The usefulness of superficial medial collateral ligament transection in medial meniscal procedures during medial open-wedge high tibial osteotomy

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Faculty Disclosure Information

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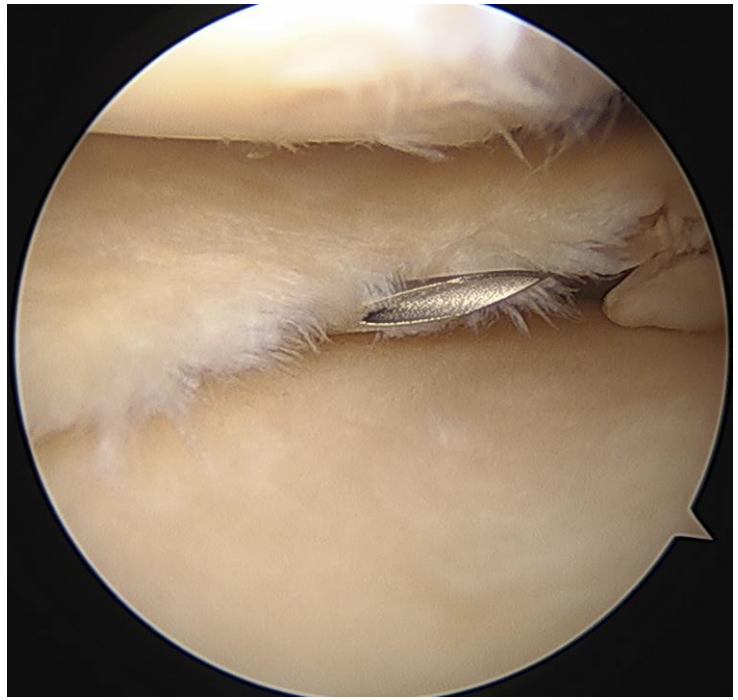
Medial meniscus (MM) procedure on open-wedge high tibial osteotomy (OWHTO)

Maximum contact pressure reduced

by MM posterior root repair combined with OWHTO

Park HJ, et al. Arthroscopy 2023



Joint space width (JSW) is narrowing on osteoarthritic knee

→ **Difficulty in MM procedure**

(Risk of iatrogenic cartilage damage)

→ **Pie crusting is effective**

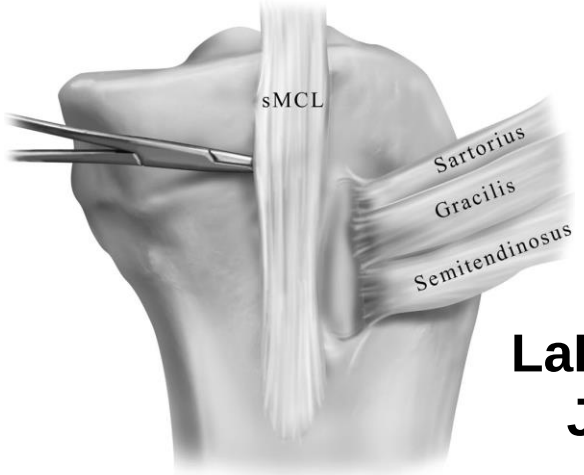
Park YS, et al. KSSTA 2011

Clarke HD, et al. J Knee Surg. 2004

Medial collateral ligament (MCL)

MCL is primary restraint on valgus stress

Griffith CJ, et al. AJSM 2009



LaPrade RF, et al. JBJS-Am. 2007

Superficial MCL (sMCL) transection increases the amount of joint space opening on valgus stress

LaPrade RF, et al. Am J Sports Med. 2010

Clinical question:

Is enlargement of minimal JSW (mJSW) by sMCL transection during OWHTO useful for MM procedure?

