The Relationship Between Lateral Laxity And Patient Satisfaction In Bicruciate Stabilized Total Knee Arthroplasty

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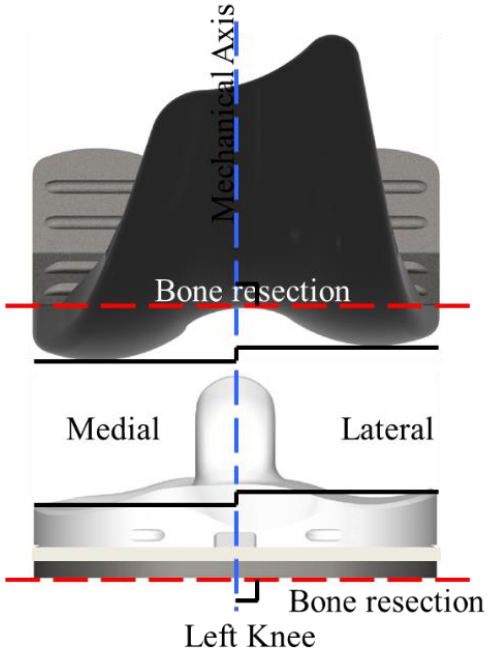
Faculty Disclosure Information

* Nothing to disclosure

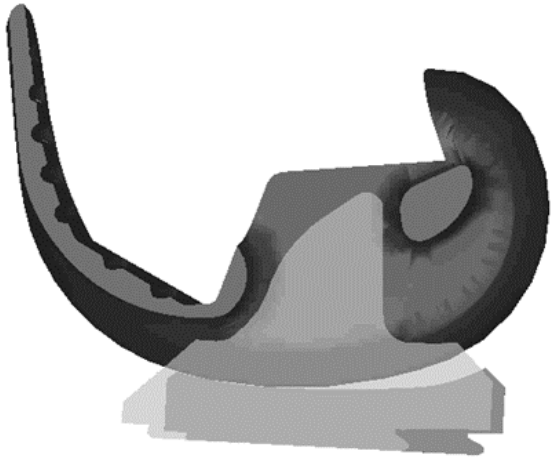
Bicruciate stabilized（BCS）TKA

JOURNEY2 BCS Smith&Nephew

Physiological Joint Line

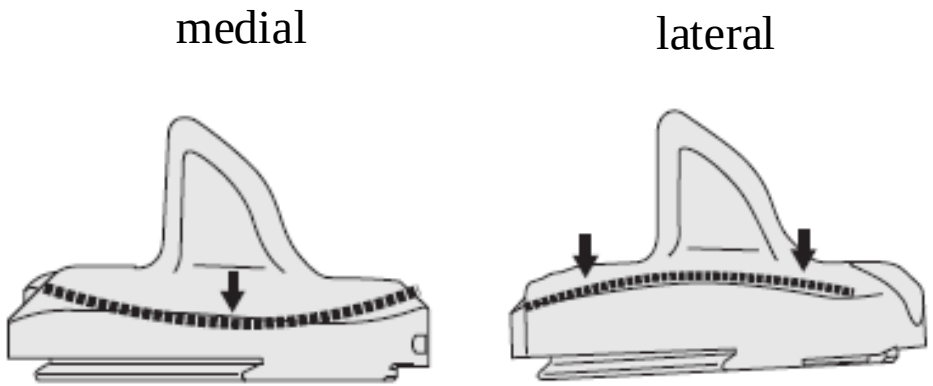


Anterior cam mechanism



Articular Surface Geometry:

- Medial: Convex
- Lateral: Concave



Promotes medial pivot motion

Designed to replicate normal knee kinematics

Soft Tissue Balance and Postoperative Outcomes in BCS TKA

Medial joint laxity at 30° flexion predicts poor patient satisfaction.

Inui knee 2020

Lateral joint laxity at 90° flexion correlates positively with satisfaction.
Medial joint laxity at 90° flexion correlates negatively with KOOS pain score.

Seki Indian J Orthop. 2024

Table 4 Multiple regression analysis

Expl variable	β	SE (β)	stdβ	t-val	*p*-val
Intercept	87.77	3.138			
ROM extension	0.888	0.518	0.169	1.734	0.090
APSP 6 h	– 0.004	0.058	– 0.085	– 0.763	0.447
APSP 18 h	– 0.092	0.052	– 0.196	– 1.777	0.079
Lateral joint laxity 90 degree	1.538	0.555	0.273	2.771	0.007*

Medial tissue preservation and appropriate lateral laxity may recreate near-physiological kinematics and improve PROs (patient-reported outcomes).

