What are the Causes, Costs and Risk-Factors for Emergency Department Visits Following Primary Total Hip Arthroplasty? An Analysis of 1,018,772 Patients

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INTRODUCTION:
Well-powered studies analyzing the relationship and nature of emergency department (ED) visits following primary total hip arthroplasties (THAs) are limited. Recent implementation of bundled payment models for elective total joint arthroplasty (TJA), wherein one global payment is granted to cover the entire peri-operative period, has led to increased review of post-operative healthcare utilization which includes ED presentation. Numerous investigations to date have attempted to analyze patient demographics and causes/risk factors associated with ED visits after elective TJA, however the majority of such studies have been limited to single-center studies, as well as limited to 30 days following the index procedure. The aim of this study was to: 1) compare baseline demographics of patients with/without an ED visit; 2) determine leading causes of ED visits; 3) identify patient-related risk factors; and 4) quantify 90-day episode-of-care healthcare costs divided by chief complaint.
METHODS: Patients undergoing primary THA between January 1, 2010 and October 1, 2020 who presented to the ED within 90-days post-operatively were identified using the Mariner dataset of PearlDiver, yielding 1,018,772 patients. This included 3.9% (n=39,439) patients who did and 96.1% (n=979,333) who did not have an ED visit. This study's primary endpoints included comparing baseline demographics between patients who had an ED visit versus those who did not, determining the primary causes of ED visits within 90-days following the index procedure, identifying patient-related risk factors, and determining healthcare expenditure between the stratified causes of ED visits. Baseline demographics between the control/study cohorts, ED visit causes, risk-factors, and subsequent costs-of-care were analyzed. Risks for ED visits were analyzed using multivariate binomial logistic regression analyses to calculate odds-ratios (OR) and their respective 95% confidence intervals (95% CI). Using Bonferroni-correction, a *p*-value less than 0.002 was considered statistically significant.
RESULTS: Patients who presented to the ED post-operatively were most often aged 65 to 74 years old (41.09%) or female sex (55.60%). Musculoskeletal complaints/etiologies were the most common cause of ED visits, constituting 43.23%. Risk factors associated with increased ED visits included alcohol abuse, depressive disorders, congestive heart failure, coagulopathy, and electrolyte/fluid derangements ($p<0.001$ for all). In general, patients who underwent primary THA and subsequently presented to the ED had more significant co-morbidities those who did not have an ED visit, with statistically significant higher mean ECI scores (7 versus 6, $p<0.0001$). Pulmonary ($28,928.01) and cardiac ($28,574.69) visits attributed to the highest costs of care.
DISCUSSION AND CONCLUSION: Older age and a host of pre-operative co-morbidities were associated with ED visits. Musculoskeletal complaints were the leading cause for ED visits following primary THA. The top five risk factors associated with increased odds of ED visits were (in descending order): alcohol abuse, electrolyte/fluid derangements, CHF, coagulopathy, and depression. Cardiopulmonary complaints were associated with the highest costs. Overall, our study includes one of the largest sample sizes to date, and identifies areas of pre-operative optimization to reduce 90-day ED visits following primary THA.