

Does Intermittent Catheterization Compared to Indwelling Catheterization Decrease the Risk of Periprosthetic Joint Infection Following Total Knee Arthroplasty?

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Introduction: Catheterization for the treatment of urinary retention commonly occurs after total knee arthroplasty (TKA). Recent studies have questioned the use of the indwelling catheterization, especially in its potential role as a nidus for infection. We are still unsure of its downstream effects on periprosthetic joint infections (PJI). Therefore, this study aimed to compare the risks of postoperative PJI following intermittent vs. indwelling catheterization after TKA.

Methods: Between 2017 and 2019, 15 hospitals in a large health system prospectively followed patients undergoing TKA. Postoperative indwelling catheter only, intermittent straight catheter only, and both indwelling and intermittent straight catheterizations were recorded. Patient demographics, comorbidities, body mass indices (BMI), and PJIs were collected from time of surgery to time of data collection with mean 14-month follow-up. Univariate and multivariate analyses were performed with independent t-tests and multiple linear regression models to compare catheterization treatment types.

Results: 9,123 TKAs were performed, with urinary retention treated by indwelling catheter only (62%, n=734), intermittent straight catheter only (25%, n=299), or both indwelling and intermittent catheterizations (13%, n=160). Univariate analyses showed that PJIs occurred in 1.1% of no-catheter patients and 2.3% of patients treated with bladder catheterization (p=0.002). Using multivariate analyses, indwelling catheter use (OR: 2.647, p<0.001), diabetes (OR: 1.837, p=0.005), and peripheral vascular disease (OR: 2.372, p=0.046) were found to have a statistically significant increased risk for PJIs. The use of intermittent straight catheterization (OR: 1.249, p=0.668) or both indwelling and intermittent (OR: 1.171, p=0.828) did not increase the risk for PJIs.

Conclusions: Treatment with bladder catheterization is commonly needed for urinary retention after TKA. This study found that the use of an indwelling catheter only, but not intermittent catheterization, increased the risk for PJI. This is an important finding to guide treatment for urinary retention after TKA in order to decrease the risk of PJIs.