

Urinary Catheterization of the Adult Female

Introduction

Urinary catheterization is an invasive medical procedure (referred to as “in and out” catheterization or straight catheterization) that involves the insertion of a single-lumen urinary catheter through the urethra and into the bladder for urine drainage or collection. The catheter is removed once the bladder is drained. Catheterization is performed in all care settings, but more frequently, in acute care hospitals. Catheterization is a common procedure performed by urology nurses in an outpatient setting or urologic practice. Catheterization is often performed before, during, or after certain types of surgery; following trauma; and during childbirth. Table 1 lists indications for urinary catheterization. It may also be performed to deliver liquids used for treatment (e.g., chemotherapeutic agents) or for the diagnosis of bladder conditions (e.g., X-rays, urodynamic tests). This Clinical Practice Procedure provides information for the health care professional on the sterile insertion of a non-dwelling catheter through the urethra for bladder drainage in an adult female patient.

Preparation

Female urethral catheterization is generally simple, straightforward, and uncomplicated, allowing for ease of catheterization, whether inserting any urethral catheter. The length of the female urethra is approximately 4 cm long, 6 to 8 mm in diameter (Figure 1, Female Urethra), slightly curved, extends from the bladder neck to the vaginal vestibule, and ends between the clitoris and vagina (Figure 2, Female External Genitalia). Catheter methods and characteristics are found in “Teaching Tool: Methods and Types of Urinary Catheters Used for Indwelling or Intermittent Catheterization.” The most challenging aspect of female catheterization is locating the meatal orifice, even more difficult in an obese woman with a large girth or in women with anatomical differences (e.g., intravaginal urinary meatus) or post-menopausal vaginal atrophy. If the patient has an artificial urinary sphincter, the implant must be opened before catheterization.

If catheterization is being performed in an institution (e.g., acute care, nursing home) or in the patient’s home by a visiting nurse, aseptic technique is maintained throughout the insertion (see “Teaching Tool: Methods and Types of Urinary Catheters Used for Indwelling or Intermittent Catheterization”) because failure to properly adhere to strict aseptic technique when catheterizing the bladder has been linked to infections and sepsis. Only health care professionals trained in the tech-

nique of aseptic catheterization should insert a catheter. The professional should be familiar with the facility or practice policy and standard precautions for urethral catheterization. Prior to insertion, an order from a health care provider should be verified. The patient and the patient’s family and/or caregiver, if present, should be informed of the reason for catheterization and what to expect in terms of discomfort. Other considerations prior to beginning the procedure are as follows:

- Determine any potential allergies (e.g., latex, betadine). Note any pertinent past medical and urologic history that may impair passage of the catheter, including urethral strictures (rare), pelvic organ prolapse and prior bladder, urethral or pelvic surgery or radiation, or any pathological condition that may impair passage of the catheter.
- Assess the patient’s ability to cooperate with the procedure (e.g., level of consciousness, ability to keep knees separated during procedure), and history of recent and/or difficult catheterizations.
- Consider obtaining assistance (e.g., two-person insertion, mechanical aids, additional lighting) to facilitate appropriate visualization and to ensure aseptic insertion technique in high-risk populations (e.g., patients who are obese or with dementia/behavioral issues).
 - Challenging aspect of female urethral catheterization is localization of the urinary meatus.

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Peer Review

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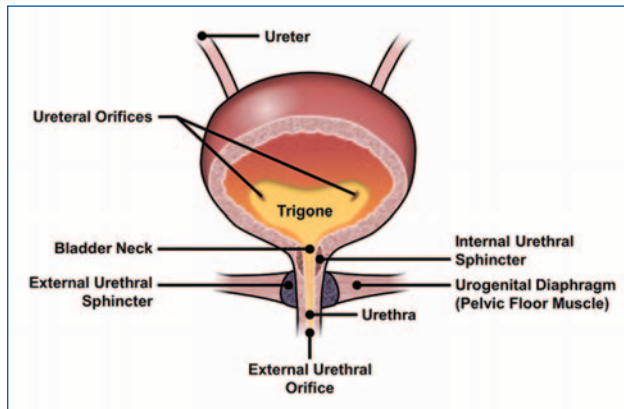
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Table 1.
Indications for Urinary Catheterization

