

Coronal Soft Tissue Balance Alone Does Not Portend Improved Patient Satisfaction After Robotic-Assisted Total Knee Arthroplasty

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INTRODUCTION:

Total knee arthroplasty (TKA) is a well proven intervention for patients with advanced osteoarthritis (OA) of the knee, however 15-20% of patients still report dissatisfaction with knee function post-surgery. A potential etiology may be ligament imbalance achieved during the TKA. Robotic TKA (rTKA) has the ability to plan and execute specific ligament tensions during TKA but the target of such tensions has never been determined. The purpose of this study was to examine which measured intra-operative medial and lateral collateral ligament tensions during robotic TKA correlated with the highest patient reported outcome measures at minimum 1 year post-TKA.

METHODS:

We examined native and post-reconstructive ligament tensions in 324 patients at 0°, 45°, and 90° of flexion during rTKA. We then stratified patients by greatest quartiles of satisfaction based on which patients showed the greatest improvement in function at one year post-op in their patient reported outcome measures (PROMs). We then retrospectively correlated each cohort with their respective intra-operative ligament tension profiles. In addition, we evaluated patient range of motion and rates of re-operation.

RESULTS:

Our results showed no statistically significant variations in PROMs and satisfaction between the different study groups, with medial and lateral ligament tension showing no statistically significant impact on patient satisfaction (all p-values > 0.05) between the least and most satisfied groups.

DISCUSSION AND CONCLUSION:

These findings suggest that robotic assistance may optimize surgical precision, however soft tissue balance alone may not account for patient satisfaction in TKA outcomes. Further research is needed to identify additional factors influencing long-term patient satisfaction post-TKA.