

Update on the occasional suprapubic catheter

Anjali Oberai MD,
FCFP

Erle Kirby, MD, MSc,
FCFP
Assistant Professors,
Northern Ontario School of
Medicine, Lady Dunn Health
Centre, Wawa, Ont.

Correspondence to: Anjali
Oberai,
aoberai@wawafbt.com

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INTRODUCTION

Inserting an adult suprapubic catheter in the rural setting is a straightforward procedure. Performing it locally can save your patient a transfer out of the community.

We recently had 2 cases in which performing this procedure locally avoided a patient transfer. One was in a patient with acute urinary retention, and the other was in a patient with multiple sclerosis for whom travel outside of the community was very challenging. No local practitioner had previously performed this procedure. With telephone support from a urology colleague at our referral centre, the first try at this procedure went surprisingly smoothly.

An article on the occasional suprapubic catheter was previously published in this journal in 2000.¹ Since that publication, the kits have improved, and the technique is simpler.

Below we share our experience.

INDICATIONS

Suprapubic bladder catheterization is most commonly indicated in the case of male patients with prostatic hypertrophy presenting with acute urinary retention in whom attempts at trans-urethral catheterization have been unsuccessful. It can, of course, be performed in patients with acute urinary retention of any cause. The patient must have a distended, full bladder; this should be confirmed by bedside ultrasonography or by percussion and suprapubic needle bladder aspiration (see the first bulleted item under “Technique”).

CONTRAINDICATIONS

- Absolute contraindication: bladder cancer.
- Relative contraindications:²
 - Inability to visualize a distended bladder on bedside ultrasonography
 - Pelvic cancer (increased risk of adhesions)
 - Anything that may increase the risk of bowel adherence to the bladder or anterior abdominal wall (e.g., previous lower abdominal or pelvic surgery)
 - Uncorrected coagulopathy.

EQUIPMENT

- Suprapubic balloon catheter set (Fig. 1). The kit generally consists of a balloon catheter that fits over a trochar, a 5 mL syringe and a connecting tube with a stopcock and



Fig. 1. Equipment.

drainage bag connector. We use the Rutner Suprapubic Balloon Catheter Set (Cook Medical), which has a simple catheter-over-trochar design, but any set will do the trick.

- 2% chlorhexidine or 10% povidone iodine.
- 1% or 2% lidocaine with epinephrine for skin and fascial infiltration.
- Appropriate syringe and needle for anesthetic.
- No. 11 blade.
- 22-gauge spinal needle or 18-gauge needle for aspiration of bladder. Note that an 18-gauge needle is really suitable only for thin patients. In most instances a 22-gauge spinal needle is needed because of its extra length.
- 10 to 20 mL syringe for needle.
- Urine bag.

TECHNIQUE

Before starting the procedure, visualize the full bladder with bedside ultrasonography (Fig. 2) and/or by percussing the full bladder and performing needle aspiration of urine from the bladder. We are more comfortable doing both procedures. However, both are not necessary, especially when bedside ultrasonography is unavailable.

- Lay the components of the suprapubic catheter kit on a sterile field.
- Place the trochar inside the balloon catheter and secure its position with the Luer lock.
- Fill the syringe with 4 mL of sterile saline or water, or as specified by the kit you are using. Expand the balloon 3–4 times with the sterile solution to make it easier to expand once in place.
- Mark the intended insertion spot about 3–4 cm (roughly 2 fingerbreadths) above the upper border of the pubic bone in the midline (Fig. 3).



Fig. 2. Bladder visualization with ultrasonography.

- Using sterile technique, prep the suprapubic area with the antiseptic solution (Fig. 3).
- Infiltrate the skin and subcutaneous tissues of the anterior rectus sheath with lidocaine at the site marked (Fig. 4).
- Apply sterile drapes, leaving the suprapubic area free so that the pubic bone can be palpated and visualized (Fig. 5).
- Using the no. 11 blade, make a 3 to 4 mm incision in the skin and dissect down into the rectus sheath (Fig. 5).
- Aspirate urine from the bladder using a 10 mL syringe attached to a 22-gauge, 7.5 cm spinal needle. The needle should be advanced at a 10°–20° angle off the vertical, directed toward the pelvis, until urine is aspirated (Fig. 6).
- Hold the trochar/catheter unit at the same angle as for urine aspiration. With the palm of the dominant hand behind the trochar unit and the



Fig. 3. Intended insertion spot about 3–4 cm above the upper border of the pubic bone in the midline.



Fig. 4. Infiltration.

nondominant hand holding the trochar at skin level, carefully advance the trochar through the subcutaneous tissues until urine flows from the trochar/catheter unit, and then continue for another 4–5 cm. This ensures that the entire balloon of the catheter is within the bladder.

- If you think you have inserted the trochar/catheter unit to the same distance where the aspirating needle detected urine but no urine flows, do not continue to advance the needle. Low bladder pressure may prevent spontaneous flow of urine through the unit. In this case, you can attach a syringe to the unit and attempt to aspirate urine. Repeatedly check for urine by aspiration as you slowly advance the catheter as above (Figs. 7 and 8) (see also the second point in the “Suggestions” section).
- Expand the balloon with 4 mL of sterile solution.
- Remove the trochar.
- Attach the connector tube.
- Pull the balloon catheter back until the balloon meets the resistance of the bladder wall.



Fig. 7. Spontaneous urine flow through the trochar unit.

