

Vol. 1, No. 3

Tracheostomy:
Easing the
Transition from
Hospital to Home

**Transurethral
Resection of the
Prostate**



Transurethral Resection of the Prostate

by Dianne Wasson, MSN, RN

Benign prostatic hyperplasia (BPH) is a common urological condition in the aging male. At least 50% of men over age 50 have some degree of prostatic enlargement.^{1,2} While the cause of BPH is unknown, it is thought that advancing age, functioning testicles, and androgen production contribute to the development of the disorder.

When the prostate enlarges to the point of symptomatic urinary outflow obstruction (Table 1), a transurethral resection of the prostate (TURP) is the treatment of choice. TURP is the second most common surgical procedure in men over 65 years.² While this procedure once required a hospital stay of three to four days, TURPs are now successfully performed in the ambulatory setting.

Symptoms of Benign Prostatic Hyperplasia (BPH)

- Urgency of urination
- Frequency of urination
- Abdominal straining
- Nocturia
- Impairment of size and force of stream
- Intermittant hesitancy
- Incomplete bladder emptying
- Terminal dribbling
- Dysuria
- Eventual renal failure from urinary obstruction

Religo & Larson, 1994; Wilson 1997

Pathophysiology and etiology of BPH

Hyperplasia is an abnormal increase in the amount of normal cells in normal tissue. While not cancerous, the cells in the cylinder of smooth muscle that encircles the prostate gland increase in number.³ Both testosterone and androgen are responsible for the production,

progression, and maintenance of the prostate gland. As men age, the level of circulating testosterone decreases, while the number of androgen receptors increases, causing the overgrowth of the prostate.⁴ The result is an enlarged prostate gland that causes bladder outflow obstruction.

Because the enlarged gland obstructs the prostatic urethra, the patient strains during urination to overcome the obstruction. Over time, straining to urinate causes the detrusor muscle of the bladder to thicken and diverticula to form in the bladder. When the detrusor muscle can no longer generate sufficient pressure to overcome the urethral obstruction, the bladder fails and retains urine. Destruction of striated and smooth muscles, i.e., pelvic floor muscles, results in urinary incontinence.⁵

Treatment and BPH

Nothing can prevent the development of BPH. Treatment is based on quality-of-life issues, such as incontinence, urgency, frequency of urination, and nocturia.³

Patient education should begin in the fourth decade of life to increase awareness of signs and symptoms of BPH. It is important for men to know not to wait to seek treatment. Delay could result in severe obstruction of the urinary system and subsequent kidney damage.³

The goal of treatment is to relieve obstruction by reducing the size of prostatic tissue compressing the urethral mucosa.⁶ Treatments are based on the degree of hyperplasia and severity of symptoms.

BPH Management

Medical management involves close monitoring for increase in severity of prostatic-related symptoms. Health-care professionals are recommended to use the American Urological Association Symptom Score (Table 2) for such monitoring. This tool can

objectively quantify BPH symptoms; however, it should not be used as the only means of diagnosing BPH, since the measures are not exclusive to BPH. Since there is an overlap in laboratory values between BPH and prostatic cancer, measurement of the prostatic-specific antigen (PSA) is also not discriminatory enough for BPH monitoring.⁷

International Prostate Symptom Score

Patient Name:	Not at all	< one time in five	< half the time	about half the time	> half the time	Almost always
1. Incomplete emptying Over the past month, how often have you had a sensation of not emptying your bladder?	0	1	2	3	4	5
2. Frequency Over the past month, how often have you had to urinate again less than 2 hours after you finished urinating?	0	1	2	3	4	5
3. Intermittency Over the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5
4. Urgency Over the past month, how	0	1	2	3	4	5

often have you found it difficult to postpone urination?						
--	--	--	--	--	--	--

5. Weak stream Over the past month, how often have you had a weak urinary stream?	0	1	2	3	4	5
---	---	---	---	---	---	---