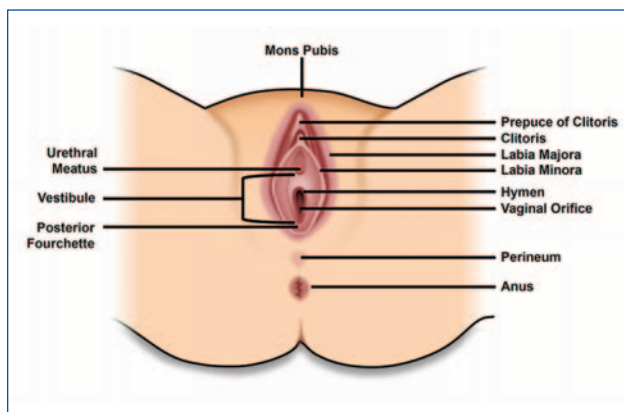
- Post-operative urinary retention.
- To obtain a sterile urine specimen.
- Relieve urinary obstruction.
- To assess residual urine in the bladder after voiding (if a bladder scanner is not available).
- Suspected incomplete bladder emptying/urinary retention in patients with neurogenic lower urinary tract dysfunction causing incomplete bladder emptying, detrusor-sphincter dyssynergia, underactive bladder, or atonic bladder, which leads to incomplete bladder emptying or urinary retention. Neurological conditions include multiple sclerosis, Parkinson’s disease, stroke, diabetes mellitus, spinal bifida, spinal tumors, cerebral palsy, multiple system atrophy, spinal-cord injury, and motor neuron disease.
- Instillation of chemotherapeutic drugs, antibiotics in patients with recurrent urinary tract infections.
- Irrigation of blood clots (passive irrigation).
- Chronic urinary retention, inability to empty any amount of bladder volume due to anatomical or functional bladder outlet obstruction.
- Preferred treatment option for urethral stricture dilation and catheterization method of continent urinary diversions.
- To empty bladder before and during surgery, and before certain diagnostic examinations.
- Use of epidural anesthesia during labor and delivery.
- Postnatal urinary retention.
- Following procedures used to treat urinary urgency and frequency (e.g., *Botulinum* toxin injections to the bladder).
- Acute bladder outlet obstruction (e.g., gross hematuria, pelvic organ prolapse, strictures).
- Administration of drugs directly into the bladder (e.g., chemotherapeutic medication to treat bladder cancer).

Figure 1.
Female Urethra



Source: Courtesy of Diane K. Newman, DNP.

Figure 2.
Female External Genitalia



Source: Courtesy of Diane K. Newman, DNP.

Equipment

Assemble all equipment before beginning procedure.

- Lighting as needed. Consider use of a flashlight to assist in visualization of meatus.
- Disposable clean medical gloves.
- Waterproof pad.
- Catheter insertion trays (kit) may differ, but most include cleaning solution incorporated into an applicator or swab or added to cotton balls, sterile fenestrated drape with opening in the center, second square-shaped drape may also be available, sterile gloves, single-use lubricant, 14 Fr single-lumen catheter, and measuring container for urine (Figure 3, Catheterization Insertion Tray).
 - If the patient has been identified as having an allergy to latex, use a 100% silicone catheter.

- If unsure about size, always start with a standard 14 Fr and increase diameter as needed.
- The use of an anesthetic gel is usually not necessary because the main benefit may be from the lubrication as opposed to the anesthetic effect (Averch et al., 2014). But its use should be considered if this is the patient’s first catheterization or if a difficult catheterization is suspected, especially if actual discomfort with catheter insertion is anticipated (see “Clinical Practice Procedure: Insertion of an Indwelling Urethral Catheter in the Adult Female”).
 - Check for lidocaine sensitivity if using a lubricant containing lidocaine.
- Consider need to assess patient’s bladder for fullness (e.g., scan bladder).

Figure 3.
Catheterization Insertion Tray



Photo: Courtesy of Diane K. Newman, DNP.

Figure 4.
Draping Perineum



Photo: Courtesy of Diane K. Newman, DNP.

Procedure

Provide as much privacy for the patient as possible.

