



Postoperative Voiding Dysfunction

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Objectives



- Define postoperative voiding dysfunction
- Describe how to evaluate postoperative voiding
- Discuss how to perform a retrograde voiding trial
- Discuss how to perform a spontaneous voiding trial



Definition



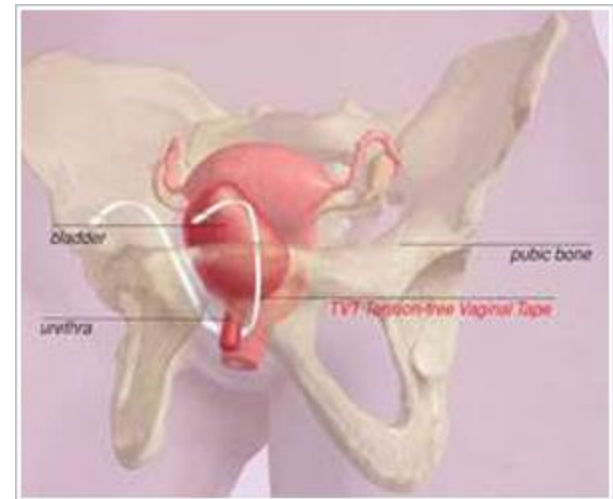
- Postoperative voiding dysfunction
 - The inability to void with fluid in the bladder during the postoperative period
 - Commonly occurs after pelvic organ prolapse (POP) and urinary incontinence surgery
 - Occurs in 43% of POP surgery that included placement of a midurethral sling



Background



- Wang, K.H., et. al.
 - 2002 Int Urogynecol J Pelvic Floor Dysfunction
 - 59 women undergoing a transvaginal tape procedure
 - Postoperative voiding dysfunction associated with
 - Abnormal preoperative uroflow pattern and configuration
 - Preoperative low peak flow rate <15 ml/s
 - Preoperative vault prolapse or enterocele
 - Concurrent vault suspension surgery
 - Postoperative urinary tract infection (UTI)





Background



- Undetected voiding dysfunction can lead to:
 - Overdistention
 - Urinary tract infections
 - Damage to the detrusor muscle



Evaluation



- Method of evaluating voiding dysfunction post operatively is based largely on practice patterns with no consensus to best method
- Methods include
 - Retrograde filling (active trial)
 - Spontaneous filling (passive technique)
 - Bladder scanning



Supplies Needed



- 10 mL syringe
- 60 mL catheter-tipped syringe
- Nonsterile gloves
- 300 mL of sterile saline
- Commode-mounted urine measurement container
- Clamp

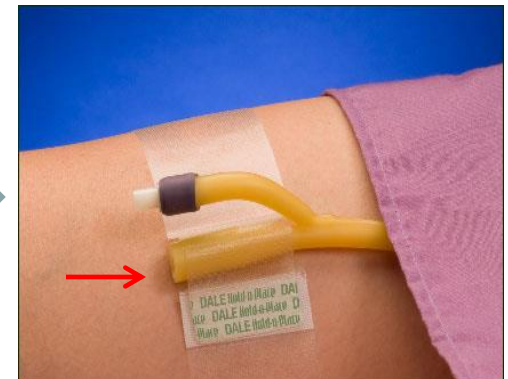




Retrograde Filling



- Confirm that all urine is drained from the bladder with the indwelling Foley catheter in place
- Give 300-mL bolus of saline instilled into the bladder through the indwelling catheter

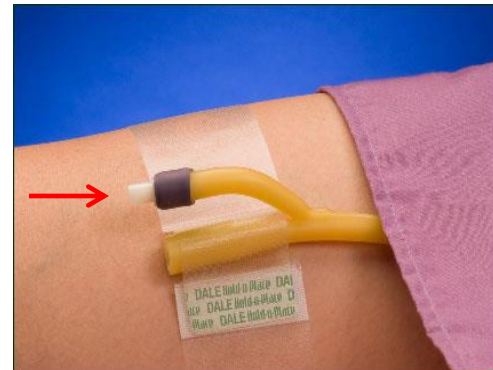




Retrograde Filling



- Clamp catheter where water was inserted
- After removing the catheter, the patient was asked to void within **30 minutes**