6. Straining Over the past month, how often have you had to push or strain to begin urination?	0	1	2	3	4	5
--	---	---	---	---	---	---

7. Nocturia Over the past month, how many times did you most typically get up to urinate from the time you went to bed at night until the time you got up in the morning?	None		1	2	3	4	5
			Time	Times	Times	Times	Times
	0		1	2	3	4	5

TOTAL I-PPS score (scores ranging from 0 to 35 with 0 being symptomatic and 35 indicating						
---	--	--	--	--	--	--

severe symptoms)							
Quality of life as a result of urinary symptoms If you were to spend your life with your urinary symptoms the way they are now, how would you feel?							
	Delighted	Pleased	Mostly Satisfied	Mixed	Mostly dissatisfied	Unhappy	Terrible
	0	1	2	3	4	5	6

Source: The I-PSS was developed by the Measurement Committee of the American Urological Association. The International Consensus under the patronage of the World Health Organization recommends its use for the evaluation of all patients experiencing problems.

Table 2

Management with drug therapy, such as alpha-adrenergic blockers, antiandrogens, or aromatase inhibitors, may relieve symptoms. Their use is controversial due to severe drug-related side effects and the length of treatment (>6 mo.) needed to relieve symptoms.^{6,8}

BPH Surgical Management

Not all men with BPH require surgery. Acute urinary retention, chronic UTIs, hematuria, and hydronephrosis are common problems warranting surgical intervention.⁵ Several surgical procedures are possible for removing the hypertrophied portion of the prostate gland (Table 3). The goals of surgical intervention are to relieve the symptoms and improve the quality of the client's life by allowing him to retain urinary control and normal sexual functioning.^{5,14}

PROCEDURE	DESCRIPTION	COMMENTS
Transurethral Resection of the Prostate	(TURP) Involves insertion of a resectoscope through the urethra using an electrically energized loop to excise hyperplastic lobes of the	<ul style="list-style-type: none"> is the surgical procedure of first choice. usually requires an

	prostate.	inpatient stay
Transurethral Incision of the Prostate (TUIP)	Is similar to TURP, except the prostate capsule is cut in several places to reduce urethral stricture vs. more extensive tissue removal. ⁴	<ul style="list-style-type: none"> is limited to patients with prostates <30 g without extensive prostatic invasion of the urethral lumen. may be done in an ambulatory setting
Visual Laser Ablation of the Prostate (VLAP)	A laserscope is inserted through the cystoscope and vaporizes the tissue beneath the epithelial layer causing coagulation necrosis of the prostatic tissue. ¹³	<ul style="list-style-type: none"> has less morbidity and blood loss than TURP. has shorter total recovery than TURP (7 vs. 28-42 days). may be done in an ambulatory setting
Transurethral Microwave Thermotherapy (TUMT)	A specially designed retention catheter with an internal microwave antenna is inserted into the urethra and a rectal probe with temperature sensors is placed along the anterior rectal wall. The hyperthermia treatment is multiphasic. Both urethral heating and cooling is used to cause tissue necrosis and shrinkage. ⁶	<ul style="list-style-type: none"> The most common complication is urinary retention due to residual edema from the treatment. is considered as cost-effective with good morbidity and mortality statistics. may be done in an ambulatory setting
Prostatectomy	Is excision of the prostate through suprapubic, retropubic, or perineal incisions. ⁵	<ul style="list-style-type: none"> The type of prostatectomy is determined by prostate size and whether any bladder abnormalities exist that can be treated concurrently. requires a longer hospital stay than TURP

Table 3

Post-operative Nursing Care

After the patient returns to the inpatient nursing unit, the nurse completes an initial assessment and continues to monitor for signs and symptoms of urinary compromise. Post-operative nursing interventions involve assessing the urinary catheter for patency and blood loss every one to two hours. Initially, the nurse may see red-tinged urine that fades to pink within 24 hours. The nurse monitors for signs of excessive blood loss, e.g., rapid pulse and decreasing blood pressure, and checks intake and output every one to two hours.⁴ When calculating output, subtract the total amount of irrigation solution infused from the total amount of urine output emptied from the collection bag.³ If blood clots impede adequate catheter drainage, gentle irrigation is performed with saline solution.

