

# Comparing Surgical Site Infection Rate in Patients Undergoing Total Knee and Total Hip Arthroplasty after Povidone-Iodine or Saline Irrigation: A Large Retrospective, Propensity-Matched Cohort Study

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**INTRODUCTION:** Surgical site infection (SSI) after total hip and total knee arthroplasty (THA/TKA) is a serious surgical complication. Perioperative irrigation is standard of care to reduce this risk, and antiseptic compounds such as povidone-iodine have been commonly used and are recommended by the World Health Organization and the Centers for Disease Control. However, the evidence supporting its superiority relative to non-antiseptic substances such as saline has been inconsistent. The objective of our study is to identify if irrigation with povidone-iodine in THA/TKA reduces incidence of SSI in patients as compared to saline irrigation.

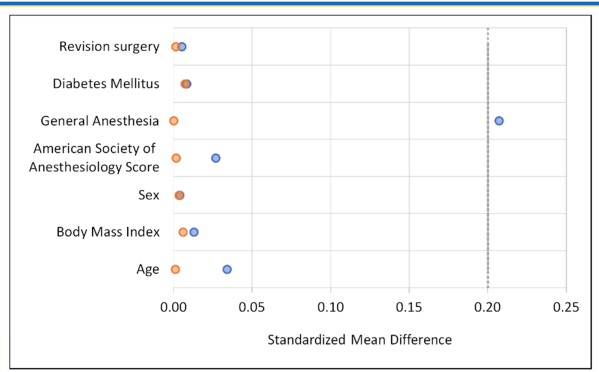
**METHODS:** In this retrospective, propensity matched cohort study of 21,482 patients who underwent TKA or THA, we extracted data from our hospital's infection control surveillance software and operative reports and compared SSI rates between patients who had received either povidone-iodine irrigation or saline irrigation. We collected information regarding patient medical status and procedure details perform propensity score determination and matching.

**RESULTS:**

In an unadjusted univariate analysis we did not identify a statistically significant difference between povidone-iodine and saline ( $p = 0.759$ ). Multivariate analysis showed that male sex, diabetes, and a procedure time of 2-3 hours increased risk of infection, but iodine usage was not significantly different from saline. Finally, after propensity score matching there were 21 (0.25%) SSI in the matched povidone-iodine group and 19 (0.23%) in the saline group which was not a significant difference (OR 1.10; CI 0.59-2.06).

**DISCUSSION AND CONCLUSION:**

Our analysis indicates that povidone-iodine is not superior to saline in reducing SSI. In situations where financial cost may be a factor in determining whether to use saline or povidone-iodine, we conclude that saline irrigation is equally efficacious and therefore a reasonable choice.



**Figure 1.** Standardized mean differences for select patient and surgical variables. Blue dots represent all patients. Orange dot represents the propensity-matched cohort. Significance line is shown by the grey dotted line.

| Variable   | Odds Ratio (95% CI) | p-Value        |
|--|---------------------|----------------|
| Age ≥ 65 vs < 65                                 | 0.90 (0.51- 1.58)   | 0.714          |
| Male vs. Female                                  | 1.62 (0.95-2.77)    | 0.078          |
| Diabetes Mellitus                                | 2.41 (1.33 – 4.38)  | <b>0.004</b> ★ |
| General Anesthesia                               | 1.91 (1.05-3.46)    | <b>0.033</b> ★ |
| Povidone-Iodine irrigation vs. Saline Irrigation | 1.06 (0.60-1.88)    | 0.848          |
| Procedure time: 2-3 hours vs 1-2 hours           | 3.43 (1.84 -6.38)   | <b>0.012</b> ★ |
| Procedure time: ≥ 3 hours vs 1-2 hours           | 2.20 (1.01 -4.78)   | 0.660          |

**Table 1.** Multivariable analysis comparing effects of covariables on infection rates