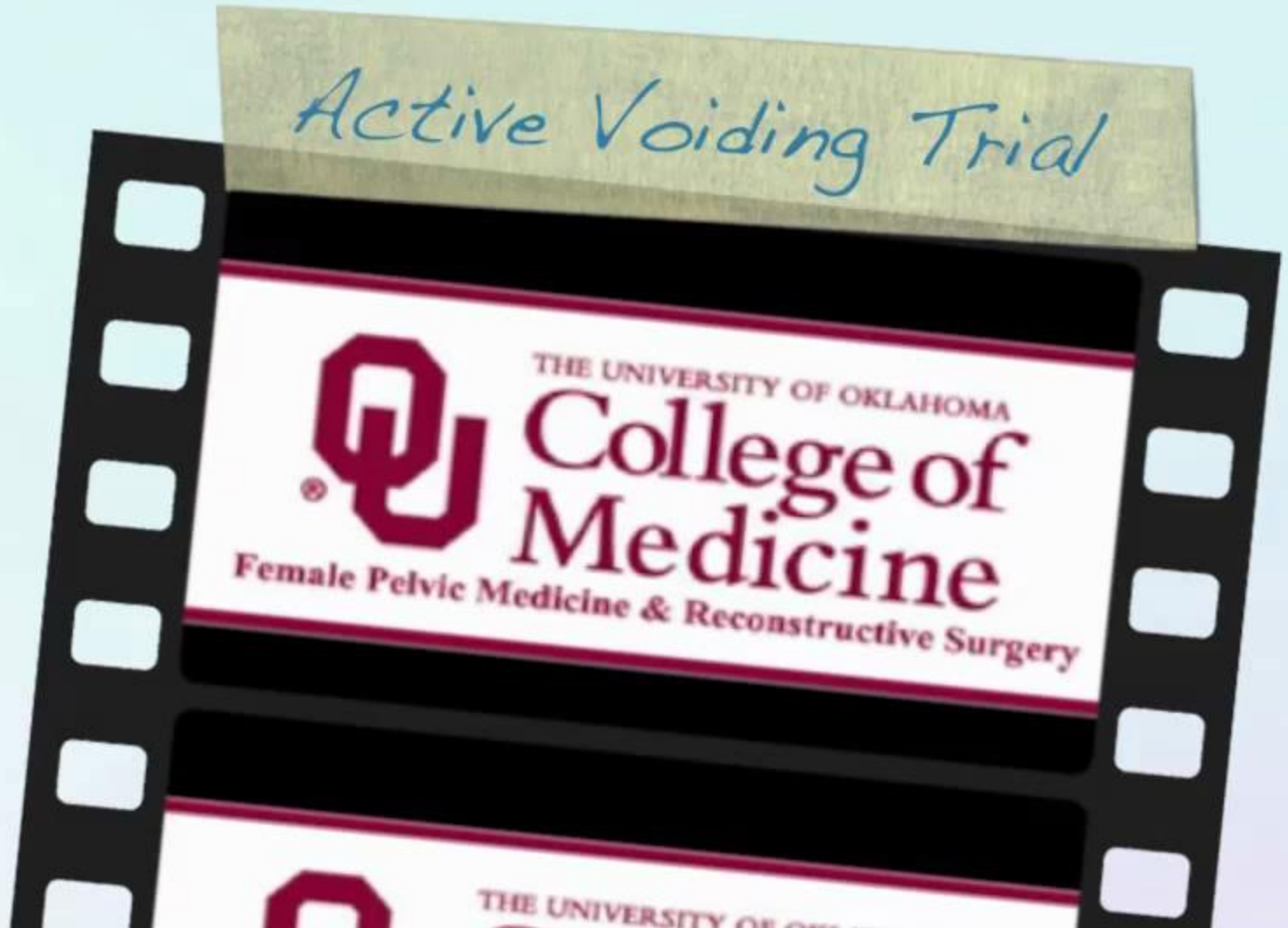
- Voided volume is recorded



Retrograde Filling



Active Voiding Trial





Did she pass the voiding trial?



- Postvoid residual (PVR) is indirectly determined by subtracting the voided volume from the 300 mL of instilled fluid
 - Example:
 - 300 mL instilled
 - Patient voids 220 mL
 - 300 mL instilled – 220 mL voided = 80 mL PVR
 - $2/3$ of 300 = 200
 - So since 220 voided $>200 \rightarrow$ patient passed voiding trial



Spontaneous Filling



- Remove foley catheter
- Allow the patient's bladder to fill spontaneously over no more than 4 hours





Spontaneous Filling



- Patient to void on desire
- Immediately after void, a straight catheterization is performed to assess the PVR
- Two consecutive spontaneous tests were performed for complete assessment using this technique
- Both must be passed to pass the spontaneous method.



