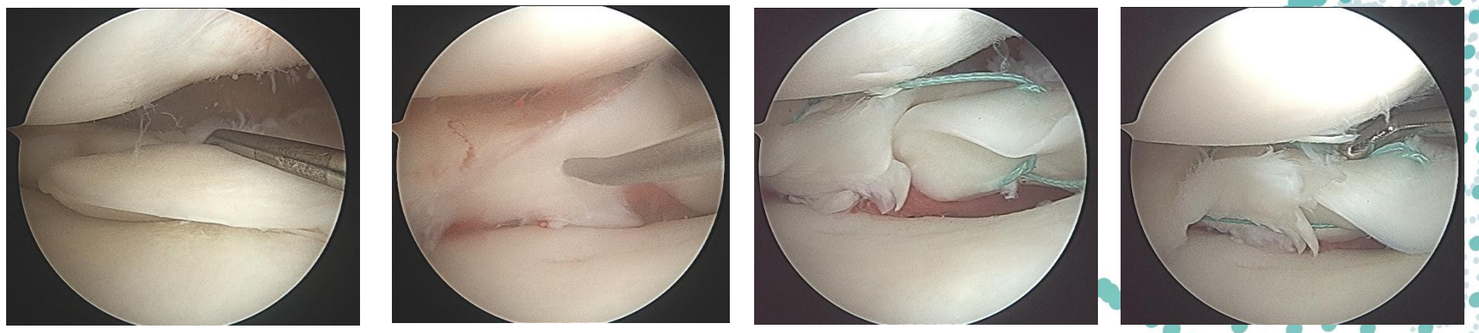
To compare postoperative outcomes, including knee stability and extrusion of LM, between trans-capsular suture (TCS) repair and all-inside suture (AIS) repair for LMPRT combined with ACLR.

Materials & Methods

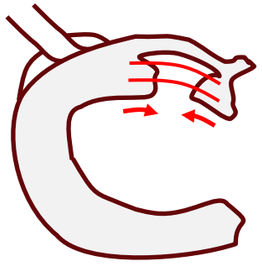
- ✓ From April 2015 to May 2022, **22** out of 322 primary ACLR cases had a concomitant **LMPRT (radial or T-shaped tear)** and underwent **meniscal repair for LMPRT** combined with ACLR using ST.

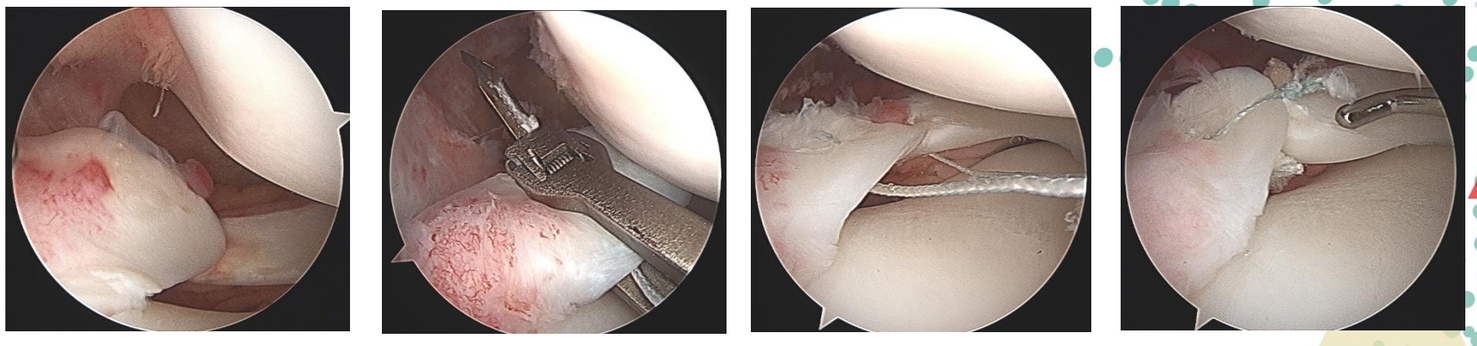
- ✓ **TCS group** (7 knees): TCS repair using all-inside devices or the inside-out technique





- ✓ **AIS group** (15 knees): AIS repair using the Knee Scorpion device (Arthrex)

