Intraoperative Dexamethasone and Venous Thromboembolism Following Elective Total Joint Arthroplasty: An Instrumental Variable Analysis

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INTRODUCTION:
Emerging data suggest that dexamethasone may diminish the risk of postoperative venous thromboembolic (VTE) complications. No prior study has assessed the association between dexamethasone use and decreased rates of VTE following primary, elective total hip (THA) and total knee arthroplasty (TKA). Therefore, this study aims to assess the relationship between dexamethasone use and rates of VTE following TJA while accounting for surgeon selection bias as some surgeons selectively withhold dexamethasone in high-risk patients.
METHODS:
The Premier Healthcare Database was queried for all patients undergoing primary, elective total hip (THA) and total knee arthroplasty (TKA) from 2015-2020. Patients undergoing TJA by surgeons who utilized dexamethasone infrequently (0-20% of all TJAs) were compared to patients treated by surgeons who utilized dexamethasone consistently (90-100% of all TJAs). Univariate and multivariate analysis was performed to assess the 90-day risk of pulmonary embolism (PE) and deep vein thrombosis (DVT). Instrumental variable analysis was performed to account for surgeon selection bias using surgeon preference for dexamethasone as an instrument for dexamethasone administration.

RESULTS:
In total, 1,322,043 primary, elective TJAs were identified (35.9% THA; 64.9% TKA). Of these, 198,415 (15.0%) patients comprised the low-use dexamethasone surgeon cohort and 199,424 (15.1%) comprised the high-use dexamethasone surgeon cohort. Overall, 190,222 (95.39%) patients received dexamethasone in the high-use surgeon cohort versus 13,333 (6.72%) in the low-use surgeon cohort. Rates of PE (0.22% vs. 0.38%, $p<0.001$) and DVT (0.39% vs. 0.57%, $p<0.001$) were reduced in the high-use surgeon cohort compared to the low-use surgeon cohort. Instrumental variable analysis demonstrated reduced risk for PE (aOR: 0.86, $p<0.001$) and DVT (aOR: 0.88, $p<0.001$) associated with dexamethasone utilization. These findings were consistent on multivariate analysis.

DISCUSSION AND CONCLUSION:
Dexamethasone use was associated with a decreased risk of VTE, even after accounting for patient and hospital factors as well as surgeon selection bias.