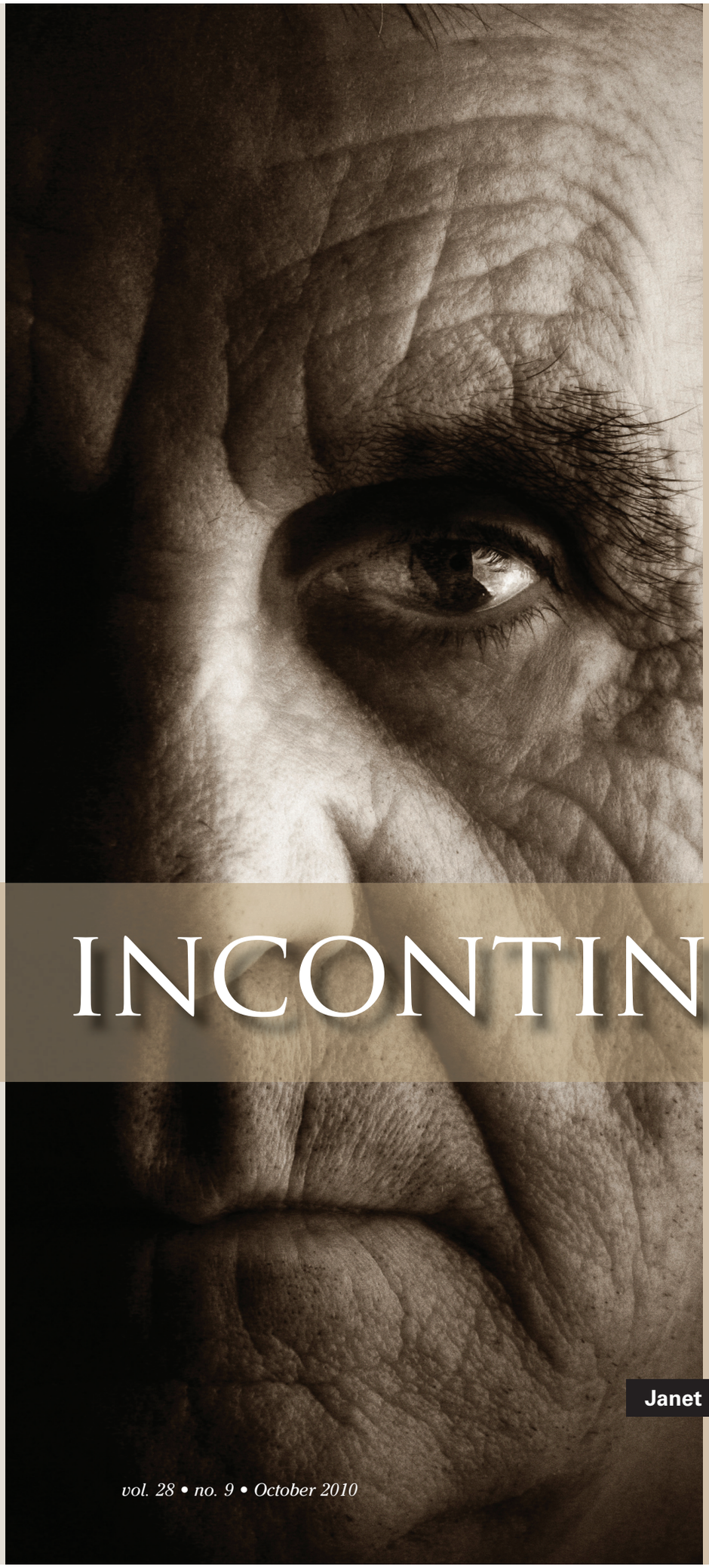
Prostate cancer is the most frequently diagnosed cancer in men in the United States, often requiring a prostatectomy. Incontinence is an almost inevitable consequence of this surgery, either temporary or ongoing. It is important that this quality-of-life issue be considered preoperatively and that patients considering surgery have information about the potential for incontinence. Teaching about noninvasive management of incontinence can begin before surgery and continue in the postoperative period. Home healthcare clinicians and Wound, Ostomy and Continence (WOC) nurses can play a pivotal role in educating patients on the potential sequela of surgery and ways to prevent or treat these conservatively.

