PSNet
PATIENT SAFETY NETWORK

Urinary Retention Dilemma

November 1, 2006
Joseph AC. Urinary Retention Dilemma. PSNet [internet]. 2006.
https://psnet.ahrq.gov/web-mm/urinary-retention-dilemma

The Case

Following an elective thyroidectomy, a 56-year-old man with a history of benign prostatic hypertrophy (BPH) and urinary hesitancy returned to the med-surg unit for monitoring calcium balance (the thyroid is adjacent to the parathyroid glands, which control the body's calcium balance). After returning, the patient began complaining of problems with urination, lower abdominal discomfort, and frequently voiding very small amounts of urine. The nurse administered terazosin (an alpha blocking agent for urinary obstruction), first the 2 mg initially ordered by the physician; the dose was later increased to 10 mg by the surgeon (the patient's pre-surgical dose). The total urine output during the 24 hours following surgery was only 1200 cc (which seemed low in light of the amount of intravenous hydration), and it came in frequent, small amounts.

During this time, the patient became increasingly uncomfortable and restless. During morning rounds, the surgeon learned of the patient's continued difficulty voiding and ordered urinary catheterization. The nurse catheterized the patient and obtained 900 cc of urine (normal post-void residual volume is a few hundred cc). The patient experienced immediate relief. The catheter was then removed, and the patient was discharged a few hours later.

After arriving home, the patient again became increasingly uncomfortable and unable to void more than a small amount. He called his urologist and was seen that afternoon. The urologist placed a Foley catheter that yielded 800 cc urine. The patient again experienced immediate relief. This time, the catheter was left in for a week to allow the bladder to regain tone. During this extended time with an indwelling catheter, the patient took antibiotics to prevent a urinary tract infection.

The Commentary

Several issues arise when reviewing this case. First, should patients have a urinary catheter in place during surgery and postoperatively? There is not a single easy answer to this question, since the decision hinges on a variety of physician, hospital, and surgical factors. Although providers are often reluctant to place catheters in an effort to minimize patient discomfort and the risk of infection, short-term use of a catheter may, at times, actually facilitate patient comfort and infection control. For example, a large cross-sectional,

prospective study evaluated 2618 French men with BPH and acute urinary retention. Of these patients, 71.6% developed spontaneous, acute urinary retention and 28.0% developed acute urinary retention postoperatively. Patients were treated with a trial without catheters (with or without an alpha blocker) versus surgery for their BPH. The results of the study favored catheterization over the surgical approach. Based on these results, most institutions now favor short-term use of catheterization (3 days or less), then trial without a catheter after an episode of urinary retention. The additional use of an alpha blocker prior to catheter removal improved outcomes.(1)

Second, if indwelling catheters are not used, what other options are available for patients like this one to ensure bladder emptying? This patient had known BPH, with symptoms of hesitancy (enlarged prostate preventing the bladder neck from funneling and allowing urine to flow), frequency, small voided volumes, and abdominal discomfort. This scenario should have alerted the staff that the patient had a "failure to empty problem" (2), with a significant risk for urinary retention, especially since he was not taking his alpha blocker. Having the patient "time void" (void at predetermined intervals such as every 3–4 hours, even when he had no urge to do so) would have provided the staff important information about the patient's voiding function and risk for postoperative urinary retention. Although the predictive utility of a trial of time voiding needs further study (3), it makes sense that prevention of overdistention of the bladder will help prevent failure of the detrusor muscle by allowing the bladder to decompress on a timed basis. To evaluate the effectiveness of the patient's ability to void, the use of a bladder volume instrument (BVI) (a portable, non-invasive instrument that allows ultrasonic measurement of post-void residual) would have provided additional objective evidence of the patient's ability to empty the bladder with each void.(4) Strict intake and output measurements, including BVI readings after voiding and a bladder diary, provide objective documentation and significant insight into the patient's voiding problem. If residual volumes are small in comparison to the volume voided (eg, voided volume of 500 cc with a post-void residual of 50 cc), then no further intervention would be necessary. If post-void residual volumes are large (eg, voided volume 150 cc and 500 cc retained), then further intervention, such as double voiding and clean intermittent catheterization, would be indicated.

