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Should Urinary Catheters Be Used During Routine Primary Knee or Hip Arthroplasty?

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Should urinary catheters be used during routine primary knee or hip arthroplasty?

Response/Recommendation: Routine use of urinary catheters, which can increase the risk of urinary tract infections, is not required in patients undergoing primary unilateral total joint arthroplasty.

Level of evidence: Moderate.

Expert vote: Agree: 85.1%, Disagree: 11.5%, Abstain: 3.5%.

Rationale

It is controversial whether using urinary catheters in routine primary knee or hip arthroplasty can help prevent urinary retention after surgery. However, perioperative use of urinary catheters might delay postoperative mobilization and increase hospital stay [1,2]. Several studies have shown that the use of urinary catheters is associated with an increased risk of urinary tract infections (UTIs) [3,4] and results in higher hospital costs [5,6].

The inclusion criteria for this review were English-language original articles including both prospective and retrospective studies on patients who underwent primary unilateral total knee or hip arthroplasty, in which the use of urinary catheters was described along with associated complications (urinary retention, UTIs, and periprosthetic joint infections (PJIs)). Patients who have a preoperative requirement for a urinary catheter (e.g., permanently retained catheter) were excluded. A comprehensive search was conducted on PubMed, Scopus, and the CINAHL database, resulting in 1,202 abstracts. After screening, 55 manuscripts with a total number of 52,369 patients were included in the final review. The majority of studies (29 studies) did not use perioperative urinary catheters. The definition of postoperative urinary retention (POUR)

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varies including the inability to voluntarily empty the bladder, causing bladder overload, or the inability to void that requires the placement of a urinary catheter [7]. It also includes specific cut-off values for bladder volumes as measured by bladder scanning, ranging from 300 to 600 mL in cases of inability to void [8–12]. The overall rate of POUR in patients who did not have use of urinary catheters was 15.9%, while patients who had perioperative placement of urinary catheters had an overall POUR rate of 5.6% after catheter removal. The perioperative use of urinary catheters was associated with reduced odds of POUR (odds ratio (OR) 0.32; 95% confidence interval (CI) 0.28 to 0.35). Patients who had POUR in both groups were treated with either intermittent or temporary indwelling urinary catheterization, but none were discharged with a urinary catheter. However, perioperative use of urinary catheters revealed a higher risk of UTIs with an odds ratio of 1.19 (95% CI 1.02 to 1.40), and these UTIs in arthroplasty patients were linked to an increased risk of PJIs [13]. Nevertheless, using perioperative urinary catheters was not directly associated with a significant increase in the risk of PJIs (OR 1.21; 95% CI 0.38 to 3.81).

The type of anesthesia is another factor related to the risk of POUR. General anesthesia was associated with decreased odds of POUR compared to regional anesthesia (OR 0.84; 95% CI 0.74 to 0.95). In patients who underwent spinal anesthesia, lower intraoperative fluid volumes decreased the risk of POUR, as did the use of short-acting anesthetics [11,14]. Men over 65 years of age who underwent spinal anesthesia with intrathecal morphine were identified as a high-risk group for POUR [15], as the prevalence and progression of benign prostatic hyperplasia (BPH) is increased in older men. Additionally, patients who have symptomatic BPH had an increased risk of developing POUR (OR 2.64; 95% CI 1.93 to 3.61), UTIs (OR 6.24; 95% CI 2.25 to 17.35), and PJIs (OR 6.85; 95% CI 1.87 to 25.08) [16]. For patients who have BPH, using the International Prostate Symptom Score to evaluate the risk of POUR before surgery could be a useful tool to determine the necessity of prophylactic catheterization [17]. The International Prostate Symptom Score is a scoring system comprised of questionnaires that ask patients about urinary symptoms they have experienced within the past month. Higher scores are associated with a higher risk of POUR and a greater need for catheterization [18]. In patients who developed POUR, intermittent catheterization may be required to manage the condition, and it has demonstrated a lower risk of UTIs compared to indwelling urinary catheters [19].

CRediT authorship contribution statement

Atthakorn Jarusriwanna: Writing – original draft, Visualization, Validation, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Kerem Başarır:** Writing – review & editing, Data curation, Conceptualization. **Daniele De Meo:** Writing – review & editing, Data curation, Conceptualization. **William A. Jiranek:** Writing – review & editing, Data curation, Conceptualization. **Jacobus D. Jordaan:** Writing – review & editing, Data curation, Conceptualization. **Deiary F. Kader:** Writing – review & editing, Data curation, Conceptualization. **Gökhan Kaynak:** Writing – review & editing, Data curation, Conceptualization. **Gabriele Tucci:** Writing – review & editing, Data curation, Conceptualization.

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