Post-Prostatectomy

Implications for Home Health Clinicians

Prostate cancer is the most frequently diagnosed cancer and the second leading cause of cancer death in men in the United States. There were 192,280 new cases diagnosed and 27,360 deaths in 2009. Prostate cancer is superseded only by lung cancer as a cause of cancer death in men (American Cancer Society, 2010). Once a man is diagnosed with prostate cancer, a variety of treatment options including watchful waiting, hormones, radiation, and surgery are available. The choice of treatment depends on the stage of disease, age, and other comorbid conditions. When surgery is appropriate, the surgical procedure is a radical prostatectomy (Hakimi et al., 2007).

Although surgical techniques have improved in recent years, an almost inevitable consequence of prostatectomy is incontinence. The International Incontinence Society has standardized the definition of incontinence to be "the complaint of any involuntary leakage of urine" (Abrams et al., 2002). Incontinence after prostatectomy is a devastating and frequently underreported problem (Nahon et al., 2006). The largest prostatectomy outcome study determined that at 6 months after prostatectomy, 80% of the study participants reported some level of incontinence, varying from slight loss of control to total loss of urinary control (Penson et al., 2005). Incontinence was also rated as the most bothersome consequence of prostatectomy (Holmboe & Concato, 2000; Penson et al., 2005; Weber et al., 2007). In addition to the quality-of-life effects of incontinence, it is also costly. The economic burden of male incontinence in the United States is estimated to be $18.8 billion per year (Strothers et al., 2005). This article addresses the pathophysiology and noninvasive treatment of post-prostatectomy incontinence in the framework of the patient's quality of life. Additionally, the role of the home healthcare clinician and WOC nurse will be discussed in both the preoperative and postoperative periods.



INCONTINENCE

CE

Clinical Scenario

Mr. M is a 66-year-old man with prostate cancer and chronic obstructive pulmonary disease (COPD). He was referred for home healthcare after a hospitalization for an exacerbation of COPD. Although he is retired, he remained active doing volunteer work, playing golf, and walking. During the admission assessment, the nurse ascertained that he had a radical prostatectomy 11 months ago for his prostate cancer. He has been incontinent of urine since the surgery, is very embarrassed by this, and now rarely leaves home.

Janet E. Smith, MBA, MSN, RN

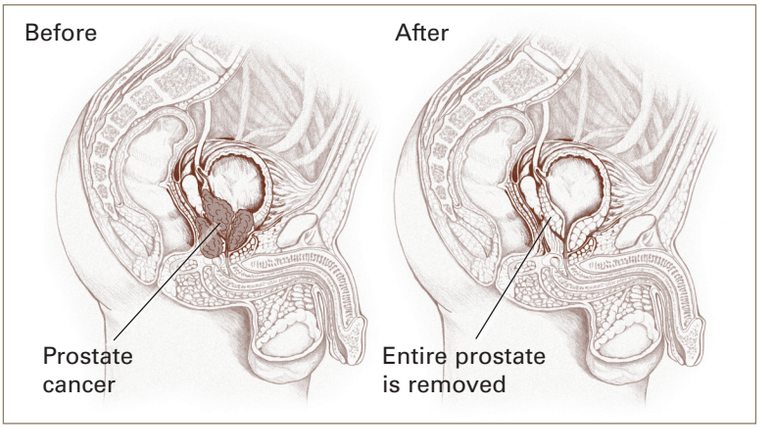


Figure 1. Male urinary system pre- and post-prostatectomy. From the National Institute of Diabetes and Digestive and Kidney Diseases Web site. http://www.catalog.niddk.nih.gov.

Pathophysiology

Before describing the pathophysiology of post-prostatectomy incontinence, it is important to understand the anatomical structures responsible for male continence. The male urinary system includes the bladder, internal and external sphincters, the prostate gland, and the urethra. Several muscle groups support male continence. The detrusor muscle of the bladder is responsible for bladder filling, storage, and release of urine (Gray, 2006). Muscle fibers from the detrusor extend into the bladder neck and internal sphincter, thus maintaining urine storage in the bladder until the cerebral cortex signals the bladder to empty (Joseph, 2001). The external sphincter, composed of striated muscle, is located below the prostate in the prostatic urethra. Additional muscle support is provided by the pelvic floor muscles, specifically the levator ani, coccygeus, and piriformis (Joseph, 2001). During the process of micturation, the internal and external sphincters relax, allowing the passage of urine through the urethra and out of the body (Gray, 2006).