Purpose: To investigate changes

in mJSW due to sMCL transection during OWHTO

Subjects: OWHTO of 43 patients

	Men	Women	P-value
Patients number	11	33	
Age, years	62.3±6.5	58.9±8.3	0.243
Body mass index, kg/m^2	27.3±2.9	26.3±3.9	0.289
Knee extension, degree	-4.6±3.5	-3.0±3.4	0.109
Knee flexion, degree	139.1±10.4	137.3±11.4	0.620

Mann-Whitney U test

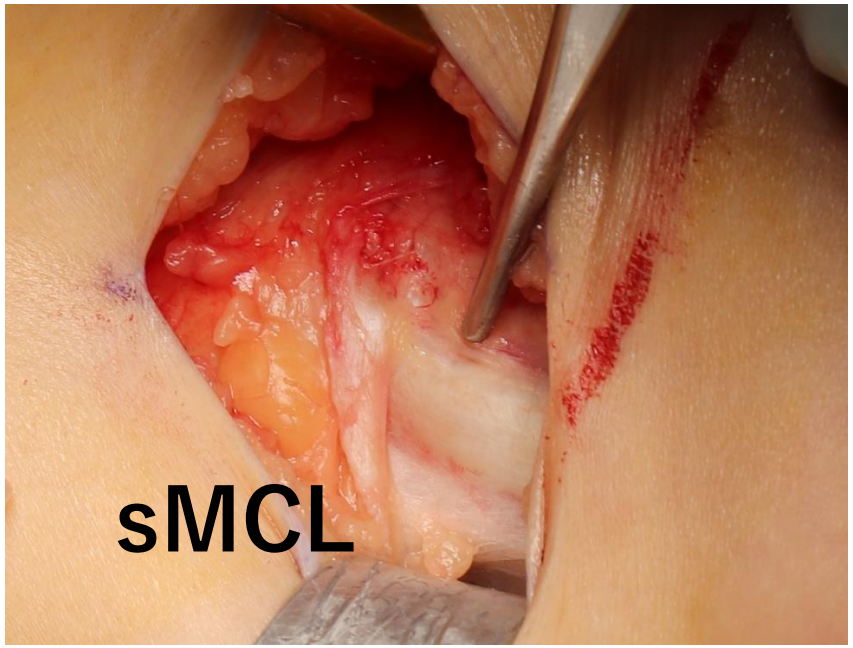
Surgical procedure and mJSW measurement

1. Arthroscopy
2. Medial incision（Maintain attachment of pes anserinus）
3. Identify sMCL
4. sMCL transection
5. MM procedure
6. Osteotomy
7. Plate fixation
8. Wound closure

