## Outcomes of Imageless Robotic Assisted Total Knee Arthroplasty at a Safety Net Hospital

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INTRODUCTION: Despite the rapid adoption of robotics in total knee arthroplasty (TKA) as demonstrated by the American Joint Replacement Registry, access to this technology remains limited in health safety-net (HSN) hospitals. Patients undergoing TKA in HSN hospitals often have severe joint deformity, therefore may benefit from improved surgical accuracy associated with the use of robotics (R-TKA). We aim to compare early outcomes of R-TKA and manual TKA using the same implant in TKA in a HSN hospital.

METHODS: We conducted a retrospective cohort study of 188 consecutive patients undergoing primary TKA between 2022 and 2024 at a single, tertiary-care, urban academic hospital by two surgeons (94 R-TKA, 94 non-robotic) using standardized anesthesia, anticoagulation and analgesia protocols. Patients with prior ipsilateral TKA, revision and partial knee replacement were excluded. Data collected included demographics, comorbidities, complications, KOOS-Jr score, manipulation under anesthesia (MUA), reoperation, and revision rates. Comparative analyses used Welch's t-tests and chi-squared or Fisher's exact tests. A p-value $<0.05$ was considered significant.

RESULTS: Age was ($66.3 \pm 7.8$ vs. $66.1 \pm 7.3$ years, $p=0.786$) and BMI ($31.8 \pm 6.1$ vs. $31.2 \pm 6.5$, $p=0.160$) in the robotic versus manual group, respectively. Incidence of MUA was lower after R-TKA (2.3% vs. 11.8%, $p=0.010$). A greater portion of patients with R-TKA achieved KOOS-Jr MCID ($20.4 \pm 27.6$ vs. $12.2 \pm 13.5$, $p=0.292$), however this was not statistically significant. KOOS-Jr scores at 1 year were similar ($78.9 \pm 16.8$ vs. $77.2 \pm 12.4$, $p=0.761$). Complication and revision rates were the same in both groups.

DISCUSSION AND CONCLUSION: In an HSN setting, R-TKA was associated with reduced incidence of arthrofibrosis requiring MUA. There were no increased complications associated with use of R-TKA. Our findings suggest that a robotic program can be safely implemented in a HSN hospital with improved post-operative range of motion.