Radical prostatectomy surgery can be performed using either an open surgical procedure or laparoscopy. During either procedure, the prostate gland is resected along with the prostatic urethra, seminal vesicles, and frequently the bladder neck (Figure 1). The remaining urethra is anastomosed directly to the bladder (Joseph, 2001; Sakai et al., 2005). In a prospective study, Jacobsen et al. (2007) found a similar rate of incontinence after prostatectomy in both men having open surgery and those having laparoscopic surgery. After prostatectomy, the causative factors for incontinence are threefold: bladder dysfunction, sphincter weakness, and pelvic floor weakness (Ko & Sawatzky, 2008).

External sphincter weakness results in stress urinary incontinence. The sphincter incompetence may result from nerve damage during surgery or incomplete healing (Joseph, 2001). A retrospective case review by Van Randenborgh et al. (2004) found that patients with intraoperative urethral length preservation had an earlier return to continence. Kielb and Clemens (2005) utilized videourodynamics to evaluate patients 4 months to 19 years after prostatectomy. They found that 95% of the 146 study patients had stress urinary incontinence. Although some of these patients also had detrusor instability, it was the sole cause of incontinence in only one patient.

Bladder dysfunction, or detrusor instability, may have developed before surgery from prostatic obstruction of the bladder outlet (Joseph, 2001) or may be a result of nerve damage or removal of the internal sphincter during surgery (Porena et al., 2007). The weakened bladder muscle may contract prematurely as the bladder fills, resulting in incontinence. Namiki et al. (2006) found that incontinence from detrusor instability is usually temporary and improves with time.

The final cause of post-prostatectomy incontinence is pelvic floor weakness. The pelvic floor muscles contain the external sphincter. Because the internal sphincter is removed during surgery, it is replaced by the external sphincter for continence. Many men rely on the internal sphincter before prostatectomy for continence (Joseph, 2001). Therefore, after prostatectomy, the external sphincter is underdeveloped resulting in incontinence (Dorey, 2007). Fortunately, the external sphincter can be strengthened through the use of pelvic floor muscle exercise.

Preoperative Period

Although the goal of surgery for prostate cancer is to remove diseased tissue, this cannot be the only measure of postoperative satisfaction. The

temporary, and sometimes permanent, complication of incontinence following prostatectomy can be best understood in terms of quality of life. The measure of quality of life is different for each individual, but generally involves a sense of well-being, happiness, and satisfaction with life (Rondorf-Klym & Colling, 2003). During the preoperative period, patients and their significant others have a need for information to enable them to make informed decisions regarding treatment. The weeks or months between a diagnosis of prostate cancer and surgery are a very stressful time. It is imperative that surgeons and WOC nurses recognize the influence of stress on hearing and learning (Burt et al., 2005). The comments of a participant in a qualitative study exemplify this.

> *Even though the urologist spent a long time with me and answered all my questions before surgery, the only thing I heard was cancer. The biggest shock is to find that I am incontinent. It just hadn't penetrated and it is devastating.* (Moore & Estay, 1999, p. 1125)

A prospective study by Moore et al. (2007) preoperatively identified men at risk for incontinence during the postoperative period. They found increasing age, baseline incontinence, and a history of a previous transurethral resection of the prostate were predictive of incontinence at 12 months after surgery.

Rondorf-Klym and Colling (2003) emphasize the importance of assessing patient's values before surgery. Once this is completed, information on the risks and benefits of various treatment options can be presented in light of the patient's values. This is an excellent role for the WOC nurse who can take the necessary time to provide detailed explanations to patients and their significant others. Several visits may be required to provide complete information and assist patients in decision making. Moreover, patients need to be given written information on surgery and potential treatment effects to assist them to make informed decisions (Moore & Estey, 1999).