The urinary catheter is usually removed by 72 hours.^{3,4} After the urinary catheter is removed, the nurse continues to monitor urinary output every two to four hours. The client is encouraged to drink 2000 to 3000 ml of fluids daily to relieve initial dysuria and resolve hematuria.

Discomfort after TURP is often associated with bladder distention, irritation from the catheter or irrigation solution, or bladder spasm. The physician may order smooth muscle relaxants, such as belladonna and opium suppositories, if bladder spasms persist. Minimizing catheter manipulation and promoting rest can help to maintain patient comfort.^{3,4} Discomfort is often attributed to meatal irritation caused by catheter movement. A Velcro™-type holder that allows for frequent rotation of the bladder pressure point and may alleviate the discomfort.

TURP-associated complications

TURP syndrome

Nursing interventions are focused on management and prevention of complications. The most serious TURP-associated complication is known as TURP syndrome. It occurs in about 2% of TURP patients, usually within the first 24 hours.^{3,4} Abnormal vascular absorption of irrigating fluid during surgery causes severe dilutional hyponatremia and hypervolemia. The amount of fluid reabsorbed depends on the duration of resection, the number and size of opened venous sinuses, and the hydrostatic pressure exerted by irrigating fluid.⁴

The nurse carefully assesses the patient for symptoms of TURP syndrome, including^{3,9}:

- dramatic increase in BP
- full, bounding pulses
- bradycardia
- tachypnea

- confusion
- agitation
- temporary blindness

The nurse also assesses the patency of inflow and outflow tubing, rate of irrigation, and bladder distention by palpation.² The nurse should hang irrigation solution bags no higher than two to three feet above the level of the patient's bladder.² A 0.9% sodium chloride solution is used for irrigation.⁹

The physician can minimize the risk of TURP syndrome by limiting resection time to fewer than 60 minutes.

Hemorrhage

The most common complication after TURP is hemorrhage. Bladder spasms or movement may initiate bleeding. Meticulous surgical hemostasis followed by appropriate catheter balloon position and sufficient inflation can prevent or control hemorrhage.^{4,5}

If the physician applies catheter traction for pressure against vessels at the surgical site, the catheter is usually secured to the abdomen or thigh with tape or a Velcro^a catheter device. Nurses ensure that traction is maintained. However, a Velcro^a-type holder can continuously hold the catheter in traction without slippage or movement.

The bleeding may be arterial, but venous bleeding is more common.⁵ Nursing interventions include the monitoring of:

- vitals signs every four hours.
- urinary output for color and consistency of bladder returns every two hours.
- increasing the rate of bladder irrigation
- flow as needed to assure urine flows and prevent obstruction

Instruct the patient to remain flat or at a slight incline immediately post-operatively, because sitting may increase venous and bladder pressure, causing bleeding.^{1,3,5}

The nurse informs the physician of any increase in bleeding or change in vital signs that may indicate hemorrhage. Surgical intervention may be needed should the bleeding continue. Hypovolemia may develop due to extensive bleeding. It requires intravenous fluids and blood product replacement.

