

Robotic-arm Assisted Revision Of Uni-compartmental Knee Arthroplasty To Total Knee Arthroplasty.

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Abstract

Background

Robotic-arm assisted surgery offers an avenue for assessing soft tissue tension and guiding component positioning during knee arthroplasty, but the feasibility and early outcomes with using this technology for revision surgery remain unknown. The objective of this study was to compare the outcomes of robotic-arm assisted revision of unicompartmental knee arthroplasty (UKA) to total knee arthroplasty (TKA) versus primary robotic-arm assisted TKA at short-term follow-up.

Methods

This prospective study included 16 patients undergoing robotic-arm assisted revision of UKA to TKA versus 35 matched patients receiving robotic-arm assisted primary TKA. In all study patients, the following data was recorded: operative time, polyethylene liner size, change in haemoglobin concentration (g/dl), length of inpatient stay, postoperative complications, and hip-knee-ankle (HKA) alignment. At most recent follow-up, range of motion, the Forgotten Joint Score (FJS), and Oxford Knee Score (OKS) were collected. Mean follow up time was 21 months (range, 6 to 36 months).

Results

There were no differences between the two treatment groups with respect to mean change in haemoglobin concentration ($p=0.477$), mean length of stay (LOS, $p=0.172$), mean polyethylene thickness ($p=0.065$), and postoperative complication rates ($p=0.295$). At most recent follow-up, the primary robotic-arm assisted TKA group had a statistically significant improved OKS compared with the revision UKA to TKA group (44.6 vs 42.3, $p=0.004$), but there was no difference in the overall range of motion ($p=0.056$). or FJS between the two treatment groups (86.1 vs 84.1, $p=0.439$).

Conclusion

Robotic-arm assisted revision of UKA to TKA was associated with comparable intraoperative blood loss, early postoperative rehabilitation, limb alignment, functional outcomes, and complications to primary robotic TKA at short- term follow-up. Robotic-arm assisted surgery offers a safe and reproducible technique for revising failed UKA to TKA.

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