What is the optimal degree of lateral laxity in knee flexion to enhance PROs following total knee arthroplasty?

Purpose of This Study

To investigate the appropriate degree of lateral joint laxity in flexion for BCS TKA

Participants

This study was a retrospective review of data obtained from patients who underwent BCS TKA from January 2018 to January 2024 at our institution. A total of 291knees were included in the present study. The exclusion criteria were as follows: infection, rheumatoid arthritis, valgus knee and incomplete data (116 patients). A total of 175 knees (patients) were analyzed. Of the patients included in this study, their

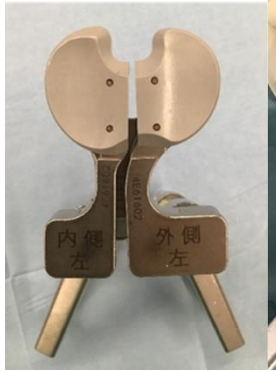
mean age was 75.4(7.2) years and were 30 men and 145 were women.

methods

At one year postoperatively, patient satisfaction was assessed using both a visual analog scale (VAS; 0 mm = very dissatisfied, 100 mm = very satisfied) and a five-point Likert scale (very satisfied, satisfied, neutral, dissatisfied, very dissatisfied).
The relationship between satisfaction (VAS score) and intraoperative lateral laxity in flexion was investigated. Lateral laxity in flexion was compared between two groups: the satisfied group (n = 145; very satisfied and satisfied) and the dissatisfied group (n = 30; neutral, dissatisfied, and very dissatisfied).

Intraoperative component gap measurement

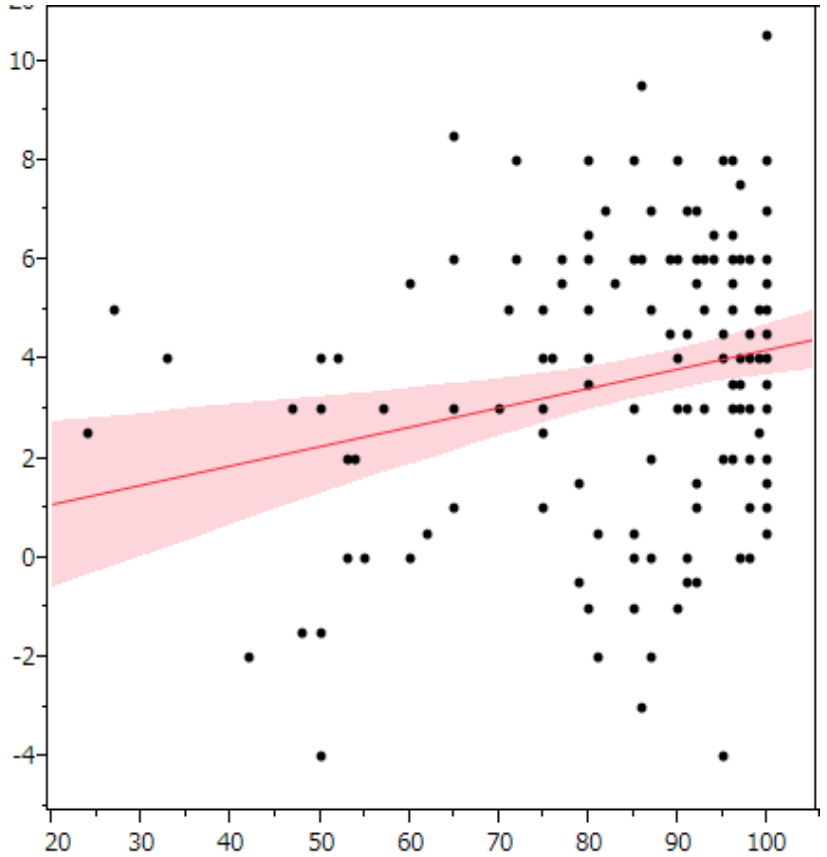
The component gap of medial and lateral compartment from 0° to 120° flexion each 30° were assessed with a distraction force of 60 N for medial and lateral compartment. As in previous studies, we defined joint “laxity” as the “component gap minus the thickness of the selected polyethylene insert”



results

Correlation Between LJL at 90° Flexion and Patient Satisfaction

LJL at 90 degree (mm)



