Robotic-Assisted Total Knee Arthroplasty May Be Associated with Lower, All-Cause Revision Rates When Compared to Manual Total Knee Arthroplasty

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INTRODUCTION:
Robotic-assisted total knee arthroplasty (RA-TKA) has been shown to improve the accuracy of component positioning and soft tissue balancing when compared to manual TKA (M-TKA). However, a paucity of data exists surrounding component survivorship and revision rates. The purpose of this institutional registry database study was to compare implant survivorship and revision rates as well as patient-reported outcomes (PROMs) in patients who underwent RA-TKA versus M-TKA.
METHODS:
A total of 7,079 patients who underwent primary TKA between 2017 and 2022 were included in this retrospective study. 5,575 (78.8%) patients underwent M-TKA and 1,504 (21.2%) underwent RA-TKA. KOOS-JR and SF-12 were collected preoperatively and at latest follow-up. Survivorship was defined as the absence of any revision surgery.
RESULTS:
At up to 7-year follow-up, the all-cause revision rate was significantly lower in the RA-TKA cohort (0.27%) and when compared to the M-TKA cohort (0.81%). Survivorship free from all-cause revision was significantly better in the RA-TKA cohort at 99.7% versus 99.2% in the manual TKA cohort. At 5-years follow-up, 80.5% of patients in the M-TKA cohort and 70.2% of patients in the RA-TKA cohort achieved the KOOS-JR MCID.
DISCUSSION AND CONCLUSION:
This is the first study identifying a lower all-cause revision rate and improved survivorship using robotic assisted versus manual techniques. Given the lack of conclusive evidence, future studies with longer-term follow-up are necessary to determine whether the use of RA-TKA results in superior clinical outcomes and improved patient satisfaction.