Predictors of Readmission after Total Hip and Knee Arthroplasty

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Introduction: Readmission after Total Hip Arthroplasty (THA) or Total Knee Arthroplasty (TKA) places a great burden on the health care system. As reimbursement systems place increased emphasis on quality measures such as readmission rates, identifying and understanding the most common drivers for readmission becomes increasingly important.

Methods: We queried an electronic database for all patients who underwent THA or TKA at our institution from 2006 through 2010. We identified those who were readmitted within 90 days of discharge from the initial admission and set this as our outcome variable. We then reviewed demographic and clinical data such as age, index procedure, length of stay (LOS), readmission diagnosis, days to readmission, co-morbidities and payer group and set these as our variables of interest. We used chi-square tests to characterize and summarize the patient data and logistic regression analyses to predict the relative likelihood of patient readmission based on our control variables. Statistical significance was defined as p <0.05.

Results: 6436 patients underwent THA or TKA during the study period. There were significant differences by age group, with 20-29 year olds readmitted more often than 50-59 and 60-69 year olds (25.8% vs. 5.9% and 5.5%, p <0.0001) for unilateral THA and TKA. Medicare patients had a higher rate of readmission than other payer groups (Medicare 10.4%, PPO 5.3%, HMO 6.5%, Self-Pay 21.4%, and Other 6.2%; p <0.0001). The readmissions cohort had a significantly higher mean LOS (4.7 days vs. 3.4 days, p <0.0001). Patients with any co-morbid conditions (e.g., CHF, COPD, diabetes, PE, CAD) had higher readmission rates than those with none (18.7% vs. 7.8%, p =0.0002). Adjusting for patient age, sex, race, payer type, and LOS, those with CHF or CAD were more likely to be readmitted compared to those without CHF or CAD (CHF: odds ratio [OR] =1.71, 95% confidence interval [CI]=1.03-2.84; CAD: [OR] =1.93, 95% CI=1.48-2.53).

Conclusions: In our analysis of patients undergoing THA and TKA between 2006 and 2010, we found significant associations between readmission and young age, higher LOS during initial admission, payer, and the presence of co-morbidities. The predilection of younger patients towards readmission may be due to other, unidentified co-morbidities which may have predisposed them to early TKA or THA in the first place. More frequent readmission for Medicare patients may be a function of both volume as well as other unstudied co-morbidities. Longer than average LOS may be an early predictor of readmission. Supporting other studies performed with Medicare data alone, our present study demonstrates that co-morbid conditions such as diabetes and CAD may predispose patients to readmission after TKA or THA. Future studies should continue to study potential drivers of readmission following TKA and THA.

Summary: Ninety-day readmissions after TKA or THA between 2006 and 2010 were reviewed; increased LOS and the presence of co-morbidities, such as CAD and CHF, were associated with higher rates of readmission.