

Results of Subvastus Approach in Patients Undergoing Primary Robotic-Assisted TKA: a review of 1,419 cases

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INTRODUCTION:

The medial parapatellar approach (PP) is the most utilized approach for primary TKA. The use of subvastus approach (SV) has increased over the past decade due to the potential for earlier recovery through preservation of quadriceps function. The use of robotic-assisted total knee surgery (RA-TKA) to achieve the target alignment and balanced gaps has also garnered greater interest as demonstrated in the AJRR registry. The purpose of this study was to determine the clinical results, complications, and PROMs in primary RA-TKAs using a muscle sparing subvastus approach.

METHODS:

This retrospective study from a prospectively collected total joint registry identified 2,055 consecutive primary RA-TKAs with minimum 1-year follow-up. Patients who did not undergo a subvastus approach included: prior knee surgery, BMI >35, multiple comorbidities, joint contracture, diabetes, and smoking. There were 1419 (70%) patients who were selected for RA-TKA using a subvastus approach and 636 using a parapatellar approach. After exclusions for lost-to-follow-up, 1,215 subvastus and 506 parapatellar TKAs were available for review. Outcome measures included range of motion (ROM), PROMIS-10 global physical health (PPH) and mental health (PMH), Forgotten Joint Score (FJS), KOOS JR, satisfaction (Likert scale), revisions, and complications. The subvastus group had lower BMI, ASA score, and Charlson Comorbidity Index when compared to the parapatellar group.

RESULTS:

The SV group had postoperative KOOS JR of 85.0±15.6, PPH of 51.1±8.1, PMH of 53.4±8.4, and FJS of 64.3±34.1. The parapatellar group had post-operative KOOS JR of 80±16.4, PPH of 46.5±8.8, PMH of 49.6±9.8, and FJS of 55.9±34.3. The subvastus group had a revision rate of 2.96% with no revisions due to aseptic loosening. The PP group had a revision incidence of 5.62%. There was 1 revision in the parapatellar group for aseptic loosening (0.2%). There were 9 revisions for PJI in the SV group (0.7%) and 9 in the parapatellar group (1.7%). The PP group had 2.13% revisions for instability compared to 0.99% in the SV group. Patient satisfaction in the SV group was 92%.

DISCUSSION AND CONCLUSION:

In a selected group of patients with minimal co-morbid conditions, a subvastus approach performed in conjunction with robotic-assisted TKA demonstrated feasibility, safety and high patient satisfaction, with no complications related to the muscle sparing approach with a 2.9% incidence of revision primarily due to instability (1.0%) and PJI (0.7%) and no cases of aseptic loosening. The parapatellar group, due to higher co-morbid conditions, demonstrated greater incidence of revision surgery and PJI.

Patients excluded from subvastus approach	Percentage of Patients (%)
Previous Surgery	27.33
BMI >35	25.67
Multiple Comorbidities	16.33
Severe Contracture	13.00
Diabetes	6.67
Smoking Status	6.33
Dual Anticoagulation Therapy	1.67
Soft Tissue Compromise	0.33
Uncategorized	2.67

Table 1. Patients excluded from subvastus approach in primary robotic-assisted TKA