ORIGINAL ARTICLE

Factors Predicting Catheter-Related Bladder Discomfort in Surgical Patients

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Purpose: *The study was conducted to identify the factors predicting catheter-related bladder discomfort (CRBD) in the postanesthesia care unit, to assess the level of CRBD and urinary catheter-related pain for the first 24 hours postoperatively, and to compare UCRP with the postoperative pain in the surgical site.*

Background: *About 20% of hospitalized patients receive an indwelling urinary catheter, and more than half of these patients complain of CRBD or urinary catheter-related pain.*

Design: *This prospective descriptive study conducted in an 800-bed university hospital involved 160 patients who had undergone elective surgery from February 5, 2012 to June 5, 2012.*

Methods: *Demographic data including gender, age, American Society of Anesthesiologists class, weight, and height were collected on the preoperative visit. Factors predicting CRBD were identified by multiple logistic regression analysis. Comparison of the UCRP and postoperative pain was analyzed using the Mann-Whitney* U *test.*

Findings: *Multiple logistic regression analysis showed that the factors predicting CRBD ≥2 30 minutes after arrival to the postanesthesia care unit were age < 50 years (odds ratio [OR], 4.79;* P = *.005), male gender (OR, 7.07;* P = *.015), obstetric and gynecological surgery (OR, 11.07;* P = *.045), and UCRP (OR, 132.3;* P < *.015). Postoperative pain (*P < *.001) was significantly greater than UCRP.*

Conclusions: *Age < 50 years, male gender, open abdominal surgery, and UCRP ≥4 predict CRBD.*

Clinical Relevance: *Perioperative care providers should screen surgical patients for risk factors of CRBD during the first postoperative 12 hours.*

Keywords: *urinary catheters, painful bladder syndrome, risk factor, postoperative pain.*

ABOUT 20% OF HOSPITALIZED PATIENTS receive an indwelling urinary catheter to monitor urinary output, drain urine, or relieve urinary obstructions.[1,2] More than half of these patients complain of catheter-related bladder discomfort (CRBD)[3,4] or urinary catheter-related pain (UCRP).[5,6] CRBD is defined as an urge to void or discomfort in the suprapubic region and is characterized by frequent and urgent urination, which is similar to overactive bladder syndrome.[3,7] UCRP refers to pain as a result of bladder and/or urethral spasm, attributed to

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Conflict of interest: Not indicated.

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irritation of the bladder wall and trigone by the urinary catheter.[6,8]

Even though prior findings have indicated a difference between CRBD and UCRP, most previous studies assessed one or the other condition, rather than CRBD and UCRP simultaneously. CRBD and UCRP are affected by acute postoperative pain of urological surgery itself. However, as most previous studies reported on CRBD or UCRP in patients who had undergone urologic surgery, the CRBD or UCRP included postoperative pain or discomfort related to the surgery itself.[3,7,9-11] Little is known of genuine CRBD or UCRP, exclusive of the discomfort and pain of the surgery itself. Even though indwelling urinary catheters can cause UCRP, the level of UCRP and the differences between UCRP and postoperative pain in the surgical site remain unclear.

It is helpful to consider the individual characteristics or factors affecting CRBD in the care of patients with indwelling urinary catheters. Catheter size and male gender reportedly were factors affecting CRBD.[4] However, because urological surgical patients were included, the authors chose surgical patients excluding those who had undergone urological surgery.

The present prospective descriptive study aimed to identify the incidence of CRBD and the factors predicting CRBD in the postanesthetia care unit (PACU), assess the level of CRBD or UCRP for the first 24 hours postoperatively, and compare UCRP with the postoperative pain in the surgical site.

Methods

Research Design

This prospective descriptive research study involved surgical patients treated at Buchon Saint Mary's Hospital, Kyunggido, South Korea. February 5, 2012, to June 5, 2012.

Participants

Participants scheduled for elective surgery under general anesthesia were recruited at the time of admission by a printed handout. Inclusion criteria were age ≥20 years, conscious state, ability to communicate, American Society of Anesthesiologists (ASA) physical class I to II, placement of an indwelling urinary catheter for the first 24 hours postoperatively, administration of fentanyl, and the use of intravenous patient-controlled analgesia (PCA) using an Accufuser Plus apparatus (Woo Young Medical, Jincheon, Korea) for the first 48 hours postoperatively. Patients with neurogenic bladders, bladder outflow obstructions, hypertrophy of prostates, urinary tract infections, surgery of the kidney, ureter, bladder, urethra or prostate, and those with a history of diabetes mellitus or Parkinson disease that could affect perception of pain were excluded.[12]

During the study period, 173 patients underwent a surgical procedure and were given indwelling urinary catheters. Thirteen of the 173 participants who provided consent withdrew during the study period, representing a completion rate of 92.5%. Thirteen patients were subsequently excluded from the study due to the removal of the indwelling urinary catheters within 24 hours (seven patients) and the nonadministration of fentanyl (six patients) in the PACU. Thus, 160 patients were ultimately included in the analysis (Figure 1).

Study Protocol

After the induction of anesthesia, indwelling urinary catheterization was performed using a standardized technique by three nurse anesthetists or three resident first physicians who had received special training for urinary catheterization according to institutional guidelines. Typically the adult female urethra is 4-cm long and 6 mm in diameter, and the adult male urethra is 18- to 20-cm long and 6 mm in diameter.[13] Therefore, the hospital guideline for care of indwelling catheter suggests use of a 16-Fr Foley catheter, which has a diameter of 5.3 mm, for all adult males and females.[14]

Foley catheter insertion in females was done as follows. Lubricating gel containing chlorhexidine was dispensed into the kit tray, and the tip of a 16-Fr Silicone Foley catheter (Yushin Medical Co, Buchon, Korea) was covered with the lubricant. The labia were separated to visualize the meatus, and each labium was wiped from top to bottom with a betadine cotton ball and wiped with dry cotton balls. A 16-Fr Foley catheter with lubricant was inserted approximately 7.5 cm through the urethra meatus into the bladder. After flow of urine,