No Plateau in Patient Complexity: Rising CCI Scores in Arthroplasty Across Surgical Settings

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INTRODUCTION: As arthroplasty continues to shift to outpatient settings, patient medical complexity remains a critical consideration. Ambulatory surgical centers (ASCs) offer greater efficiency and lower cost of care, but patient selection is crucial to successful outcomes given the lack of higher-level care at these sites. The Charlson Comorbidity Index offers a standardized metric to track comorbidity burden over time and predicts postoperative complication risk. This study investigates the trends in CCI for patients undergoing total hip and knee arthroplasty (THA, TKA) within both hospital and ASC environments.

METHODS: We reviewed 7,241 primary THA and TKA procedures performed on 5,975 patients from 2018 to 2024 at a hospital and its affiliated ASC within a single academic institution. Annual trends in CCI by site were assessed using ANOVA. For patients with multiple surgeries, the difference between their minimum and maximum CCI scores was calculated.

RESULTS:

In the hospital group, mean CCI rose significantly from 4.00 in 2018 to 5.67 in 2024 (p <0.01). An increase in CCI from 4.24 to 5.19 was noted in the hospital group between 2020 to 2021, correlating with the opening of the affiliated ASC. While an increase in mean CCI from 3.35 in 2021 to 3.66 in 2024 was observed in the ASC group, this was not statistically significant. Among 1,216 patients with multiple surgeries, CCI increased in 31% of patients from their first to their last surgery.

DISCUSSION AND CONCLUSION: Rising patient complexity underscores the need for robust infrastructure in arthroplasty programs, particularly at hospital sites. As ASCs continue to absorb healthier patients, hospitals may increasingly concentrate care for patients with greater medical burden—necessitating sustained investment in perioperative optimization, multidisciplinary care teams, and postoperative monitoring capabilities. The evolution of patient selection and case distribution will shape how systems balance safety, efficiency, and access in future arthroplasty care.