Delayed bleeding caused by excessive physical exertion or straining for bowel movements may be experienced up to two weeks post-operatively.³ Instruct the patient to drink at least 12 glasses of water per day and to avoid the use of alcohol, caffeinated beverages, and spicy foods that may overstimulate the bladder. He should avoid strenuous activities, such as driving, for at least two weeks and notify the physician if the bleeding does not subside within one hour of resting and increasing fluid intake.⁴

Bacteremia

Urinary-tract bacteria enter the systemic circulation through prostatic vessels that are cut during surgery. In catheterized patients, the incidence of infection is 50% or greater.¹⁰ The longer the length of time the catheter remains in place the greater the risk of infection. Donegan has reported that virtually all patients have bacteria in the urine after 10 days of catheter use; however, other patient conditions may not permit the bacteria to become problematic.¹¹

The incidence of urinary tract infection or bacteriuria is known to develop in most individuals within two to four weeks after the catheter is inserted (AHCPR 1996).¹⁴ If prolonged use of a urinary catheter after TURP is necessary, careful monitoring, meticulous hygiene, and maintenance of a closed system is critical.

Pre-existing urinary tract infections and the presence of an indwelling catheter predispose the patient to post-operative infections. Septic shock is a risk when bacteria are released into the blood stream due to urinary-system manipulation. Bacteremia is managed with a preoperative amino-glycoside antibiotic, such as gentamycin.

The nurse continues to assess the patency of inflow and outflow tubing and the rate of irrigation. Other nursing assessments for symptoms of bacteremia include^{3,4}:

- shaking
- chills
- sudden hypotension
- tachycardia
- hyperthermia

Urinary Catheter Obstruction

The urinary catheter can become obstructed by clots or tissue debris. By assessing the color and consistency of bladder returns, patency of inflow and outflow tubing, and rate of irrigation, the nurse can prevent urinary retention post-operatively.⁴

Initially, the physician may order a rapid irrigation to flush debris and clots. An adequate irrigant rate can be maintained by the nurse via gentle milking of the outflow tubing at frequent intervals. Moving the patient gently from side-to-side in bed also helps to expel blood clots.

It may be necessary to irrigate with a piston syringe if a clot obstruction occurs.^{3,4} Continuous bladder irrigation (CBI) or intermittent bladder irrigation (IBI) with normal saline solution keeps the catheter free of obstruction and facilitates the detection of obstruction or other complications. The rate of irrigation is adjusted so that a colorless or light pink output is maintained.

Bladder irrigations and the urinary catheter are usually discontinued within 24 to 48 hours. The physician should be notified if an obstruction cannot be resolved by hand irrigation or if the urine returns bright red.^{4,5}

Fibrotic Scarring

A potential, late complication is fibrotic scarring. It causes urethral stricture or bladder neck contraction. Fewer than 7% of patients have been associated with this complication.³ A careful nursing history of patient healing or scarring can identify patients at risk. Surgical intervention is the primary management of this complication.

Discharge Planning

Unless a surgical complication or unusual problem with urination occurs, the patient will not be discharged with a catheter or dressing.⁵ The nurse gives specific discharge instructions to the patient about self-monitoring the urinary system. The patient may be asked to keep a voiding record and to note the character and volume of urine and the frequency of urination.

During the initial home-recovery period, the nurse instructs the patient to avoid strenuous activities, such as driving, and to rest often for two to six weeks. To enable the surgical site to properly heal, common activity restrictions during the post-operative period include:

- no lifting of more than 5 lb.
- no excessive physical exertion
- no long walks
- no driving a vehicle

If the urine turns bright red, instruct the patient to immediately drink more clear fluids and rest. He should notify the physician, if the bleeding does not subside within one to two hours.^{3,4,5}

Nutrition is an important aspect of patient discharge planning. Instruct the patient to avoid the consumption of alcohol, caffeine, and spicy foods that could overstimulate the bladder. The importance of drinking 2500 to 3000 ml of fluid daily cannot be overemphasized. The increased level of fluids help to clear the urine, pass remaining clots, and prevent infection. A high-fiber diet is important for the prevention of constipation and to reduce the probability of hemorrhage due to increased pressure on the pelvic muscles.^{4,5}

Another aspect of home-care instructions involves meticulous perineal hygiene to minimize the risk of infection. Encourage the patient to take prescription antibiotics at regular times of day, until the course of medication is completed to reduce the risk of urinary sepsis.^{4,5}