- Identify patient using two identifiers (name, date of birth) according to facility/practice policy.
- Perform hand hygiene and put on clean medical gloves.
- Raise bed and position lighting as necessary to provide adequate visualization of perineum.
- Assist patient into a dorsal recumbent position with knees drawn up and separated in a frog position or with feet flat on bed.
 - Sim's (upper leg drawn up flexed at knee and hip [supported with pillows, if necessary], knee to chest) or lateral position can be an alternate position if the patient cannot lie supine or if unable to identify the meatus.
 - For some women, the supine lithotomy position can be very uncomfortable or even dangerous (e.g., patients in the last trimester of pregnancy may faint with decreased blood supply to the fetus in this position, those with arthritis of the knees and hips).
- Expose patient's genitalia, ensure positioning is appropriate and lighting is adequate (especially important in the female patient).
 - Cover rectal area with a drape to reduce the risk of cross-contamination.
 - Determine if a second person is needed to ensure sterile environment.
- Assess the external genitalia for anatomic landmarks and for presence of abnormalities (e.g., incontinence-associated dermatitis, lesions, atrophy, odor, vaginal discharge).
- Place a waterproof pad under the buttocks.
- Clean perineal area (e.g., soap and water), rinse, and dry.
 - Hygiene before aseptic catheterization removes secretions, urine, and feces that could contaminate the sterile field.
- Remove and discard soiled gloves.
 - Set up sterile tray for catheter insertion and maintain a sterile field throughout the catheterization procedure. If there is a break in sterile technique during preparation or the actual procedure, restart process with new insertion tray, sterile gloves.
 - Place the tray so it is more easily accessible (e.g., on a mayo tray, bedside table, between the patient's legs), within reach so as to minimize chance of contamination. The tray can be used as a container for urine collection.
 - Open the outer plastic wrapping of the kit; may use it for waste disposal.
 - Open the sterile inner package containing the catheter supplies, and open all flaps using sterile technique.
- Ask the patient to raise buttocks and place square-shaped drape (if present), touching ends only, slightly under the buttocks and perineum (shiny side down). This creates a sterile field under the perineum.
- Remove gloves and open sterile glove package in the tray, and put on gloves.
- Place the drape with the fenestrated or diamond-shaped opening drape, so it is centered over the perineal area, exposing the labia and meatus (Figure 4, Draping Perineum).
- Arrange remaining supplies in sterile tray, maintaining sterility of gloves.
 - If collecting a urine specimen, ensure the cup is upright in the tray and remove lid.
- Open lubricant packet and squirt onto the sterile field, and coat 1 to 2 inches (7 mL or lower third) of the catheter with lubricant.

Figure 5.
Cleansing with Forceps and Cotton Ball

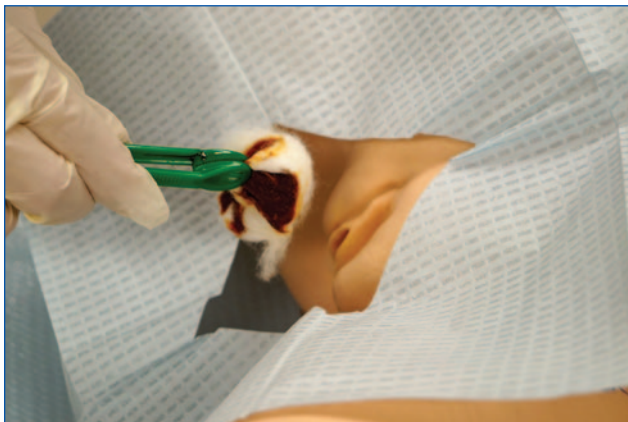


Photo: Courtesy of Diane K. Newman, DNP.