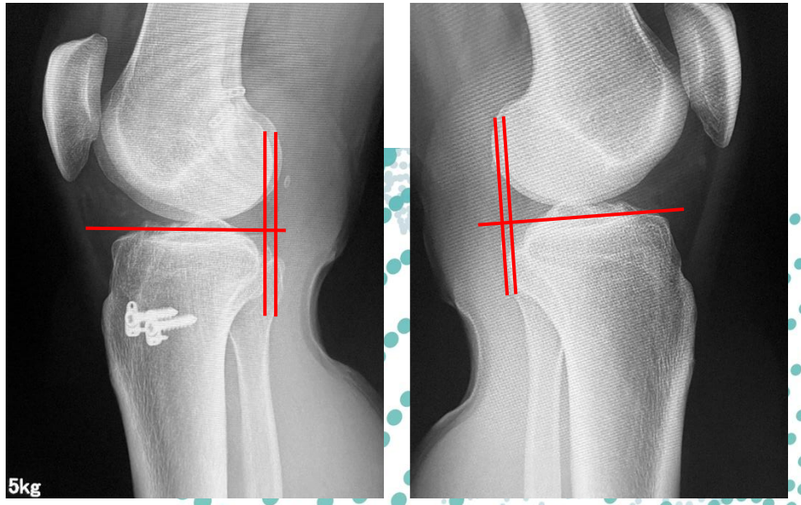




✓ **Knee stability** @ 2 years after surgery

- Stress radiographs using a Telos SE 2000 (Telos) at 20º under anterior drawer force of 150 N

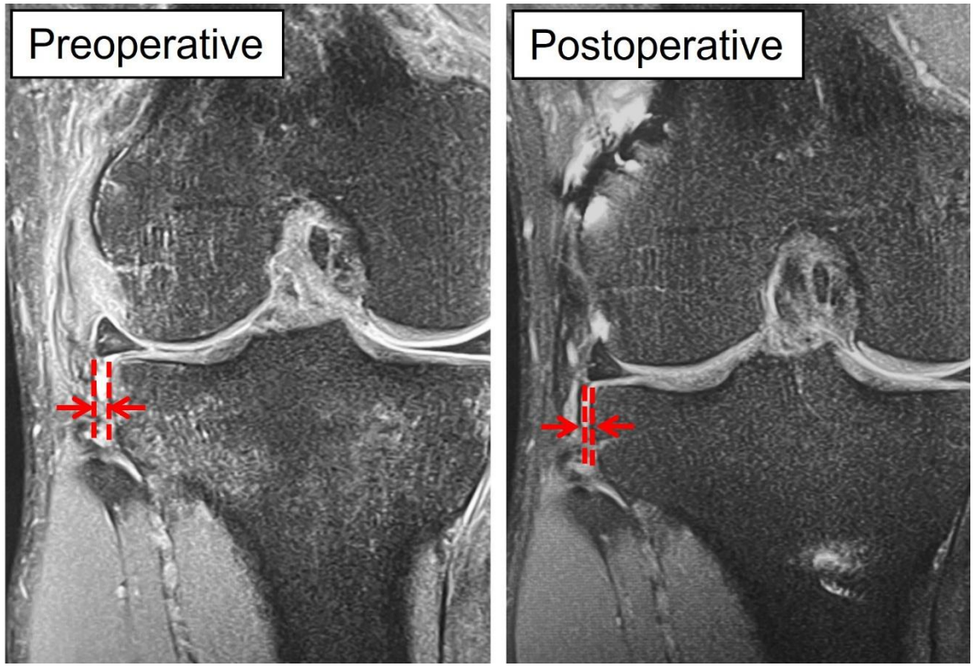
Side-to-side difference (SSD) in anterior tibial translation (ATT)



