Surgical Approach and Intrawound Vancomycin Powder Use in Primary Total Hip Arthroplasty

Rebekah Kleinsmith, Kehinde S Agoro, Haley Diane Puckett, Stephen A Doxey, Torben Harstad Urdahl, Mariah Norling, Patrick Horst, Brian Cunningham

INTRODUCTION: The purpose of this quality improvement project was to determine whether surgical approach (anterior vs. posterior) in the setting of intrawound vancomycin powder (IVP) administration influences prosthetic joint infection rates (PJI) within 90-days following primary total hip arthroplasty (THA).

METHODS: A prospective study was conducted from October 2021-September 2022. Ten high-volume arthroplasty surgeons alternated using IVP every month while maintaining all other perioperative protocols. Patients were matched 2:1 based on surgical approach (posterior vs. anterior), age, body mass index (BMI), and IVP administration (yes vs. no). The primary outcome was 90-day culture positive PJI following primary THA. Secondary outcomes included overall reoperation rate, reoperation for noninfectious reasons (fracture, instability, malposition), readmission, and wound complications within 90-days post-operatively.

RESULTS: A total of 1,061 primary THA patients were matched 2:1 with 692 undergoing posterior and 369 undergoing anterior THA. Most patients were female (n=603, 56.8%), with an average age of 65.4±11.0, and BMI of 29.2±5.3. There were 469 (44.2%) who received IVP. There was no difference in age, BMI, sex, Charlson Comorbidity Index, or distribution of IVP administration by approach ($p>0.20$). There was no difference in culture positive PJI rate ($p=0.99$), overall reoperation rate ($p=0.14$), or reoperation rate for wound complications ($p=0.26$). The posterior approach demonstrated a higher reoperation rate for noninfectious reasons compared to the anterior approach (2.9% vs. 0.3%, proportional difference: 2.6%, 95% CI [1.0%, 4.0%], $p< 0.01$). The posterior approach group trended towards a higher rate of 90-day readmissions (3.9% vs. 1.9%, $p=0.09$), while 90-day wound complications trended towards a higher rate in the anterior approach group (2.4% vs. 0.9%, $p=0.05$)

DISCUSSION AND CONCLUSION: Surgical approach in primary THA does not appear to influence infection rates in the setting of IVP use; however, the posterior approach was associated with more noninfectious reoperations, and trended towards more readmissions than the anterior approach.