



Paper #30

## The Incidence of and Risk Factors for 30-day Surgical Site Infections following Primary and Revision Total Joint Arthroplasty

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**Introduction:** Infection after TJA is a devastating and costly complication. In this study we have used the ACS NSQIP to analyze the incidence of and risk factors for 30-day surgical site infection following TKA or THA.

**Methods:** We queried the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database between 2005 and 2010 for all patients undergoing either primary (p) or revision (r) TKA or THA using CPT codes. Thirty-day Surgical Site Infections (SSIs) were analyzed in aggregate for all TJAs and sub-analyzed as primary and revision cohorts. Patient characteristics, 30-day complications, and mortality were compared using univariate methods. Multivariate logistic regression identified predictors of 30-day SSI.

**Results:** 25,235 patients underwent TJA: 23,128 primary and 2,170 revision. Patient age was similar among all cohorts, but BMI was higher in the pTKA/rTKA vs pTHA/rTHA cohort (32.9/33.4 vs 30.0/29.3,  $p < 0.01$ ). Thirty-day mortality was 0.21% after pTJA and 0.65% after rTJA ( $p < 0.01$ ). The overall 30-day incidence of SSI was 1.23% after TJA; lower in pTKA, 1.10%, and pTHA, 1.18%. SSI rates were higher in rTKA, 1.68% and highest in rTHA, 2.90% ( $p < 0.01$ ). In pTJA, patient BMI, especially greater than 40 (OR 1.9, 95% CI: 1.3-2.9), hypertension (OR 1.5, 95% CI: 1.1-2.0), previous wound infection (OR 5.0, 95% CI: 2.3-10.9), prolonged operative time  $> 2$  hours (OR 1.9, 95% CI: 1.5-2.6), and electrolyte disturbance (OR 2.4, 95% CI: 1.0-6.0) were independent risk factors for SSI. Risk factors for SSI in revision arthroplasty include pre-op dyspnea (OR 2.2, 95% CI: 1.0-4.7) and a bleeding disorder (OR 2.5, 95% CI: 1.0-6.1). In the rTJA cohort, other risk factors such as smoking, prolonged operative time  $> 2$  hours, dependent functional status, and increased BMI all neared statistical significance ( $p$  values  $< 0.1$ ). All models demonstrated excellent discrimination (c-index: 0.65-0.77) and calibration (all HL ratios  $> 0.42$ ).

**Conclusion:** Short-term, 30-day SSIs occur in more than 1% of patients undergoing TJA. The incidence of SSI following TJA is highest among revision procedures, especially of the hip. Patient characteristics, especially morbid obesity, were associated with a dramatically increased infection risk.