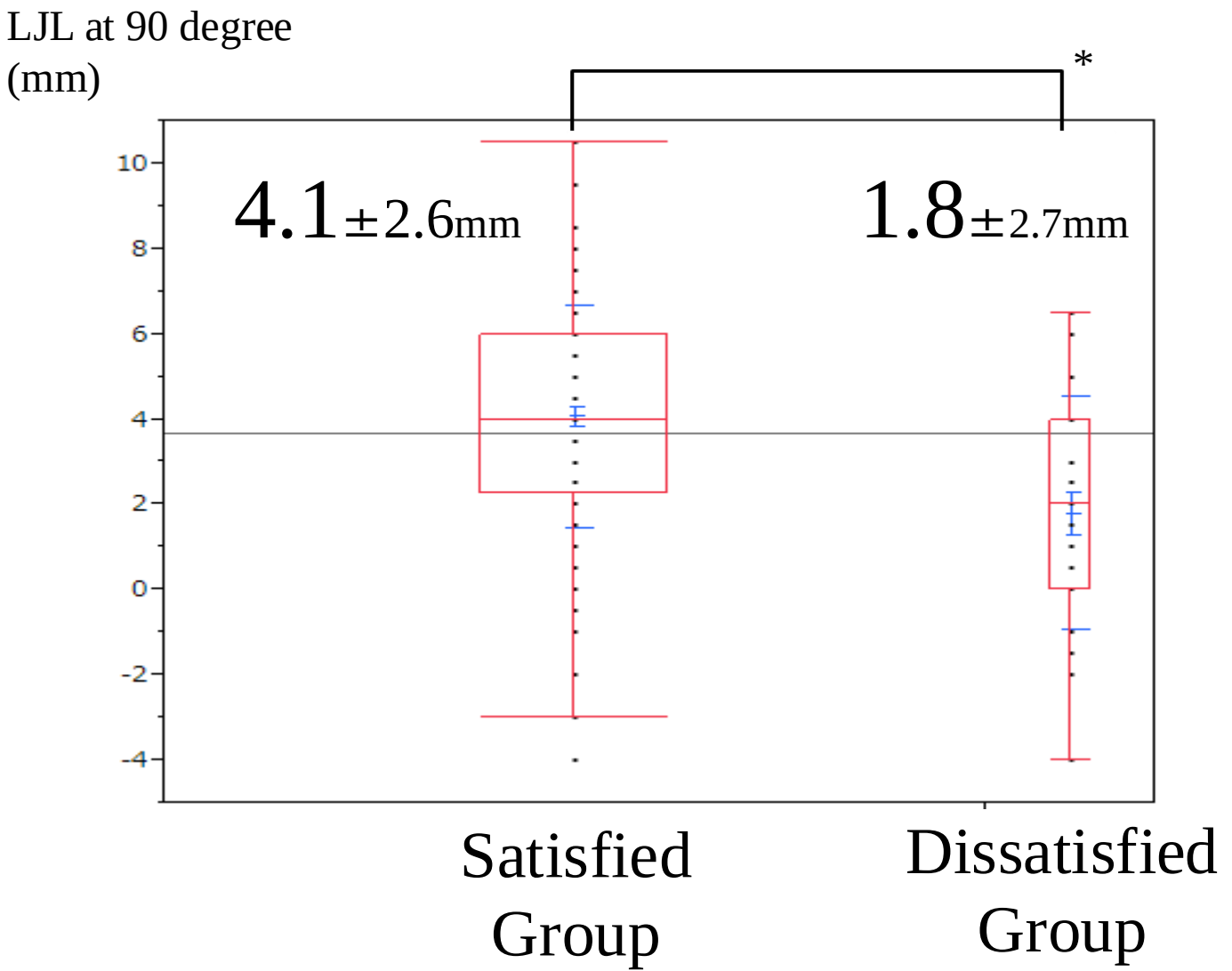
***r*=0.235 *p*<0.01**

Patients satisfaction VAS(mm)

Spearman correlation coefficients

Comparison Between Satisfied and Dissatisfied Groups in LJL at 90° flexion

Satisfied Group (n=145) vs Dissatisfied Group (n=30)