The most important exercises for the patient are strengthening and tightening the pelvic floor muscles (Kegel exercises). Kegel muscles can stop the flow of urine. The patient is taught to tighten the pelvic muscles without tightening the thigh or abdominal muscles for 35 to 50 repetitions in five -10-second periods.^{4,5} These exercises reduce abnormal detrusor muscle contractions by decreasing bladder pressure.¹²

Long-term patient management after TURP involves ongoing assessment of sexual and urinary function. Assessing self-esteem and sexuality is critical as optimal erection function and changes in libido may take 12 months to resolve.⁴

Conclusion

Nurses will often care for TURP patients. An uncomplicated post-operative course results from skilled medical and nursing management, including patient education. Rapid recognition of signs and symptoms of TURP complications is critical. Knowledge of appropriate treatment of complications is essential to assure positive patient outcomes.

References

1. Beetstra J, Gabrielson A. Transurethral resection of the prostate in an ambulatory setting. *Journal of Urological Nursing* 1992;11(3):163-168.
2. Black JM, Matassarini-Jacobs E. *Medical-surgical nursing: Clinical management for continuity of care* (5th ed.). Philadelphia: Saunders, 1997.
3. Wilson M. Care of the patient undergoing transurethral resection of the prostate. *Journal of Perianesthesia Nursing* 1997;12(5):341-351.
4. Gray ML. Nursing management of men with reproductive system disorders. In: Beare PG, Myers JL (eds.), *Adult Health Nursing* (3rd ed.). St. Louis: Mosby, 1998.
5. Ignatavicius DD, Workman ML, Mishler MA. *Medical-surgical nursing: A nursing process approach* (2nd ed.). Philadelphia: Saunders, 1995.
6. Religo WM, Larson TR. Microwave therapy: new wave of treatment for benign prostatic hyperplasia. *Journal of the American Academy of Physician Assistants* 1994;7(4):259-267.
7. McConnell JD et al. *Benign prostatic hyperplasia: diagnosis and treatment*. 1994 (AHCPR Publication No. 94-0582).
8. Monda JM, Oesterling JE. Medical management of prostatic obstruction. *Journal of Urological Nursing* 1994;13(2):717-738.
9. Schick L. The patient with post-transurethral resection of the prostate syndrome. *Journal of Post Anesthesia Nursing* 1991;6(2):136-142.
10. Cohen BJ and Flaherty KT. Urinary elimination. In Leahy JM, Kizilay PE. *Foundations of nursing practice: a nursing process approach* 1998; 965-1018.
11. Donegan N. Management of patients with infections and diseases. In Smelzer SC Bare BG (eds). *Medical-Surgical Nursing*. (8th ed) pp. 1954-1998. Philadelphia: Lippencott-Raven,1998.

12. LeMone P, Burke KM. Medical-surgical nursing: critical thinking in client care. Menlo Park, CA: Addison Wesley, 1996.
 13. Bird D, Smith S. Visual laser ablation of the prostate (VLAP). Canadian Operating Room Nurses Journal 1995;13(4):6-9.
 14. Agency for Health Policy and Research, Urinary Incontinence Guideline Panel Urinary incontinence in adults: Acute and chronic management, clinical practice guideline number 2. AHCPR Pub. No 92-0682. Rockville, MD: Agency for Healthcare Policy and Research, Public Health Service, US Department Health and Human Services.
-



Dianne Wasson, MSN, RN, is an associate professor at Trinity College of Nursing, Moline, Illinois, where she has served on the faculty since 1993. She has extension training in pediatric nursing and is a certified diabetes educator and PALS instructor. Dianne is a respected lecturer and active community volunteer. She received her RN diploma at the Lutheran Hospital School for Nurses, Moline, Illinois, and MSN at the University of Dubuque, Iowa.