Foley and SPT

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Summary:

Foley catheter and suprapubic catheter problems are among of the most common consultations that we get as urologists. Many of these consults involve a patient in urinary retention with significant discomfort and the ability to resolve the issue quick and easily it the key to good patient care. Getting a good history and having a broad set of skills and tricks to manage these issues is essential to the urologist's armamentarium.

Receiving the Phone Call and Initial thoughts

I. Foley catheter is not draining

Common case presentation

75 male with urinary retention secondary to BPH presents to the ER with Foley catheter that has not drained for the last 16 hours and is leaking around the catheter.

- **Differential Diagnosis:**
  - Hematuria with clot obstruction.
  - Catheter obstruction from other debris
  - Foley catheter is not in the bladder; in this case, it is usually blown up in the prostatic urethra in males at the time of placement.
  - The patient is not making urine.
- **Evaluation**
  - How long has the catheter has been in place? Who placed the catheter if placed recently?
  - History of clotting disorders or on anticoagulation?
  - History of passing stones or debris through the catheter?
  - Examine the abdomen for distension

- Evaluate the Foley catheter bag and tubing for blood clots, debris,etc.
- Can get bladder scan if concern for acute renal failure with anuria.

- **Management**
  - First, try to flush the catheter through the main port with 30cc of saline in a catheter tipped syringe. The catheter may be obstructed with debris or a blood clot, and a simple flush may prompt drainage.
  - If the Foley catheter flushes well, meaning the same amount of fluid instilled through the Foley catheter is returned, yet the catheter still is not draining. It would be best to evaluate the patient for anuria with documented in's and out's along with renal function measurements.
  - If the Foley does not flush well, consider deflating the balloon and trying to advance the foley in a male as it could be in the prostatic urethra.
  - If the Foley appears to be in the bladder, but is obstructed and cannot be flushed, the catheter needs to be changed. Consider using a hematuria catheter if you feel the foley is obstructed with blood clot. Once the new Foley catheter is in, irrigate out the blood clot and you will need to decide if continuous bladder irrigation is indicated.
  - If fluid is continuously instilled but not returned, it would be best to evaluate with imaging to confirm catheter placement and exclude bladder perforation.

II. Foley/Suprapubic tube will not come out

Common case presentation

65 year old male with Foley catheter placed 2 months ago for urinary retention and was lost to follow up. He now presents to the ER because he wants the catheter out. Nurse and Physician in the ER is unable to remove the catheter.

- **Differential Diagnosis**
  - Faulty valve mechanism.
  - Blockage of inflation channel
  - Calcification of the balloon- usually if the catheter has not been changed for an extended period of time.
- **Evaluation**
  - Has the Foley catheter been draining appropriately?
  - Any history of difficulty removing catheters in the past or encrustation of catheters or stents?
  - How much fluid were they able to aspirate from the balloon port?
  - Did the patient have recent cross-sectional imaging that can be assessed for encrustation of the balloon?
- **Management**
  - First, you can cut the side arm of the catheter to remove the valve mechanism. If the

valve mechanism is the problem, the water should drain, deflating the balloon. Sometimes the deflated balloon portion can bulge a bit, making it more difficult to pull the foley out of the urethra. In this case, a slight increase in traction will usually result in successful removal

- If the balloon will not deflate, inject 10cc mineral oil, which acts as a mild solvent, into the balloon port of the catheter and then wait 10-15 minutes. If unsuccessful, you can inject another 5-10cc and wait up to 30 minutes. It is important to inspect the deflated balloon to ensure no retained fragments in the bladder.[1]
- Passing of a ureteral stent stylet or a wire can be passed down the balloon port to attempt to clear debris from the channel or even pop the balloon, although this technique is not commonly successful [2]
- If these techniques do not work, an attempt to puncture the balloon directly with a needle is necessary
    1. In females, this can be done transurethrally or transvaginally with some gentle traction on the balloon to bring it to the bladder neck
    2. Suprapubic puncture with 22G spinal needle is the easiest route in males and can be done with or without ultrasound guidance and with minimal risk of residual balloon fragments[2]
- If none of these techniques work, consider imaging modalities to ensure there is not significant encrustation on the intravesical portion of the bladder. If there is a large stone, the patient will require surgical intervention

III. Cannot Place Foley Catheter

Common case presentation

65 year old male with history of increasing difficulty voiding over the past few years has been unable to void for the last 24 hours and is very uncomfortable. Attempt in the ER at catheter placement is unsuccessful.