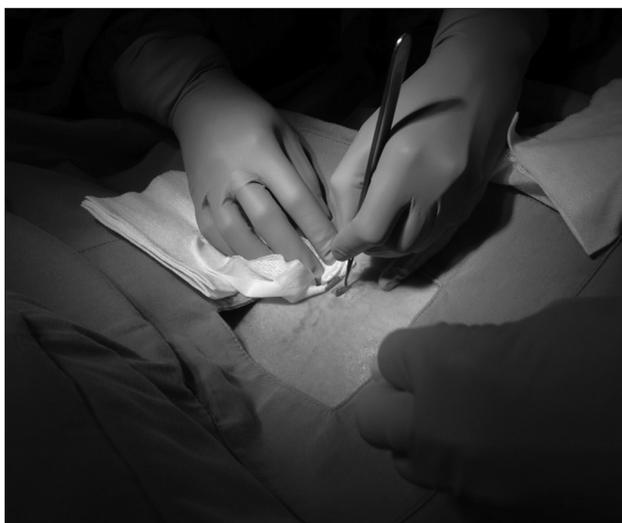


Fig. 5. Dissection to rectus sheath.



Fig. 6. Urine aspiration from bladder.



Fig. 8. Using syringe to aspirate for urine.

- Attach the drainage bag.
- Suture the catheter in place by putting 1 suture through the skin at the base of the catheter and tying it with 2 long ends. Loop the ends around the catheter at least 5 times and then tie a second knot to hold the loops firmly against the catheter, without compromising the lumen of the catheter (Fig. 9). Note that the catheter does not have to be sutured in place; it can be held in place with a gauze dressing.
- Cover with a sterile dressing and tape in place. Add a second piece of tape on the abdomen such that it creates some slack in the tubing and prevents constant tension on the catheter (Fig. 10).

POTENTIAL COMPLICATIONS²

- Bowel perforation and intraabdominal visceral injuries are possible. Ensuring the bladder is distended will minimize the risk of this.
- Hematuria: this is generally transient.
- Infection: sterile technique will minimize risk.

SUGGESTIONS FOR THE “OCCASIONAL PRACTITIONER”

We offer the following suggestions for the occasional practitioner from our limited personal experience.

- Ensure you dissect down through the fascia. If you do not, you may have to use an uncomfortable amount of force to push the trochar through into the bladder.
- You may not feel a significant “pop” as you penetrate the bladder. If you have reached your spinal needle depth without spontaneous flow of urine, aspirate for urine before continuing to advance the trochar.

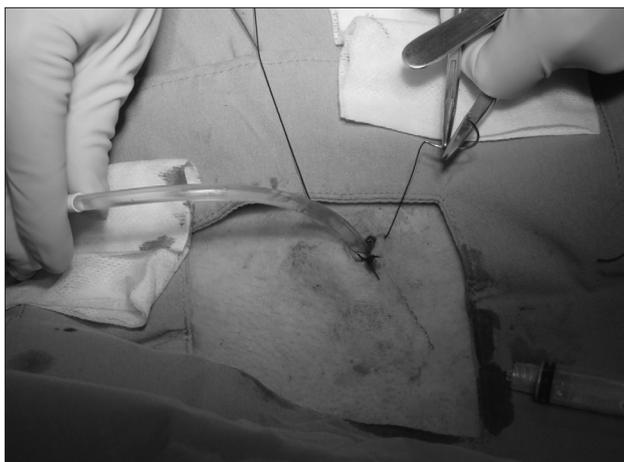


Fig. 9. Suturing catheter in place (optional).

- Be sure to advance the catheter 4–5 cm into the bladder after urine is aspirated.
- Suprapubic catheterization can be painful. Make sure you give the patient adequate local anesthesia with or without procedural sedation.

CONCLUSION

Back to our 2 patients. At the time of writing, our patient with acute urinary retention was doing well. He had his catheter in for 2 weeks and then underwent transurethral resection of the prostate. From performing suprapubic bladder catheterization in this patient, we learned the importance of dissecting right down into the rectus sheath. We did not do this and were surprised at the amount of force required for the trochar to enter the bladder. We did not make this mistake with our second patient.

Our patient with multiple sclerosis was also doing well at the time of writing and was very happy to have a suprapubic catheter rather than a transurethral catheter. The procedure had to be redone 1 week later as his catheter was leaking.



Fig. 10. Dressing.

We were never clear why this happened. Urology suggested that it may have been due to bladder spasms secondary to multiple sclerosis. However, the second procedure went smoothly, and his catheter has been functioning well for several months. Our home care nurse is now managing and changing his catheter.

In conclusion, adult suprapubic catheterization is infrequently performed in the rural/remote setting. It is, however, a straightforward procedure, and performing it locally can save the patient

unnecessary discomfort and a transfer out of the community.

REFERENCES

1. MacLellan K. The occasional suprapubic catheter. *Can J Rural Med* 2000;5:24-5.
2. Shlamovitz GZ, Kim ED. Suprapubic catheterization. Medscape; 2016. Available: <http://emedicine.medscape.com/article/145909-overview> (accessed 2017 Feb. 20).

Competing interests: None declared.

Cardiogrammes ruraux

Avez-vous eu à décrypter un ECG particulièrement difficile récemment?

Dans la plupart des numéros du *JCMR*, nous présentons un ECG assorti de questions.

Les réponses et une discussion du cas sont affichées sur une autre page.

Veillez présenter les cas, accompagnés d'une copy de l'ECG, à Suzanne Kingsmill, rédactrice administrative, *JCMR*, 45, boul. Overlea, C. P. 22015, Toronto (Ontario)

M4H 1N9 ; manedcjr@gmail.com