

The Impact of Operating Room Efficiency Optimization in Primary Hip and Knee Arthroplasty

Nicholas Olson, Tobenna Nwankwo, Jacqueline R Ray, Christopher M Jaicks, Henry Ho, Robert A Sershon

INTRODUCTION:

Maximizing operating room (OR) efficiency has recently gained traction amongst surgeons with the growing demand for total joint arthroplasties (TJA). The shift towards orthopaedic-focused ambulatory surgical centers (ASCs) has made optimizing OR time more feasible. Strategies have been shown to enhance efficiency without compromising patient outcomes. This study evaluates the impact of instituting an OR efficiency optimization program on 90-day patient outcomes in a high-volume ASC setting.

METHODS:

Prospectively collected data were retrospectively queried for all primary TJA performed by a single surgeon at two stand-alone ASCs between July 2023 and December 2024. The traditional cohort had surgery prior to optimization efforts and was compared to the optimization cohort who received surgery after changes were implemented. This resulted in 272 cases included in the traditional cohort and 227 cases included in the optimization cohort. Optimization efforts included increasing perioperative process efficiency, avoiding room delays, and improving team communication. Outcomes measured included the mean number of cases per OR day, complication and revision rates, and patient-reported outcome measures (PROMs).

RESULTS:

In the traditional cohort, 8.7 cases were performed per day compared to 9.9 in the optimization cohort. The total OR time decreased by 11 minutes per case as a result of the efficiency optimization efforts. The all-cause revision rates (0.4% in both cohorts, $P > 0.05$) and complication rates (3.67% vs 3.08%, $P > 0.05$) showed no statistically significant difference. No clinically important changes occurred in the PROMs between the two cohorts.

DISCUSSION AND CONCLUSION:

Process efficiency in the ASC setting can increase surgical throughput while maintaining equivalent patient outcomes. Optimized OR flow and improved team dynamics can help meet the growing demand for joint arthroplasties, ensuring a sustainable and efficient surgical environment. Future studies may investigate large cohorts with longer follow-up to further evaluate these findings.