For many years, clean intermittent self-catheterization (CISC) has been used to facilitate bladder emptying.(5,6) It is affordable (particularly when catheters are cleaned and reused) and easy for the patient to learn. The threat of urinary retention and having to wait hours in the emergency room in excruciating pain is also eliminated. If this patient was unable to adequately empty his bladder, then he could have been placed on a regimen of CISC every 4 hours after voiding. As voluntary voided volumes increased, catheterizations could be systematically decreased. This would have allowed the patient safe evacuation of his bladder without having an indwelling catheter and concomitant antibiotics to prevent urinary tract infection. CISC prevents the continuous presence of a foreign body in the bladder (indwelling urethral catheter) that will rapidly develop a biofilm that can lead to infection. It also discourages the growth of opportunistic bacterial colonies in the bladder that may invade the detrusor muscle, cause a "symptomatic" urinary tract infection, and require antibiotic use.

A systematic review of the Cochrane Database for short-term indwelling urethral catheter use during hospitalization found that intermittent catheterization, as opposed to indwelling catheterization, was a better choice for patients with urinary retention. Patients with indwelling catheters had higher bacteriuria than patients with intermittent catheterization (RR 2.9; 95% CI 1.44–5.84); however, intermittent catheterization

was more costly.(8)

As part of nursing education, nurses are taught to catheterize patients.(9) In my experience working in a rehabilitation area, many of my patients with neurogenic bladders utilize CISC exclusively to empty their bladders. Morbidity is low unless patients fail to follow established techniques of cleansing/storing catheters and equipment.(6) If patients are unable to self-catheterize because of an enlarged, obstructive prostate, then an indwelling catheter can always be inserted by the urologist until further treatment interventions (such as medications or surgery) can be considered.

For the case at hand, the patient was placed on a medication (terazosin) that can take days to relax the bladder neck and relieve obstruction. Thus, the decision to discharge the patient without a catheter or plans for self-catheterization after terazosin was begun was an error, since the reoccurrence of painful obstruction was predictable. Intermittent catheterization would have relieved bladder distention and allowed time for the medication to relax the bladder neck while preventing the need for an indwelling urethral catheter and antibiotics that may cause side effects.(10)

However the clinical situation was managed, the case also illustrates problems in nurse-physician communication surrounding the issue of urinary catheterization. In my experience, such communication can be facilitated by using a simple protocol to assist nurses and other providers in caring for these patients. With the advent of computerized patient records, instructing and educating nurses and other health care providers with a keystroke is now possible.(11) For patients with history of BPH and difficulty voiding, "pop up" clinical reminders can be configured and made available prior to writing orders and as part of the postoperative, daily, or discharge notes. If computerized patient records are not available, this information can be part of written protocols and procedures. A sample protocol is shown in the Table.

In conclusion, this patient should have been monitored for voiding with post-void residuals after surgery since he had a *known* BPH problem. His terazosin should have been restarted postoperatively. If the patient was unable to empty at least three-quarters of his bladder volume, then CISC should have been recommended and taught prior to discharge. If the patient refused to do CISC or was incapable of doing it independently, then an indwelling catheter should have been placed for 3 days, after which time the catheter should have been removed and a voiding trial performed. If the patient failed the voiding trial, then CISC could be resumed until a mutually agreed upon treatment management could be determined. This would have allowed the patient every opportunity to enjoy the return of his bladder function without the risk of overdistention due to outlet obstruction and pain due to inability to void. The use of antibiotics, with their accompanying risk of possible side effects, could have been avoided. Since there are no guidelines to assist health care providers with decision making in regard to BPH patients, institutions need to incorporate agreed upon standards for acceptable voided volumes and post-void residuals for this patient population.

Take-Home Points

- Prior to discharge, surgical patients need to be able to empty their bladders "adequately." Demonstration of the patient's ability to void, as well as documentation of that ability, should be part of best practice. If patients are unable to void adequately, then CISC or short-term indwelling catheter, with or without an alpha blocker, needs to be considered.

