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The Efficacy of Isolated ALL reconstruction in resolving residual rotational instability Following ACL reconstruction or partial injury

: A Case Series of 18 Patients

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FACULTY DISCLOSURE INFORMATION

My disclosure(s) is/a

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INTRODUCTION

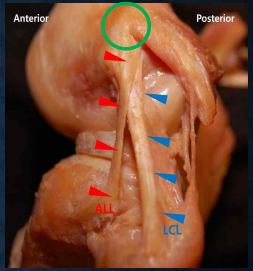
- **After ACL reconstruction**

  : some patients persistent rotatory instability, overall 5~20% failure rate.

  especially, vertically positioned ACL graft

  → High risk of residual instability

  Wright et al. JBJS, 2011
  Lee et al. Arthroscopy, 2007



(Courtesy by JH Wang)

- ***Anterolateral ligament (ALL)***

  - important stabilizer of tibial internal rotation
  - ALL disruption increased anterolateral rotational instability ∕ revealed by the pivot-shift

  Getgood et al. KSSTA, 2019
  Rasmussen et al, AJSM, 2016

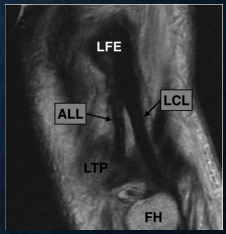
- **Remained a high rate of residual pivot shift after ACLR**

  - Low rate return to same level of sports activity before injury (≦50%)

  ⇒ **Focus on additional procedures for rotational instability,**

  particularly lateral ligament augmentation

  Sonnery-Cottet et al. AJSM, 2016
  Webster et al. AJSM, 2014



Helito CP et al. OJSM, 2015
RM Patel et al. AJSM. 2023

INTRODUCTION

- **The current indication of ALLR or LET**

  : High-grade Pivot-shift with ACL injury

  Revisional ACLR

  Generalized ligament laxity / Genu recurvatum

  Young patient returning to pivoting activities — Getgood et al. KSSTA, 2019

- ***How about isolated ALLR for persistent rotatory instability even though ACL recon?***

  → only one case report with successful control instability — Helito et al. OJSM, 2018

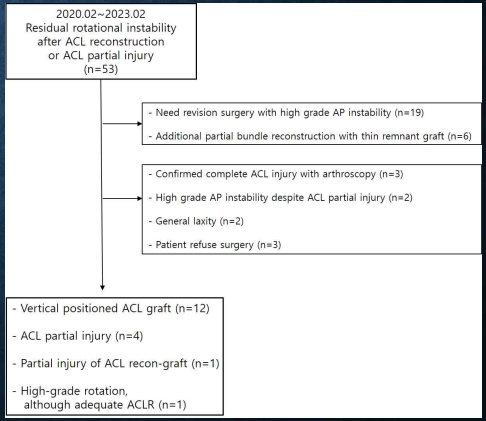
- **Need more case series to assess the efficacy of isolated ALLR**

PURPOSE

- To evaluate **the clinical outcome of isolated ALL reconstruction especially for controlling rotational instability.**
  (for after ACLR or partial ACL injury)

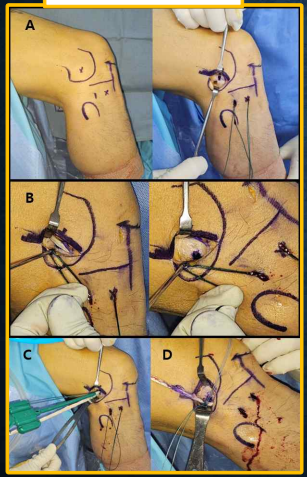
METHODS

- **Patient selection**
  - Cohort study of persistent rotational instability more than 2Y after ACLR/ ACL partial tear = 18 knees from 2020.02 ~ 2023.02
- **Physical exam**
  : Lachman, Pivot-shift
- **Clinical outcomes**
  : IKDC subjective, Lyshlom
  Surgery-related complications, lateral over-tightness
  1Y MRI imaging
- **Statistics**
  : Paired t-test, Mann-whitney U test

