

Robot-Assisted Navigation vs Computer-Assisted Navigation in Primary Total Knee Arthroplasty: Efficiency and Accuracy

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Abstract

Purpose of Study: Since the introduction of robot-assisted navigation in primary total knee arthroplasty (TKA), there has been little research conducted examining the efficiency and accuracy of the system compared to computer-assisted navigation systems. This study compared the efficiency and accuracy of Praxim robot-assisted navigation (RAN) and Stryker computer-assisted navigation (CAN) in primary TKA. **Methods Used:** This was a retrospective study consisting of 52 patients who underwent primary TKA utilizing robot-assisted navigation and 29 patients utilizing computer-assisted navigation. The primary outcome measure was navigation time. Secondary outcome measures included intraoperative final mechanical axis alignment, intraoperative robot-assisted bone cut accuracy, tourniquet time, and hospitalization length. **Summary of Results:** RAN navigation times were, on average, 9.0 minutes shorter compared to CAN (95% CI:[4.0, 14.1], p-value: 0.0006). The average absolute intraoperative malalignment was 0.5 degrees less in the RAN procedures compared to the CAN procedures (95% CI:[0.08, 0.95], p-value: 0.020). Tourniquet time was not significantly different between the two systems. Patients in the RAN group tended to be discharged 0.6 days earlier compared to patients in the CAN group (95% CI:[0.1, 1.1], p-value: 0.0122). **Conclusions:** Among patients undergoing TKA, there was a decreased navigation time, decreased final malalignment, and decreased hospitalization length associated with the use of robot-assisted navigation when compared to computer-assisted navigation.

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