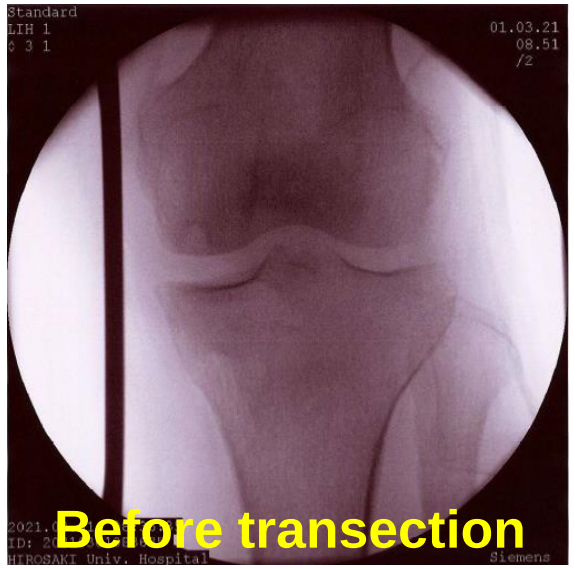
mJSW measure

mJSW measure

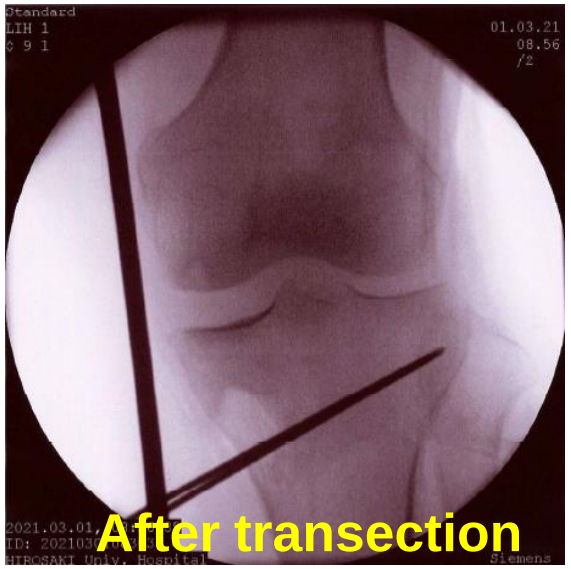
mJSW measure



Measurement of mJSW



Before transection



After transection

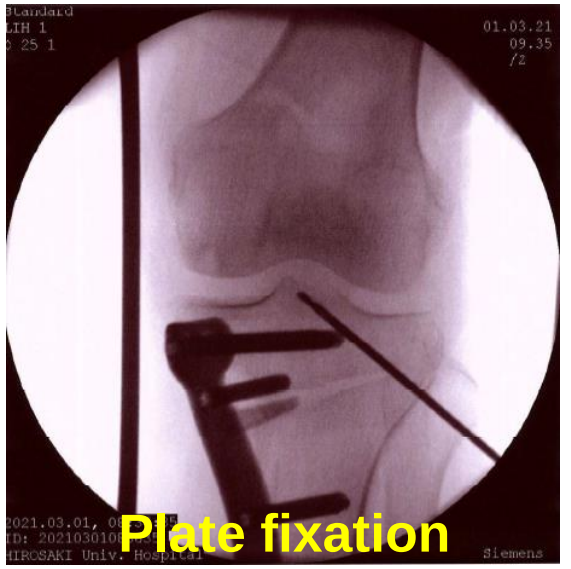
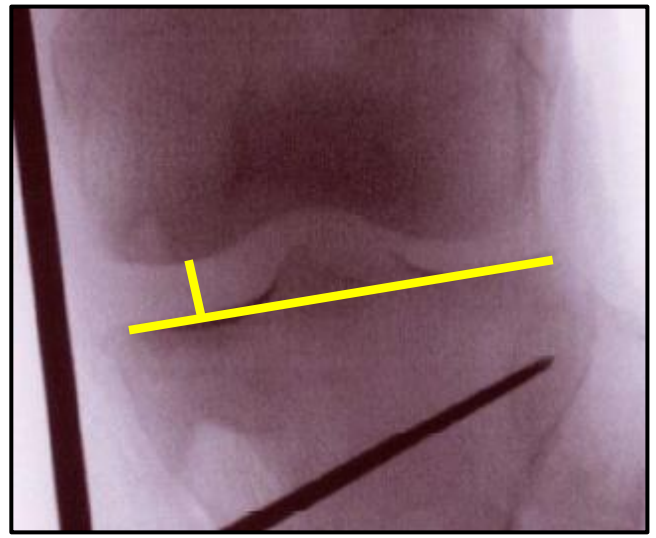
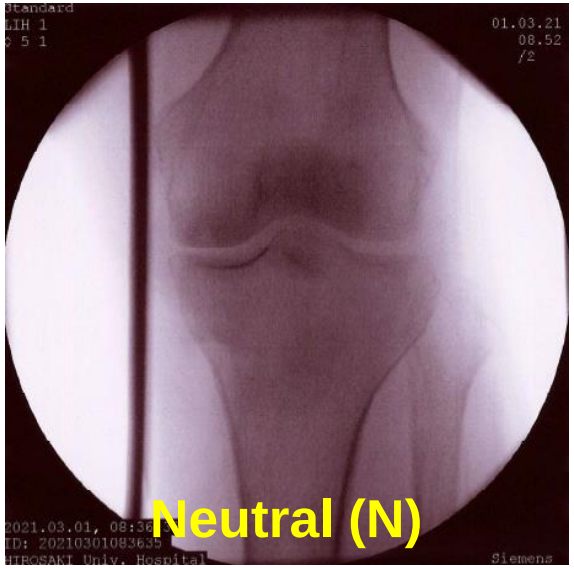
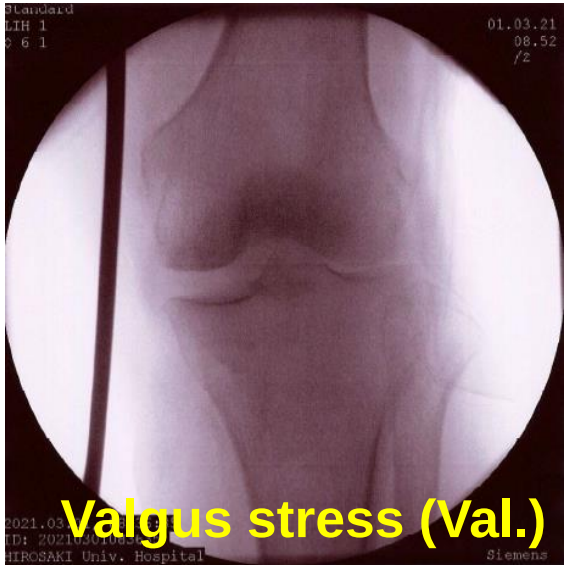


Plate fixation





Neutral (N)



Valgus stress (Val.)