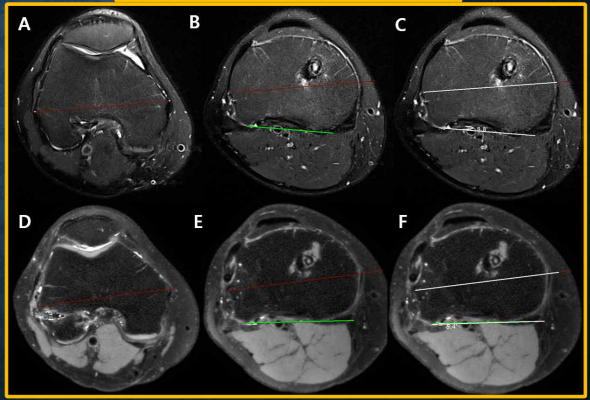


METHODS

Surgical technique



MRI evaluation: F-T rotation angle

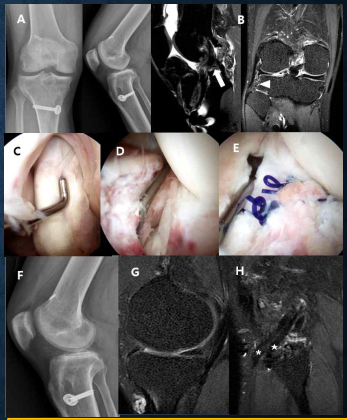


RESULTS

- **Among the 18 patients,**
  - 12 had a vertically positioned intact ACL graft,
    4 had a partial ACL injury,
    1 partially damaged the reconstructed ACL graft,
    1 persistent high grade with adequate ACLR
  - Mean time after ACL recon OP : 4.8Y

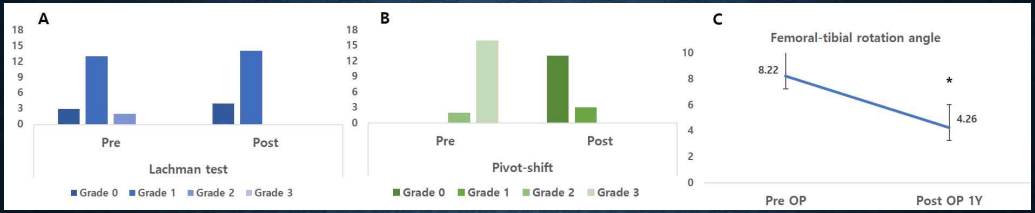
- All of the patients confirmed ALL injuries at the preoperative MRI exam.

- 11 patients performed **concomitant meniscus repair**
  - ☞ the most common was neglected medial meniscus ramp lesion repair (6 cases)
    : complete healed at 1Y MRI F/U
    medial meniscal posterior horn re-repair (3 cases)
    : 2 of 3 complete healed at MRI F/U



Representative case. A 43 years old male who complained persistent rotational instability of right knee after vertical ACL reconstruction

RESULTS



- **3 Pts. reported still residual grade 1 pivot, however, all of the patient's subjective instability improved.**
- The IKDC from an average of 62.87 ± 9.1 to 90.62 ± 4.6 at 2Y
- The Lysholm score from an average of 66.1 ± 8.14 to 93.2 ± 4.43 at 2Y
- At 1-year follow-up MRI, all patients showed the maintenance of ALL grafts
- The F-T rotation angle decreased from 8.22° to 4.26°
- **No major complication** including re-rupture of ACL graft, arthrofibrosis, hematoma over ALL reconstruction site, and over-constrained lateral compartment.

DISCUSSION

- **Vertical positioned ACL graft, using traditional T-T technique**

  → High risk of persistent rotatory instability — Lee et al. Arthroscopy, 2007

- ACL partial injury + meniscal injury + ALL injury

  → Still risk of rotatory instability even though well-established rehab program — Koo et al. J Biomech Eng, 2023; Gunaydin et al. Acta Orthop Belg, 2021

- 2 cases with Lachman grade II with vertical ACL graft + MMPH tear

  : also improved **AP instability to grade 0 / I** after ALL + MMPH repair

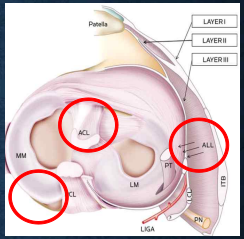
- 7/18 Pt.s of this study showed non-repaired meniscus injury Hx. (m/c: ramp lesion)

  → We should focus on co-injury of the meniscus, ALL when addressing ACL — Ozbeck et al. AJSM, 2023

DISCUSSION

- The new concept of the "**Rotatory unhappy triad**"
  : combined injury of **ACL, ALL, MMPH**

- It take 3M to return to pre-op level after isolated ALLR,
  without definite complication



ESSKA ALC consensus update, 2024

- If we have a **therapeutic arsenal** to control the rotatory instability without ACL revision
  → it would be a valuable option to restore knee joint function without long-term rehab.

<Limitation>

- No comparative study with non-operative conservative Tx. Group
- Single center by single surgeon
- Physical examination could affect the examiner's subjective

CONCLUSION

- **Isolated ALLR for persistent rotational instability after ACLR or partial ACL injury is effective for controlling rotational instability**

- **If there was a combined meniscus injury, concomitant meniscus repair showed good results of meniscal repair success rate, even though long-injury time**

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