- Saturate cotton balls with betadine or open betadine swab sticks so they are readily available.
- Cleanse the patient; one hand becomes contaminated by touching the appropriate areas on the patient, whereas the other hand (usually the dominant hand) only has contact with the sterile field:
 - With non-dominant hand (hand is no longer sterile), gently spread apart the labia majora cephalad (towards the head) and laterally to visualize and expose the urethral meatus, which should be located directly below the clitoris and above the vaginal opening (Figure 2). This hand is now contaminated, and this position should be maintained throughout the procedure.
 - If the meatus is not visualized, exerting a slight downward pressure when you clean between the labia may open the meatus briefly.
 - In an obese patient, an assistant may be needed to hold the labia folds open during the entire catheterization.
 - With dominant non-contaminated hand, use forceps to pick up betadine-soaked cotton ball or pick up betadine swab stick. Using the forceps or betadine swab will preserve the sterile field. Stroking directly downward from clitoris to vagina, cleanse each side of labia (outer labia then inner labia) from front to back (Figure 5, Cleansing with Forceps and Cotton Ball). Use a new cotton ball or betadine swab stick with each stroke to minimize contamination of meatus with bowel flora. Dispose of soiled cotton ball or betadine swab stick away from sterile field after each downward stroke.
- Before inserting the catheter, educate the patient on diaphragmatic breathing techniques to relax the pelvic floor and prevent external sphincter contraction, promoting easier insertion of the catheter and minimizing discomfort.
- With the dominant sterile hand, pick up the lubricated catheter as you would grasp a pencil or a dart, 3 to 4 inches from the tip and slowly insert catheter through the urethral orifice, angled slightly upward as you advance it, aiming in the direction of the umbilicus.
 - Make sure the catheter does not touch the unprepped area of the perineum.
- Continue to pass the catheter with a smooth constant motion for 2 to 3 inches (5.0 to 7.6 cm) or until urine begins to drain, then advance the catheter another 1 to 2 inches. Resistance to passing the catheter may occur.
 - Resistance can be caused by urethral clamping or contraction of the external sphincter. Asking the patient to relax, take a few deep breaths and cough gently or perform Valsalva maneuver may help to hold the sphincter open momentarily as the catheter is passed through the sphincter.
 - If urine is not draining: 1) the catheter eyelets may be blocked with lubricant and advancing the catheter further into the bladder may clear the lubricant; or 2) the catheter may be in the vagina. Leave the catheter as a landmark until a new catheter is successfully inserted in the bladder. Obtain a new catheter tray and re-attempt catheterization.
 - If there is any doubt the catheter is in the bladder or concern about it kinking in the urethra, stop the insertion procedure. Signs include patient complaint of severe pain during insertion, inability to pass the catheter due to resistance, and/or no urine drainage.
- Allow all urine to drain out of the bladder into the catheter tray or into a sterile specimen container if sending sample for culture. When drainage stops, withdraw the catheter slowly and smoothly.
 - May consider Valsalva maneuver or suprapubic compression to ensure all urine is drained.
- Discard used equipment, remove gloves, perform hand hygiene. Label specimen container if sending urine sample to laboratory.

Documentation

Documentation should include the reason for catheterization, date and time, catheter type and gauge, any problems encountered during procedure (i.e., resistance to insertion, bleeding, pain), amount and description of urine drained, urine specimen collection, and patient's response to the procedure. Document education completed.

Insertion Complications

The actual urethral catheterization procedure has few adverse events in the female patient, but the following may occur:

1. **Bleeding or hematuria:** Although not as common in female patients, catheter insertion and removal may cause blood to occur on the tip of the catheter, or even minimal bleeding may occur from irritation or trauma to the urethral lining. Ensuring an adequate amount of lubrication will reduce the risk of urethral trauma and friction on catheter insertion. Heavy bleeding or clots should not occur.
2. **Difficult urethral catheterization:** See “Clinical Practice Procedure: Insertion of an Indwelling Urethral Catheter in the Adult Female”.
3. **Inability to visualize urinary meatal opening:** First, make sure the patient is positioned so perineal area is easily visualized. This may mean elevating the area with lifts or on a fracture bedpan placed bottom up. Ask the patient to cough or perform the Valsalva maneuver because this causes the urethra to bulge. Poor meatal visualization may also occur when the urethra is deep inside the vagina. Placing a finger inside the vagina and applying gentle pressure upward will straighten the urethra. For further information, see “Clinical Practice Procedure: Insertion of an Indwelling Urethral Catheter in the Adult Female”). Pelvic organ prolapse at or beyond the introitus (Grade 3 or 4) may obscure the meatus. Reducing the prolapse with a Sim speculum may improve meatal visualization.
4. **Pain:** Catheter insertion in women is usually not painful, but there may be complaints of a stinging sensation and discomfort.
5. **Infection:** Bacteria can be introduced during catheterization, but the chances are less than with insertion of an indwelling urinary catheter because the catheter is removed immediately after the bladder is drained. Cleaning the meatus thoroughly prior to catheter insertion and maintaining aseptic catheterization minimizes the chance of introducing bacteria as it passes through the first 1.5 cm of the urethra where the largest numbers of microorganisms are present. 

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