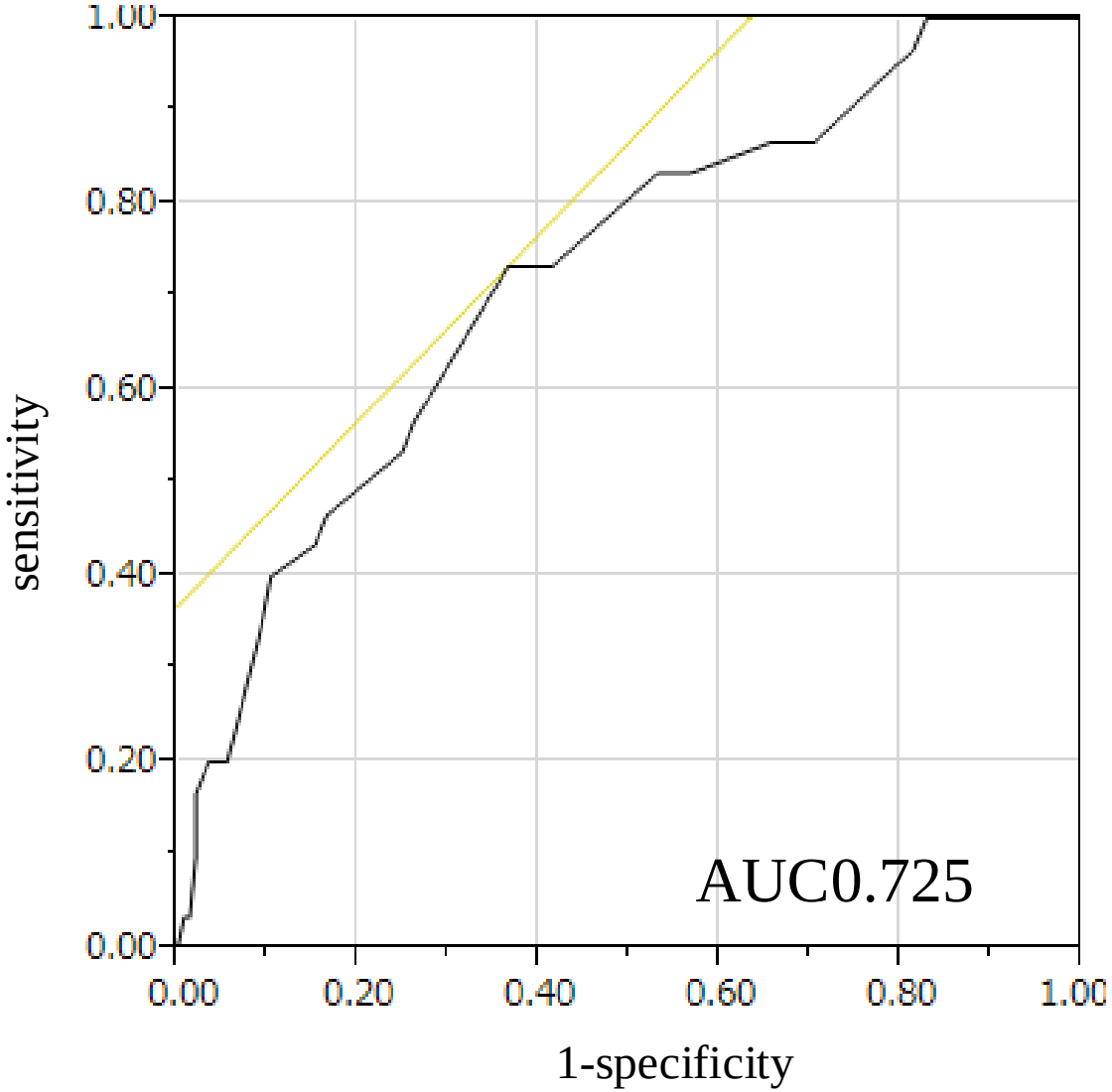


*p<0.001

Wilcoxon rank sum test

Receiver operating characteristic analysis of LJL for patient satisfaction

Cut-off value	3.0mm
sensitivity	0.733
specificity	0.635



Conclusion

This study demonstrates that maintaining adequate lateral joint laxity in flexion is crucial for optimizing patient satisfaction following BCS TKA. Our findings indicate that lateral joint laxity exceeding 3 mm is associated with significantly higher postoperative satisfaction scores, highlighting the importance of achieving appropriate intraoperative balance.

These insights provide valuable guidance for surgeons performing BCS TKA, emphasizing the need to optimize soft tissue balance to enhance patient-reported outcomes.