

## **Risk Factors for Infection after Hip Arthroplasty: Preventable vs. Non-Preventable Infection**

Michael Phillips, MD, Guy Maoz, **James D. Slover, MD,**  
Joseph Bosco, MD, Richard Iorio, MD

**Background:** The purpose of this study was to identify the potentially modifiable risk factors for deep surgical site infections (SSI) after primary hip arthroplasties.

**Methods:** Data was obtained from a consecutive series of 3,132 primary hip arthroplasties performed at a single specialty hospital over a three year time period (January 1, 2009 – Dec 31, 2011). All deep SSI were identified using CDC case definitions. Univariate analysis was performed to determine the association of patient and surgical risk factors on SSI.

**Results:** 24 deep SSI were identified after 3,132 hip arthroplasty surgeries (0.77 SSI per 100 procedures). Univariate analysis revealed the following significant risk factors associated with SSI: Female (OR 3.32, 95% CI: 1.24, 8.91,  $p = .01$ ), non-same day admission (OR 4.31, 95% CI: 1.69, 10.97,  $p = 0.006$ ), not receive pre-operative topical antiseptic wipes (OR 3.88, 95% CI 1.67, 8.33,  $p=0.003$ ), ASA score  $> 2$  (OR 4.47, 95% CI 1.82, 11.00,  $p < 0.001$ ), BMI  $> 40$  (OR 4.56, 95% CI 1.49, 13.92,  $p = 0.02$ ), attending case load  $< 80$ /year (OR 4.81, 95% CI 1.79, 12.91,  $p = < 0.001$ ), hemi-arthroplasty procedure (OR 3.87, 95% CI 1.30, 11.46,  $p=0.03$ ), received blood product (OR 3.79, 95% CI 1.01, 14.23,  $p = .049$ ). 18 deep SSI occurred after the 2,901 hip arthroplasties performed within 1 day of admission (same day) compared to 6 deep SSI which occurred after the 230 hip arthroplasties performed greater than one day after admission (non-same day), OR 0.23 (95% CI 0.08, 0.66),  $p=0.006$ ).

**Conclusion:** Non-same day hip arthroplasties have a significantly higher infection rate than same day hip arthroplasties. The potentially modifiable risk factors in our patient population include use of pre-operative topical antiseptic wipes, elevated BMI, and use of blood products. A preoperative program including Shared decision Making and behavior modification designed to educate patients about risks and assist them in addressing risk factors may potentially decrease SSI rates and allow patients to make better informed decisions regarding their surgery. When reporting deep SSI rates, stratification into same day vs non-same day hip arthroplasty and preventable infections (when the modifiable risk factors are not addressed) vs non-preventable infections (these risk factors are adequately addressed) may provide a more accurate assessment of performance on an institutional and individual level.