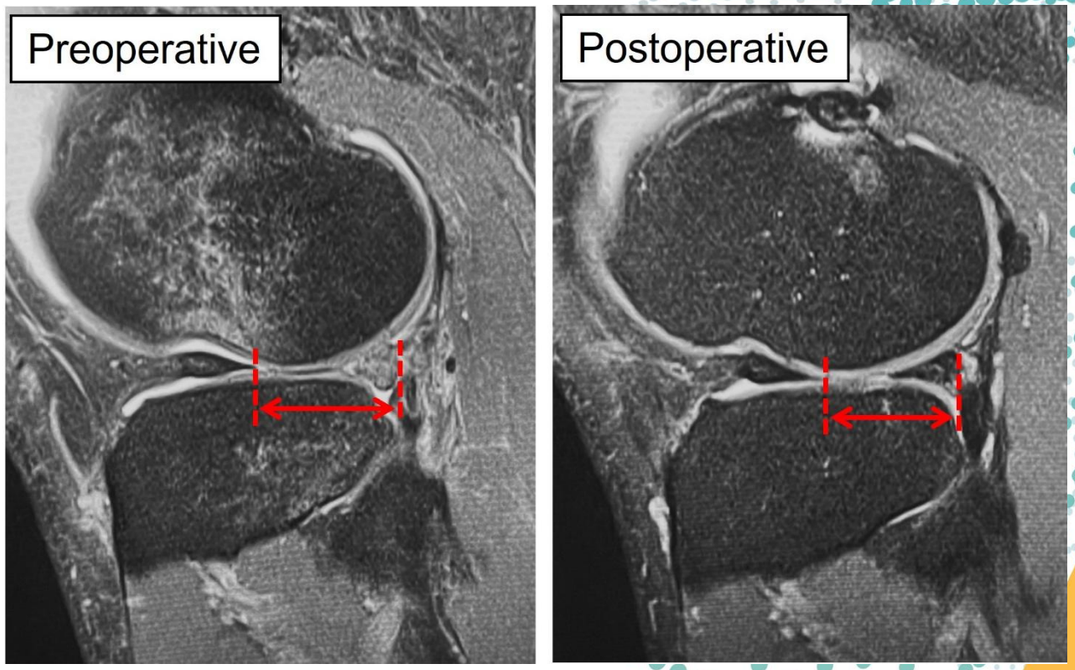
- The pivot-shift test

✓ **Meniscal extrusion of LM** before and 2 years after surgery

Coronal extrusion of LM



Sagittal extrusion of LM



Ahn JH, et al. *Arthroscopy* 2010
Tsujii A, et al. *Am J Sports Med* 2019

✓ Statistical Analysis

Student's t-test and Mann-Whitney U-test

This study was approved by institutional review board in our hospital.

Results

✓ Time from injury

TCS group	AIS group	p value
41 ± 20 days	57 ± 34 days	NS

✓ Concomitant MM injury

TCS group	AIS group
• 3 ramp lesions • 1 longitudinal tear at posterior segment	• 7 ramp lesions • 3 longitudinal tears at posterior segment • 1 posterior root tear

✓ **Knee stability** @ 2 years after surgery

	TCS group	AIS group	p value
SSD in ATT	**3.7 ± 2.0 mm**	**1.3 ± 1.7 mm**	**0.01**
Positive ratio on pivot-shift	28.6% (2/7)	13.3% (2/15)	0.10

✓ Improvement in meniscal extrusion of LM

Coronal extrusion	TCS group	AIS group	p value
Improvement in extrusion	0.2±0.6 mm	0.8 ±0.9 mm	N.S.
Improvement of >1mm	14.3% (1/7)	46.7% (7/15)	N.S
Progression of >1mm	0%	0%	N.S

Sagittal extrusion	TCS group	AIS group	p value
Improvement in extrusion	-2.0±1.7 mm	0.1 ±1.2 mm	0.003
Improvement of >1mm	14.3% (1/7)	33.3% (5/15)	N.S
Progression of >1mm	85.7% (6/7)	20.0% (3/15)	0.014

Discussion

- ✓ Tsujii et al. (Am J Sports Med 2019) reported that sagittal extrusion of the LM progressed significantly after meniscal repair using either the inside-out or all-inside technique for LMPRT combined with ACLR, despite a high healing rate observed during second-look arthroscopy.

- ✓ In the present study, sagittal extrusion in the AIS group remained stable after surgery. Additionally, anterior stability in the AIS group was better than that in the TCS group. These results suggest that AIS repair may better restore meniscal function, including its role as a secondary restraint, compared to TCS repair.

Conclusion

All inside suture repair may be preferable to Trans-capsular suture repair for LMPRT combined with ACL reconstruction to achieve better postoperative outcomes, particularly in terms of anterior knee stability and prevention of sagittal extrusion progression of the LM.

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