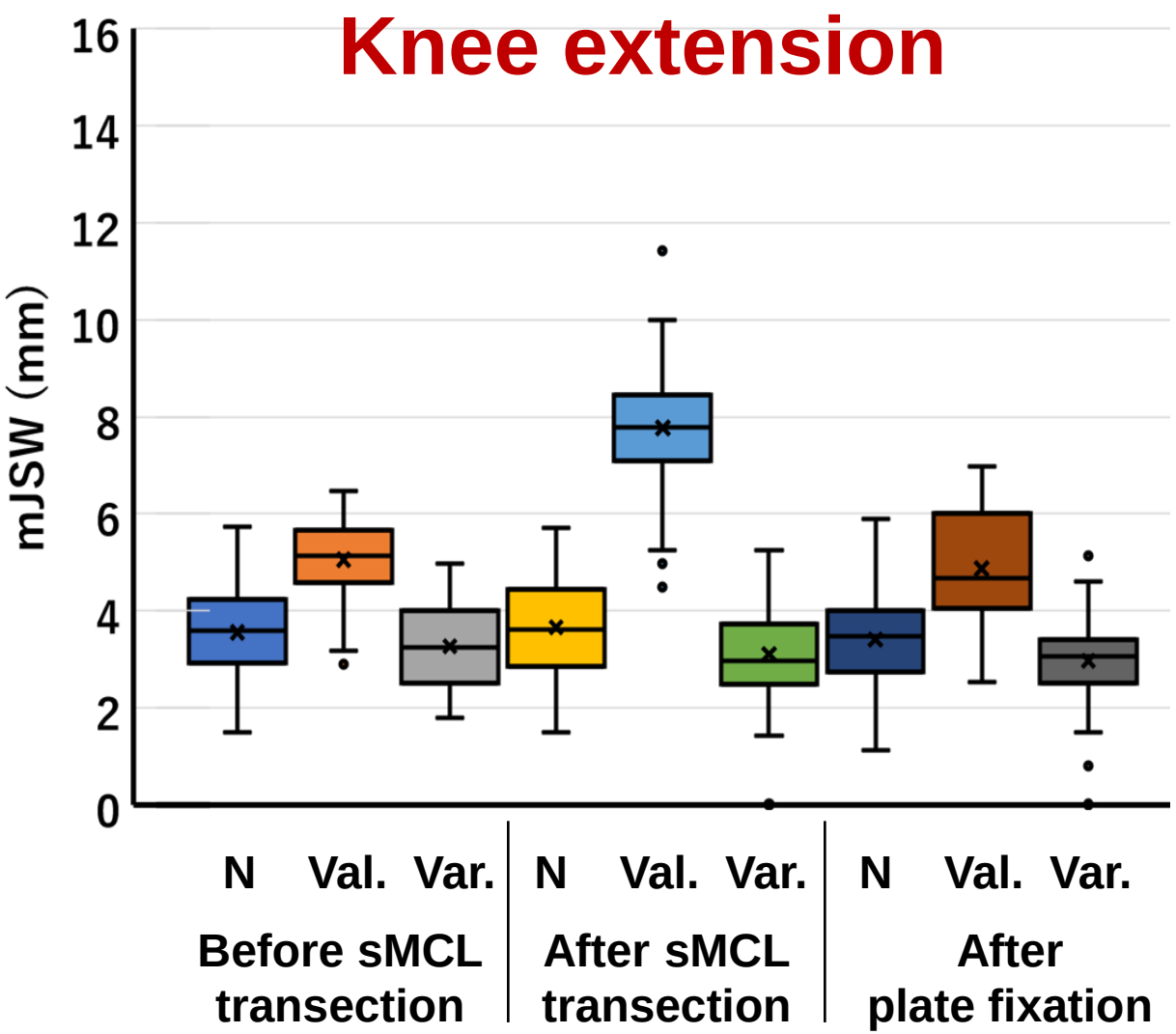
Varus stress (Var.)