- **Differential Diagnosis**
    - Obesity (Buried penis in male or difficulty finding meatus in female)
    - Urethral stricture/Bladder neck contracture (post prostate surgery)
    - BPH
    - False passage likely created in a patient with one of the above diagnoses
    - Anatomic variant/congenital condition
- **Evaluation**
    - It is important to find out as much information about the patient and the number of catheter attempts as you can. This way you can decide what equipment and catheters to bring with you. In particular a history of benign prostatic hypertrophy on medication, previous surgeries (prostatectomy, transurethral prostate surgery), history of urethral

stricture disease.

- Make sure to inquire why the patient needs a catheter. If the patient is not in retention, consider other ways to manage urinary incontinence or close urine output monitoring. Condom catheters and female external catheters are some options.
- Always consider the discomfort the patient may have already been through and consider bringing lidocaine jelly and pain medication to help the patient relax and decrease pain. Injection of a large volume of lidocaine jelly directly into the urethra can be helpful for pain control and to make placement of the catheter easier

- **Management**
  - A patient with prior prostatectomy or transurethral resection of the prostate (TURP) could have a bladder neck contracture or bulbar stricture. In this setting, a smaller, stiffer catheter such as a 14F silastic catheter will likely have the best chance of passage. Sometimes the smaller French size catheter does not have the stiffness needed to traverse the urethra at the level of the bladder neck or prostate; therefore, a SuperStiff wire can be placed down the Foley catheter to improves stiffness. [3]
  - If the patient is morbidly obese or has anasarca, it is likely that a buried penis or difficulty spreading the labia in a female is the issue
    1. In this case, you want to have extra help to hold back the pannus or labia so you can better visualize the urethra.
    2. If you still cannot see the meatus in a female, you may need to place 2 fingers into the vagina anteriorly and pass the catheter on top of your fingers, guiding the catheter blindly into the urethra. A 14 or 16F Coude tip Foley catheter can help if the meatus is deep inside the introitus. Finally, a nasal speculum can be helpful to spread the labia to identify the urethral meatus in obese female patients.
    3. In severe cases of buried penis, you may need to use a cystoscope to locate the meatus and place the catheter over a wire after getting access to the urethra.
  - An older gentleman in retention is likely to have BPH
    1. A well-lubricated Coude tip Foley catheter is most likely to give you success. When using a Coude tip catheter, a 18-20F catheter is preferred over a smaller catheter that may not be rigid enough to maneuver past the prostate. Perineal pressure by an assistant can help guide the Coude tip catheter into the prostatic urethra in difficult cases.[4]
  - Meatal stenosis
    1. Use a meatal dilator to gently dilate the meatus and pass a small, rigid catheter such as a 14F silastic Foley catheter.
- **Advanced maneuvers**[5,6]
  - Should your initial maneuvers fail, you need to be ready to attempt some more advanced maneuvers in order to get access to the bladder. At this point, discussion with an experienced urologist is recommended to decide in the particular case if a suprapubic tube or urethral foley would be better for the patient

- Hydrophilic wire placement
    1. A hydrophilic wire can be blindly placed into the urethra and advanced into the bladder. The slippery, atraumatic properties of this wire decrease the risk of further traumatic injury to the urethra. If the wire seems to have made it past the area of concern and into the bladder, you can place a 5F angiographic catheter over the wire into the bladder. Drainage of urine from the angiographic or aspiration with a syringe can confirm placement. A stiff wire can then be placed through the angiographic catheter into the bladder to facilitate dilation[7]
- Filiforms and followers
    1. Blind dilation with filiforms and followers should be done with extreme care. Patients with history of radiation therapy of the prostate or multiple prior surgeries should probably be dilated over a wire placed under vision
    2. When placing filiforms for suspected false passage, do not remove filiforms that do not advance into the bladder. Leave them in place and gently pass another filiform. The filiforms will fill the false passage and eventually one will make easy passage into the bladder. Then serially dilate over the filiform to 4F larger than the catheter and attempt placement
- Urethrocystoscopy with or without dilation
    1. Using a flexible cystoscope, maneuver through the urethra to reach the area of difficulty
        1. In some cases, the patient simply has a large prostate making blind passage difficult and the scope can be directed into bladder under vision. Once safely in the bladder place a wire and back the scope out over the wire. A catheter can then be placed over the wire into the bladder. Catheter size can be selected based on the situation but smaller than 16Fr can clog if there is associated hematuria. Council tip catheters have an opening at the tip of the catheter to allow the catheter to be placed over the wire. If a council tip wire is not available, you can create a hole in the tip of the catheter using a catheter punch. Less ideal but if need a hole also can be made but cutting the tip of the catheter to expose the lumen.
        2. If a stricture is encountered, placing a stiff wire under visualization will allow serial dilation with Heyman dilators. A Council-tipped catheter can then be placed over the wire. Dilation at least 2-4F above the size of the catheter to ensure easy passage.
        3. An alternate to serial dilation is direct visualization balloon dilation with rigid or flexible cystoscope.[8]
        4. If a false passage is encountered, drive the scope through the true lumen into the bladder and place a wire into the bladder. This will allow you to place a council-tipped catheter over the wire and into the bladder
            - Of note, false passages tend to be posteriorly located and there can be