Pros and Cons



Retrocatheter Filling

Advantages

- Done at patient's leisure
- Fewer catheterizations
- Allows for accurate measurement of postvoid residual (PVR)

Disadvantages

- Operates dependent
- Possibly more catheterizations



Studies



- Foster, R. T., et al.
 - 2007 American Journal of Obstetrics and Gynecology
 - 55 patients- randomized to retrograde fill or spontaneously voiding
 - Urinary retention in 47% of patients
 - Subjects randomized to backfill were more likely to adequately empty their bladders and be discharged home without catheter drainage than the spontaneous voiding group (61.5% vs 32.1%, respectively, $P = .02$)



Studies



- Geller, E. J., et al.
 - 2011 Obstetrics and Gynecology
 - Randomly assigned to retrograde first or spontaneous first
 - 50 patients
 - Review of the preference questionnaire found that patients preferred the retrograde method 51.1% vs 44.4%
 - Both methods have a low positive predictive value → more false-positive diagnoses of voiding dysfunction → more women sent home self-catheterizing



Studies



- Pulvino, J.Q., et al.
 - 2010 Journal of Urology
 - The back fill void trial correlated better with a successful voiding trial than the spontaneous fill trial
- Ferrante, K., et al.
 - 2013 AUA abstract
 - Most women (454/597 (76%)) passed the first voiding trial (self-voiding group) and 143 (24%) needed a repeat voiding trial



So what if they fail the voiding trial?



- Notify on call resident
- Typically, the catheter can be replaced and patient scheduled for follow up visit in 24-48 hours to have the voiding trial repeated
- Patient can be taught self-intermittent catheterization, but this is typically taught in the outpatient setting



When to Use a Bladder Scan



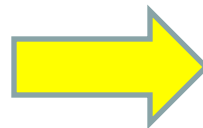
- Bladder scan is typically a specific order placed by the physician
- Often performed in conjunction with the spontaneous voiding trial, rather than performing the catheterization
- More commonly used by the Urologists



Bladder Scanning



- Turn machine on
- Have patient lie in supine position with abdominal muscles relaxed
- Place gel on patient's abdomen at the midline approximately 3 cm above the pubic bone

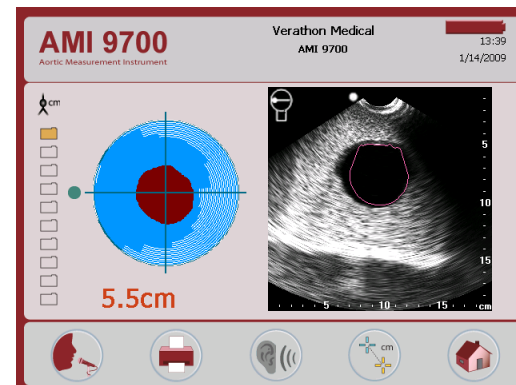
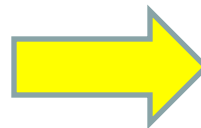
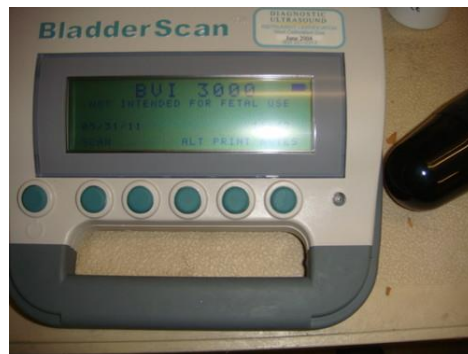




Bladder Scanning



- Aim towards the bladder
- Press the scan button
 - Make sure the ultrasound bladder image is the biggest and centered
- When done, the results of the urine volume will be displayed





References



- Rosseland, L. A., Stubhaug, A. and Breivik, H. (2002), Detecting postoperative urinary retention with an ultrasound scanner. *Acta Anaesthesiologica Scandinavica*, 46: 279–282. doi: 10.1034/j.1399-6576.2002.t01-1-460309.x
- Geller, E.J., et al., *Diagnostic accuracy of retrograde and spontaneous voiding trials for postoperative voiding dysfunction: a randomized controlled trial*. *Obstetrics & Gynecology*, 2011. **118**(3): p. 637-42.
- Foster Sr, R.T., et al., *A randomized, controlled trial evaluating 2 techniques of postoperative bladder testing after transvaginal surgery*. *American journal of obstetrics and gynecology*, 2007. **197**(6): p. 627.e1-627.e4.
- Pulvino, J. Q., et al., Comparison of 2 Techniques to Predict Voiding Efficiency After Inpatient Urogynecologic Surgery. *The Journal of Urology*, 2010. **184**(4): p. 1408-1412.
- Wang, K.H., M. Neimark, and G.W. Davila, *Voiding dysfunction following TVT procedure*. *International Urogynecology Journal*, 2002. **13**(6): p. 353-7; discussion 358.
- Ferrante, K., et al., *Repeat Post-Op Voiding Trials: An Inconvenient Correlate with Success*, in *American Urological Association*. 2013: San Diego, CA.