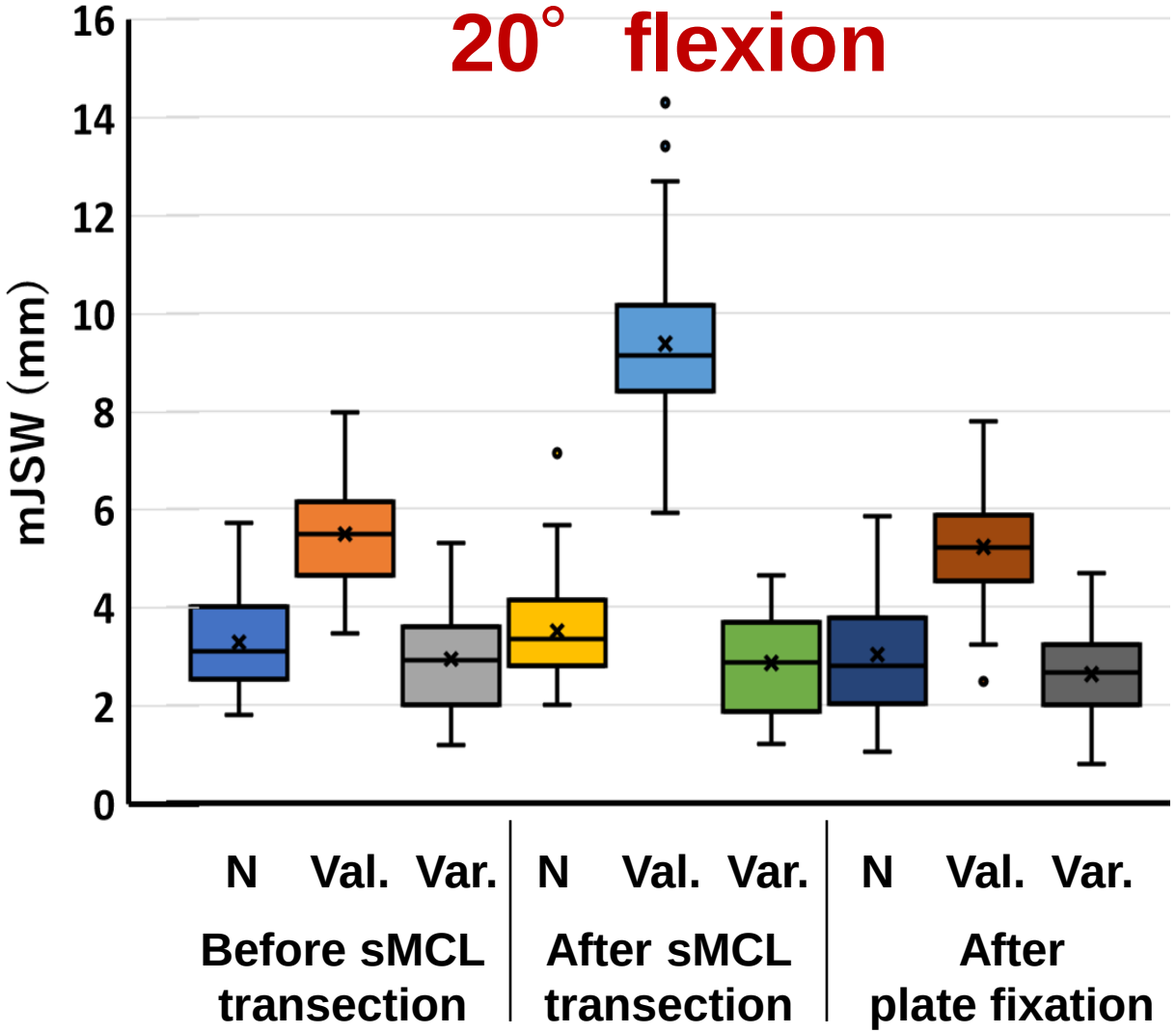
mJSW measure on

- **knee extension**
- **20° flexion**

Normalize by 4mm rod using Image J

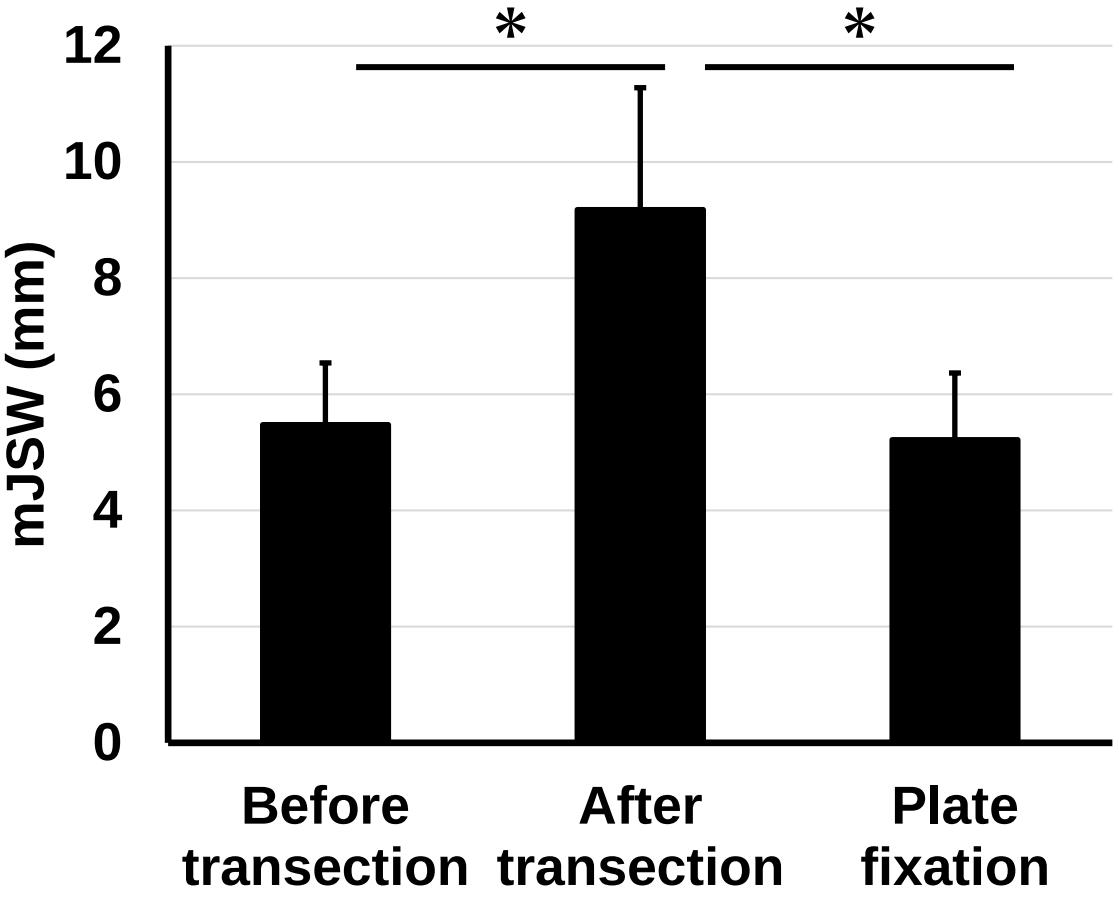
Changes of mJSW

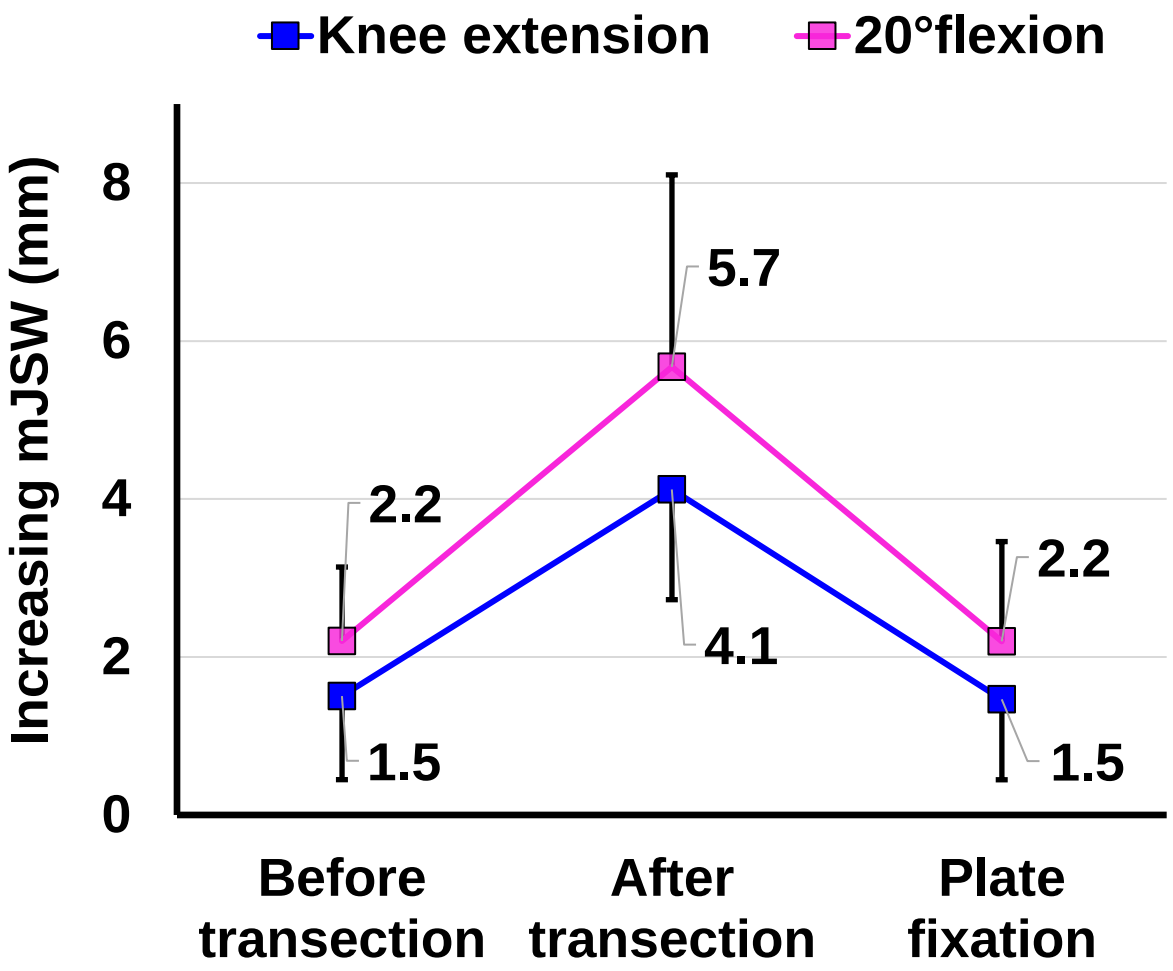




Change of mJSW on val. stress

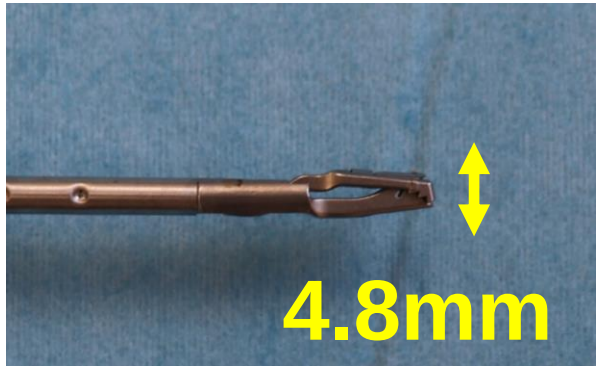
20° flexion