bleeding, so gently advancing the scope with anterior deflection can sometimes guide you into the true lumen in difficult cases.

- Suprapubic catheter placement
    1. It is important to know the patient's surgical history and review any abdominal imaging they may have prior to attempted suprapubic tube placement. Consider IR placement in patients with extensive surgical histories or overlying bowel on imaging
    2. There are many techniques for suprapubic tube placement. Ensure the bladder is full prior to any blind placement. Use of ultrasound guidance or direct visualization with cystoscopy when possible increases safety

Key Takeaways

1. Always obtain a good history and review any imaging prior to addressing a difficult catheter consultation.
2. Prepare a list of supplies you might need and have them available and handy should your initial attempts be unsuccessful.
3. Always consider patient discomfort when attempting procedures and provide appropriate pain medicine and local anesthetic when at all possible.
4. If you are having difficulty or need to decide between invasive procedures such as cystoscopy or suprapubic tube, involve an experienced urologist to help decide what intervention is best for the patient.

References: 2,4,7,9,10,11

Videos

A Simple Guidewire and Angiocatheter Technique for Difficult Urethral Catheter Placement

Cystoscopic with Wire-Guided Urethral Catheter Placement: A Step-by-Step Tutorial

A Stepwise Demonstration of Foley Catheter Placement Over a Guidewire and Suprapubic Catheter Placement: Inside-to-out and Outside-to-In Techniques

Open Insertion of Suprapubic Catheter

Suprapubic Tube Placement

AUA Core Curriculum: Foley and SPT

References

1 ☆ Murphy G., Wood D. The Use of Mineral Oil to Manage the Nondeflating Foley Catheter. The Journal of Urology (1993), volume 149, pages 89-90.

2 Br J Urol. 77 (1996), pages 716-718. A comparison of various methods to burst Foley catheter balloons and the risk of free-fragment formation. Gulmez I., Ekmekcioglu O., Karacagil M.

3 Liss MA, Leifer S, Sakakine G, Esparza M, Clayman RV. The Liss maneuver: a nonendoscopic technique for difficult Foley catheterization. J Endourol. 2009;23(8):1227-1230. doi:10.1089/end.2009.0043

4 International Braz J Urol. Volume 34 issue 4, Rio de Janeiro July/Aug. 2008. Difficult male urethral catheterization: a review of different approaches. Villanueva C., Hemstreet G. P. 3rd.

5 Villanueva C, Hemstreet GP 3rd. The approach to the difficult urethral catheterization among urology residents in the United States. Int Braz J Urol. 2010;36(6):710-717. doi:10.1590/s1677-55382010000600009

6 Kokubun M, Fujimoto S, Shrestha RD, et al. Gan To Kagaku Ryoho. 1991;18(11):2058-2062.

7 Urology Annals. July 2015. A clever technique for placement of a urinary catheter over a wire. Abbott J. E., Heinemann A., Badalament R., Davalos J. G.

8 Gelman J, Liss MA, Cinman NM. Direct vision balloon dilation for the management of urethral strictures [published correction appears in J Endourol. 2012 Jan;26(1):77]. J Endourol. 2011;25(8):1249-1251. doi:10.1089/end.2011.0034

9 Urology. Volume 59, Issue 1, January 2002, pages 127-129. Review of techniques to remove a Foley catheter when the balloon does not deflate. Daneshmanda S., Youssefzadeh D., Skinner E. C.

10 Br J Urol. 56 (1984), pages 185-187. Removal of retained urinary catheters. Chin P. L., Singh R. K., Athey G.

11 BMJ. 4 (1972), page 735. Removing obstructed balloon catheter. Sood S. C., Sahota H.