

Unplanned hospital readmission following total joint arthroplasty

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Total joint arthroplasty (TJA) is a reliable and effective means to treat degenerative conditions of the hip and knee. It has been shown to improve physical function, overall health and quality of life. The utilization of total knee arthroplasty (TKA) and total hip arthroplasty (THA) is predicted to increase exponentially in the United States through 2030 so that the number of the number of TKA increases by 673% for TKA to 3.48 million annually and the number of THA increases by 174% to 572,000 (1). The total gross cost to the American health care system for THA has risen more than 4 fold since 2005, to \$13.43 billion, and the gross cost of TKA has risen more than 5 fold, to \$40.8 billion (1,2). The Affordable Healthcare Act of 2010 includes pay-for-performance measures enforced by the Centers for Medicare and Medicaid Services (CMS) that are intended to incentivize providers and hospitals to minimize costly complications, reoperations and readmissions (3). As part of these measures, outcomes and complications are used as surrogates for performance and have become publically available leading to an overall increased scrutiny of outcomes following TJA.

The prevalence of obesity and obesity related medical conditions in the United States is also increasing in exponential fashion. In fact, from 1991 to 2010 the rate of diabetes has quadrupled and the rate of obesity has increased five folds in the US arthroplasty population (4). These conditions have been clearly linked to an increased risk of post-surgical complications further increasing the gross cost of care beyond that associated with simple increasing utilization. We previously performed an investigation of the effect of obesity on complications following TJA using the American College of Surgeons-National Surgical Quality Improvement Program (ACS-NSQIP), and identified elevated BMI to be associated with increased risk of medical

complications, surgical complications including superficial and deep wound infection as well as reoperation and total length of hospital stay (5). In a similar study we identified that diabetes was associated with increased risk of medical complications following TJA and that insulin dependent diabetes was associated with an increased risk of readmission and even 30-day mortality (6). With an increasingly comorbid population seeking TJA at alarmingly increasing rates it should come as no surprise that affordability and risk management are topics of interest to patients, physicians, hospitals, policy makers and third party payers.

In the study titled “Factors Affecting Readmission Rates Following Primary Total Hip Arthroplasty”, we again utilized the ACS-NSQIP database to identify individual risk factors leading to increased risk of readmission following primary THA. Of 9,441 patients, there were 345 (3.65%) readmissions in the first thirty days following surgery (7). The risk of readmission following THA increased in ways very similar to the risk of many other complications following TJA and was related to increased preoperative comorbidity burden with BMI >40 kg/m² singled out as a specific risk factor. Postoperative surgical site infection, thromboembolic event and sepsis were the most common readmission diagnoses.

Paxton *et al.*, in the study titled “Are There Modifiable Risk Factors for Hospital Readmission after Total Hip Arthroplasty in the US Healthcare System”, recently performed a similar study using the Kaiser Permanente Total Joint Replacement Registry (8). In 12,030 patients undergoing THA, they identified a nearly identical readmission rate of 3.6% (436 patients) within thirty days of the index procedure. Modifiable risk factors associated with an increased likelihood of 30 day readmission included: postoperative medical complications, discharge to facilities

other than home, and morbid obesity. Non-modifiable risk factors included sex, age and race. In addition, it was identified that surgeon volume and hospital surgical volume had an effect on readmission. They concluded that care settings be optimized, that patients with modifiable risk factors undergo pre-operative risk mitigation, and that patients with non-modifiable risk factors be counseled regarding their potential increased risk of readmission.

TJA represents a large and ever increasing portion of the annual CMS healthcare expenditure and is likely unsustainable. Current legislation is aimed at managing cost by targeting postoperative complications and unplanned hospital readmission. In this modern value (quality/cost) driven environment, we believe patients undergoing elective TJA should undergo risk stratification and mitigation in an attempt to optimize quality and minimize cost. Unfortunately, tools that accurately predict risk, quantify the effect of risk mitigation efforts, and ultimately guide care are lacking (9). Establishing optimal value in TJA is a worthy effort whose ultimate success is predicated on understanding risk predictors of poor outcome, costly complications and readmission thus preserving our patient's access to this proven and valuable intervention.

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Footnote

Conflicts of Interest: DW Manning is a Board or Committee member of Program Subcommittee Adult Hip (AAOS); he receives royalties from Biomet; he is the paid consultant of Biomet and Medacta; he has stock options of Iconacy; he is

also the paid presenter/speaker of Medacta.

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