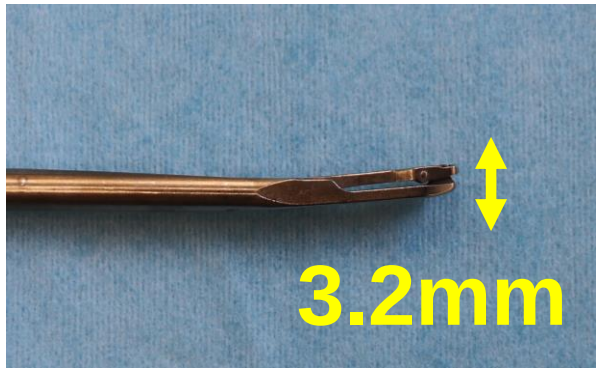


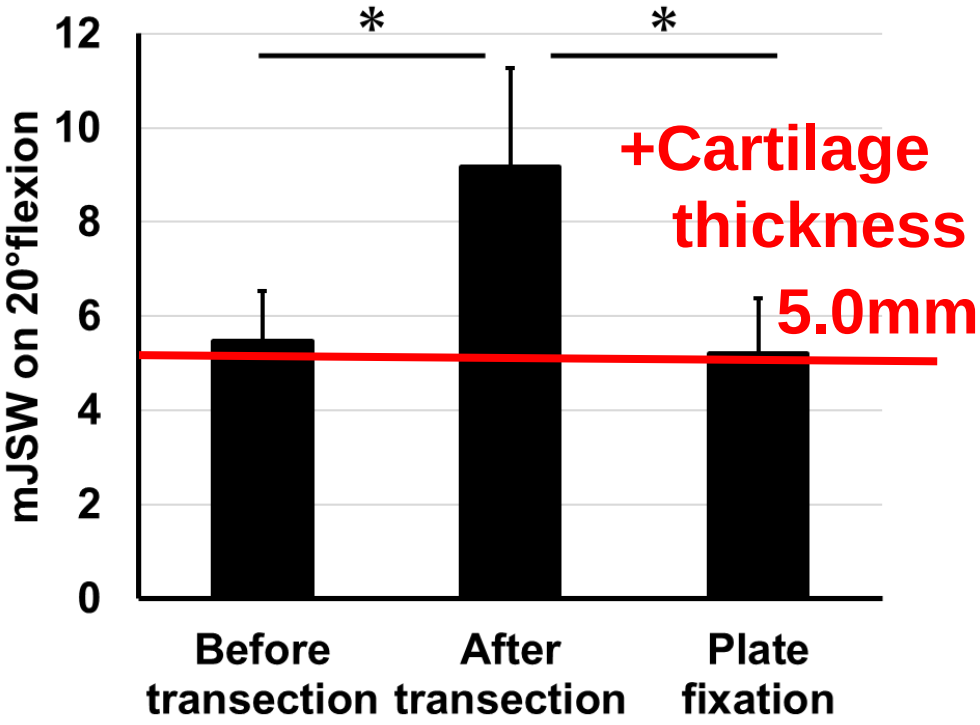


Repeated ANOVA, Tukey test, ＊: $p<0.05$

Suture passer thickness and JSW







JSW increase on val. stress and MCL transection: 9.2mm

→ MCL transection is useful for suture passer

Instability after sMCL transection