- A "pre-determined plan of care" will provide a standard of care for all BPH patients, facilitate communication, avoid confusion, and prevent inappropriate care. Policies for acceptable voided volumes and post-void residual amounts are dependent on the physician and institution.
- Patients should have a follow-up appointment with MD within 1 week postoperatively and a 24-hour advice number to call for problems that arise during that week.

Angela C. Joseph, RN, MSN, CURN Clinical Nurse Specialist VA San Diego Heathcare System

References

1. Desgranchamps F, DeLa Taille A, Doublet JS, for the RetenFrance Study Group. The management of acute urinary retention in France: a cross-sectional survey in 2618 men with benign prostatic hyperplasia. BJU Int. 2006;97:727-733. [go to PubMed]

2. Barrett DM, Wein AJ. Voiding dysfunction: diagnosis, classification and management. In: Gillenwater JY, Grayhack JT, Howard SS, Duckett JW, eds. Adult and Pediatric Urology. 2nd ed. St. Louis, MO: Mosby Year Book; 1991:1001-1099.

3. Ostaszkiewicz J, Roe B, Johnston L. Effects of timed voiding for the management of urinary incontinence in adults: systematic review. J Adv Nurs. 2005;52:420-431. [go to PubMed]

4. Moselhi M, Morgan M. Use of a portable bladder scanner to reduce the incidence of bladder catheterisation prior to laparoscopy. BJOG. 2001;108:423-424. [go to PubMed]

5. Lapides J, Diokno AC, Silber SJ, Lowe BS. Clean, intermittent self-catheterization in the treatment of urinary tract disease. J Urol. 1972;107:458-461. [go to PubMed]

6. Madersbacher H, Wyndaele JJ, Igawa Y, et al. Conservative management in neuropathic urinary incontinence. In: Abrams P, Cardozo L, Khoury S, Wein A, eds. International Consultation on Continence. 2nd ed. Plymouth, United Kingdom: Plymbridge Distributors Ltd.; 2002.

7. Niel-Weise BS, van den Broek PJ. Antibiotic policies for short-term catheter bladder drainage in adults. Cochrane Database Syst Rev. July 20, 2005:CD005428. [go to PubMed]

8. Niel-Weise BS, van den Broek PJ. Urinary catheter policies for short-term drainage in adults. Cochrane Database Syst Rev. July 20, 2005:CD004203. [go to PubMed]

9. Ribby KJ. Decreasing urinary tract infections through staff development, outcomes, and nursing process. J Nurs Care Qual. 2006;21:272-276. [go to PubMed]

10. Trautner BW, Darouiche RO. Role of biofilm in catheter-associated urinary tract infection. Am J Infect Control. 2004;32:177-183. [go to PubMed]

11. Darmer MR, Ankersen L, Nielsen BG, Landberger G, Lippert E, Egerod I. Nursing documentation audit—the effect of a VIPS implementation programme in Denmark. J Clin Nurs. 2006;15:525-534. [go to PubMed]

Table

Protocol for patients with known BPH.

- Time void patients by the clock every 4 hours postprocedure, measure, record.
- Check bladder volume instrument (BVI) after void, measure, record.
- Document with intake and output as part of the medical record.
- Contact MD for order for straight catheterization if urine output is less than 25% of total volume as determined by the post-void BVI measurement. Always have patient try to void first. Males will empty better standing since standing straightens the curve in urethra and lessens resistance.
- With order for clean intermittent self-catheterization (CISC), teach patient how to catheterize prior to discharge and provide supplies for use at home.

This project was funded under contract number 75Q80119C00004 from the Agency for Healthcare Research and Quality (AHRQ), U.S. Department of Health and Human Services. The authors are solely responsible for this report's contents, findings, and conclusions, which do not necessarily represent the views of AHRQ. Readers should not interpret any statement in this report as an official position of AHRQ or of the U.S. Department of Health and Human Services. None of the authors has any affiliation or financial involvement that conflicts with the material presented in this report. View AHRQ Disclaimers