

PREDICTOR OF SUCCESSFUL TRIAL WITHOUT CATHETER FOR POSTOPERATIVE URINARY RETENTION AFTER NON-UROLOGICAL SURGERY

Hypothesis / aims of study

Postoperative urinary retention (POUR) is a common and potentially serious morbidity but is poorly understood. POUR has generally been defined as the inability to pass any urine in the presence of a palpable or percussible bladder after surgery but the definition varies widely [1]. Although most patients may recover from POUR with a trial without catheter (TWOC) after a few days of catheterization, some patients with POUR can have persistent urinary retention after failure of TWOC, and this prolongs or complicates the postoperative recovery phase. There are sparse data on predictor of recovery from POUR after non-urological surgery. The aim of this study was to investigate the outcome of TWOC for POUR after non-urological surgery and to determine predictor of successful TWOC.

Study design, materials and methods

Of 8603 patients referred to the department of urology for urologic problems, 395 patients complained of micturition difficulty after non-urological surgery. After excluding patients with previous neurological disease, previous urological surgery, and urological disease such as urethral stricture, bladder or prostatic cancer and benign prostatic hyperplasia, and in-and-out catheterization for POUR, a total of 207 patients with post-void residual (PVR) urine volume of 400 ml or greater measured by indwelling catheterization were included in this retrospective study. All eligible patients underwent indwelling catheterization as an initial treatment and then TWOC was performed 3 to 7 days later. POUR was defined as micturition difficulty with greater than 400 ml of post-void residual (PVR) urine volume measured by catheterization after non-urological surgery. Successful TWOC was defined as voiding with less than 100 ml of PVR urine volume. A retrospective review was performed to evaluate patient demographics and clinical factors (age, gender, body mass index, comorbidity, presence or absence of lower abdominal discomfort at POUR, preoperative lower urinary tract symptoms or constipation, inability to ambulate at POUR, use of alpha-blocker, duration of indwelling catheterization after POUR, preoperative Modification of Diet in Renal Disease glomerular filtration rate, and presence or absence of preoperative pyuria), surgical factors (duration of surgery, the amount of intravenous fluid administered during surgery, location of surgery, operative positioning, and presence or absence of intraoperative indwelling catheterization) and anesthetic factors (type of anesthesia, use of patient-controlled anesthesia, and use of anticholinergic drugs during anesthesia). Predictive factors were identified by multivariate regression analysis. All definitions corresponded to recommendations of the International Continence Society [2].

Results

The mean age and retention volume of the eligible patients was 65.2 years (range, 23 to 92 years) and 678 mL (range, 400 to 1,500 mL), respectively. There were 90 male and 117 female patients. Intraoperative indwelling catheterization was performed in 141 (68.1%) patients. Mean duration of indwelling catheterization for POUR was 5.0 (range 3.0 to 7.0) days and 170 (82.1%) patients received medication with an alpha-blocker. A successful TWOC was observed in 142 (68.6%) patients. The mean age, and the percentages of female, spinal surgery and prone position during surgery in the patients with unsuccessful TWOC were higher than in those with successful TWOC. On multivariate analysis, age and location of surgery (spine vs. non-spine) were the independent predictors of successful TWOC for POUR. In subgroup of 107 patients with a retention volume of 600 ml or greater, younger age and presence of intraoperative indwelling catheterization were the independent predictors of successful TWOC for POUR, while younger age was the only independent predictor in 100 patients with a retention volume of less than 600 ml. Urodynamic study was performed in 33 of 65 patients with failure of TWOC. Detrusor overactivity, detrusor underactivity, acontractile detrusor, and normal detrusor function were observed in 9, 12, 15, and 6 patients, respectively. During indwelling catheterization, 3 (1.9%) and 10 (9.6%) patients complained of gross hematuria and urethral discomfort, respectively. However, no patient had serious catheter-related complications such as febrile urinary tract infection. Forty of 65 patients with failure of TWOC were discharged from the hospital with indwelling catheters and the remaining 25 patients performed clean intermittent catheterization (CIC) after being discharged. A second TWOC was performed 1 to 2 weeks after discharge from the hospital. Sixteen of 40 patients with indwelling catheters at discharge had success in the second TWOC.

Interpretation of results

The important findings of our study can be briefly summarized as follows: 1) older age and spinal surgery can be risk factors for unsuccessful TWOC for POUR, and 2) the presence or absence of intraoperative indwelling catheterization may be an important factor influencing the success of TWOC in patients with a retention volume of ≥ 600 mL but not in those with a retention volume of < 600 mL. The contractility of the detrusor decreases with advancing age. It was generally assumed that POUR increases with age, with the risk increasing by 2.4 to 2.8 times in patients over 50 years of age [1]. As expected, our results showed that age was an independent predicting factor of successful TWOC for POUR and that patients older than 70 years were at a 1.8 times higher risk of failure of TWOC than were those younger than 70 years. The incidence of POUR can vary according to the location of surgery. The present study showed that the patients with spinal surgery were at a higher risk of unsuccessful TWOC for POUR than were those with non-spinal surgery. This may be because they usually need prolonged bed rest and cannot urinate in the correct voiding position after spinal surgery. Interestingly, in a subset of patients with retention volume of ≥ 600 mL, the presence of intraoperative indwelling catheterization was an independent predictor of successful TWOC for POUR. Thus, avoidance of excessive bladder distention by indwelling catheterization during surgery might be important for recovery of micturition from POUR in patients with a retention volume over 600 mL.

Concluding message

Our data suggest that older age and spinal surgery may be important risk factors for failure of TWOC for POUR after non-urological surgery. Also, the present study indicates that indwelling catheterization during surgery may be needed to avoid excessive bladder distention and persistent micturition difficulty. Thus, clinicians should pursue preventive measure such as systemic monitoring of PVR urine volume by bladder scanner to avoid POUR and minimize the associated morbidity, especially in patients with these risk factors. Also, research into an adequate treatment protocol for POUR should be further encouraged.

References

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Disclosures

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