ISAKOS CONGRESS 2025 | MUNICH GERMANY June 8–11

Does the Use of Lateral Extra-Articular Tenodesis Reduces Residual Knee Rotatory Laxity After ACL Reconstruction?

A Retrospective Randomized Case-Control Study Using Kinematic Rapid Assessment (Kira)

Giron F., MD, PhD

Boncinelli D., MD; Franco P., MD; Salomone L., MD.

Department of Traumatology and Orthopaedics, AOU Careggi, Florence

Faculty Disclosure Information

- Nothing to disclosure

Introduction

The aim of the study was to evaluate whether the addition of lateral extra-articular tenodesis (LET) to anterior cruciate ligament reconstruction (ACLR) can improve knee stability in athletes with a minimum two-year follow-up.

Methods

- 60 patients fulfilled inclusion criteria
  - **G1** (control): Arthroscopic ACLR
  - **G2** (case): Arthroscopic ACLR + LET
- Level I athletes with at least 3 training sessions and 1 match per week
- ACLR with hamstring graft (5 strand), OUT-IN technique
- Evaluated at 3, 6, 9 weeks, 4, 6 and 12 months. Average follow-up 34 months

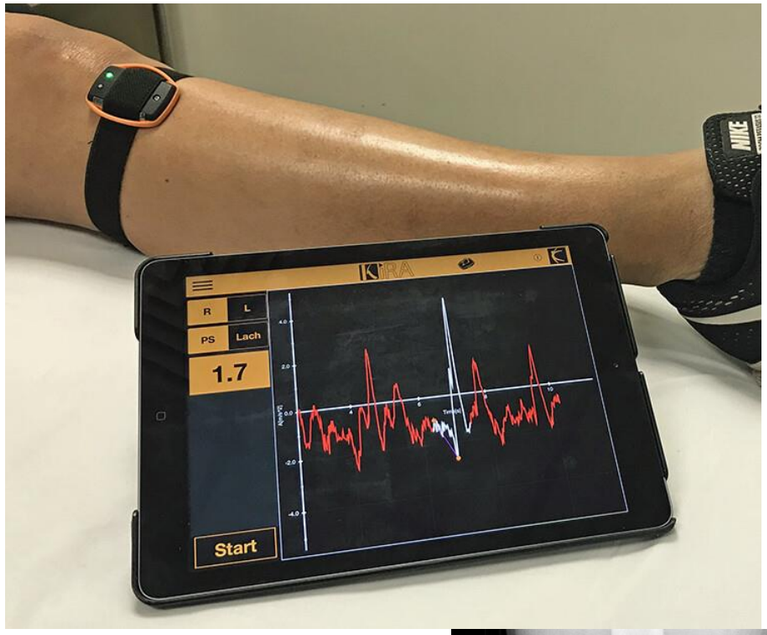
ISAKOS CONGRESS 2025 | MUNICH GERMANY June 8–11

	G1	G2
Patients	**30**	**30**
Male	**23**	**27**
Female	**7**	**3**
Age (average)	**33**	**22**
Range	**20-54**	**17-49**
Right side	**15**	**15**
Left side	**15**	**15**
Timing of surgery (month)	**10,8**	**4**

	G1	G2
Medial meniscus	11	10
Partial meniscectomy	6	4
Suture	5	6
Lateral Meniscus	7	15
Partial meniscectomy	3	9
Suture	4	6

Methods

- Single surgeon, ACLR with G-ST (5 strand), out-in technique with Endobutton CL + Xtendobutton fixation on femoral side (S&N) and metal interference screw and staple on tibial side
- LET according to Coker-Arnold technique
- Postoperative x-rays and at final follow-up
- IKDC, Tegner, Lysholm scores, KiRA test, radiographic assessments.
- Indipendent observer



Results

- The return to sport was 82.1 % at final follow-up in G1, 98.33 % of the total in G2
- The remaining 17.9 % of the patients (12 cases, 11 in G1 and 1 in G2) did not resume the same level of sporting activity for personal reasons