This study: Maintain pes anserinus + plate fixation

→ Less increase of mJSW on val. stress at time zero

Complete release of distal sMCL

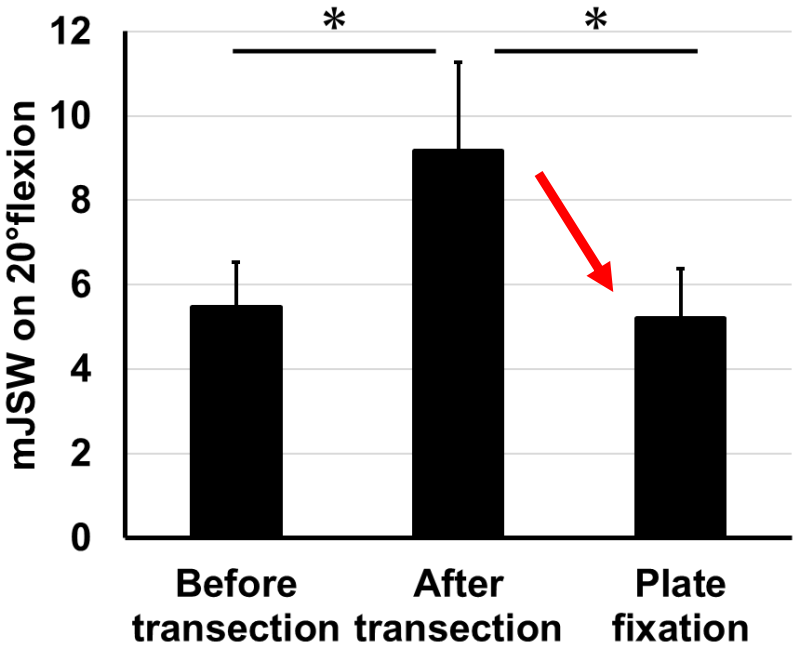
→ No val. laxity post-op 2y

Sato D, et al. BMC Musculoskelet Disord. 2019

sMCL transection w/o repair

→ No val. laxity post-op 2y

Kim JH, et al. AJSM. 2022



Conclusion

Transection of the sMCL in OWHTO effectively enlarged the mJSW to 9.2 mm, which was 3.8 mm greater than that before transection, facilitating medial meniscal procedures.

After plate fixation, the mJSW returned to pre-transection levels.

Reference

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