	G1	G2	χ^2
Lysholm-Tegner (100)	**96,47**	**97,2**	n.s.
Range	86-100	81-100	
IKDC score (100) subjective	**94,53**	**98,62**	n.s.
Range	77-100	82,8-100	
Tegner pre op.	7	9	
Δ Tegner	82,10%	98,33%	**p=0.003**
Activity level preop.			
1	0	0	
2	3	1	
3	23	12	
4	4	17	

	G1	G2
IKDC score objective		
A	**25**	**27**
B	5	3
C	0	0
D	0	0
Lachman test		
A	**28**	**29**
B	**2**	**1**
C	0	0
D	0	0
Pivot Shift test		
A	**21**	**26**
B	**9**	**4**
C	0	0
D	0	0

Results

- Adding LET increases return to the same sport level (**Δ** Tegner χ^2 test $p<0.05$)
- Adding LET reduces post-operative AP drawer at Lachman test , although it wasn't statistical significant ($p=0.6755$)
- Adding LET reduces residual rotatory instability (Pivot shift test, t-test $p<0.05$)

KiRA examination	G1	G2	
Lachman test			t-test
A	**26**	**28**	n.s.
B	**4**	**2**	n.s.
C	0	0	n.s.
D	0	0	n.s.
Δ Lachman	-0,39	-0,076	**n.s**
Std. err.	0,47	0,49	
Pivot Shift test			
A	**28**	**30**	n.s.
B	**2**	**0**	n.s.
C	0	0	n.s.
D	0	0	n.s.
Δ Pivot shift	0,47	-0,18	**p=0.03**
Std. err.	0,21	0,27	

Results

- Widening of femoral and tibial tunnels showed in no case an increase of more than 25% of the original,
- No statistically significant differences between the two groups were found

Tunnel Widening (mm)	G1	G2	
Tibial tunnel			T-test
7,5	7	0	
8	9	18	
9	12	12	
10	2	0	
Δ widening range	1,2	1,4	**p=0,5**
Femoral tunnel			
7,5	2	0	
8	12	13	
9	15	17	
10	1	0	
Δ widening range	0,51	0,54	**p=0,9**

Conclusion

In patients treated with ACLR + LET , we found statistically significant improvement in postoperative pivot shift control and return to high-level sports activity.

The use of the KiRA accelerometer allowed us to quantify the anterior and rotational translation value of the tibia after ACLR.

References

- Claes S, Vereecke E, Maes M, et al (2013) Anatomy of the anterolateral ligament of the knee. J Anat 223:321–328. https://doi.org/10.1111/joa.12087
- Sonnery-Cottet B, Thaunat M, Freychet B, et al (2015) Outcome of a combined anterior cruciate ligament and anterolateral ligament reconstruction technique with a minimum 2-year follow-up. Am J Sports Med 43:1598–1605. https://doi.org/10.1177/0363546515571571
- Napier RJ, Feller JA, Devitt BM, et al (2021) Is the KiRA Device Useful in Quantifying the Pivot Shift in Anterior Cruciate Ligament–Deficient Knees? Orthop J Sport Med 9:1–7. https://doi.org/10.1177/2325967120977869
- Runer A, Roberti di Sarsina T, Starke V, et al (2021) The evaluation of Rolimeter, KLT, KiRA and KT-1000 arthrometer in healthy individuals shows acceptable intra-rater but poor inter-rater reliability in the measurement of anterior tibial knee translation. Knee Surgery, Sport Traumatol Arthrosc 29:2717–2726. https://doi.org/10.1007/s00167-021-06540-9
- Firth AD, Bryant DM, Litchfield R, et al (2022) Predictors of Graft Failure in Young Active Patients Undergoing Hamstring Autograft Anterior Cruciate Ligament Reconstruction With or Without a Lateral Extra-articular Tenodesis: The Stability Experience. Am J Sports Med 50:384–395. https://doi.org/10.1177/03635465211061150

ISAKOS CONGRESS 2025 | MUNICH GERMANY June 8–11