Postoperative Period

An advantage of laparoscopic prostatectomy is a shorter hospital stay. However, this means that all patients are discharged with an indwelling catheter and must be prepared to care for the catheter at home. Generally, catheters are removed 7 to 21 days after surgery (Moore & Estey, 1999). The author believes that all men discharged home with a catheter should have a homecare nurse visit to teach catheter care and reinforce discharge teaching provided in the hospital. Additionally, this will help to improve quality of life for the patient and caregivers after discharge as they struggle to cope with unanticipated sequela

Internet Sites for Additional Patient Information

Post-Prostatectomy Incontinence:

- http://www.healthandage.com
- http://www.prostate-cancer.org
- http://www.seekwellness.com/incontinence
- http://www.hisandherhealth.com/mens-sexual-health/male-incontinence
- http://www.healngwell.com
- http://www.organizedwisdom.com
- http://www.familydoctor.com

Pelvic Floor Muscle Exercises

1. Pretend that you are trying to stop the flow of urine or stop the passage of gas. These are your pelvic floor muscles.
2. Squeeze these muscles as though you were trying to hold back gas. Squeeze for a count of 10 and then rest for a count of 10.
3. Start with four contractions and four rest periods several times during the day and build up to 10 contractions four times daily. If you can only do one or two contractions to start, don't worry, just keep practicing.
4. It is important to do these exercises without contracting your abdominal, thigh, or buttocks muscles.
5. These exercises can be done sitting, lying down, or standing.

Although surgical techniques have improved in recent years, an almost inevitable consequence of prostatectomy is incontinence.

of the surgery. It would be ideal if a home visit was made by a WOC nurse. Anecdotal remarks by men in several research studies indicated that the support of the research nurse was invaluable in helping them to cope with catheter issues and later incontinence (Burt et al., 2005; Milne et al., 2008; Moore & Estay, 1999; Zhang et al., 2007).

Once the catheter is removed, patients must be prepared to deal with the possibility of incontinence. In Moore and Estay's (1999) qualitative study, a significant finding was a disparity between what surgeons told patients about their postoperative course and what the patients heard. Patients felt unprepared to deal with their postoperative course, although information had been provided by either the surgeon or a nurse. It is important that surgeons, WOC nurses, and inpatient nurses discuss and provide written information on the possibility of incontinence with patients. This information can then be reinforced by the home healthcare clinician postoperatively. One hospital in Canada provides patients with a discharge bag, including a urinary leg bag, urinary collection bag, incontinence product samples, and a community resource brochure (Davidson et al., 2004). The patients found this to be very helpful once they returned home. Although most postoperative urinary incontinence will clear within 2 years after surgery, the use of pelvic floor muscle exercises results in an early return of continence.

The foundation of noninvasive treatment for post-prostatectomy incontinence is pelvic floor muscle exercises (Figure 2). Four randomized controlled studies have demonstrated a significant improvement in incontinence in the group receiving pelvic floor muscle training over the control group (Burgio et al., 2006; Filocamo et al., 2005; Parekh et al., 2003; Van Kampen et al., 2000). Dorey (2007) believes that men should be taught and practice pelvic floor muscle exercises as soon as the possibility of surgery is discussed. These exercises can also be gently performed while the catheter is in place. Men should be individually taught pelvic floor muscle exercises to assure that they are using the correct muscles (Dorey, 2007). The exercises can also be taught and practiced during the preoperative period. There is no research-based evidence that biofeedback or electrical stimulation enhanced treatment (Dorey, 2007) and these modalities add additional expense to treatment (Joseph, 2006). Dorey (2007) emphasizes that pelvic floor muscle exercises are effective for stress incontinence, urge incontinence, and post-micturition dribble. Pelvic floor muscle exercises also enhance blood flow to the operative area, thus enhancing healing of tissue and nerves (Dorey, 2007). These exercises should be practiced for life to prevent a return to incontinence.

Song et al. (2007) studied 94 patients before radical prostatectomy using magnetic resonance imaging. They found a correlation between the thickness of the pelvic floor muscles and an early return of continence. This gives credence to the importance of using pelvic floor muscle exercises before surgery. In a randomized, controlled study, Zhang et al. (2007) tested the use of pelvic floor muscle exercises and exercises plus a support group. They found that the support group participants practiced pelvic floor muscle exercises significantly more often than the control group. They also found that the support group had significantly greater improvement in continence, as well as improved quality of life. Specifically, the support group reported improved communication with spouse/partner and increased social outings.

Role of the Home Healthcare Clinician

The home healthcare clinician is responsible for providing skilled care, including teaching, to patients. The post-prostatectomy patient can be taught about extrinsic factors that can potentiate incontinence. This is an excellent means to provide an internal locus of control to patients who often feel out of control of their healthcare (Rondorf-Klym & Colling, 2003). Smoking increases the overactivity of the bladder muscle and is linked to urge incontinence (Dorey, 2007). Smoking cessation can be offered as a mean of

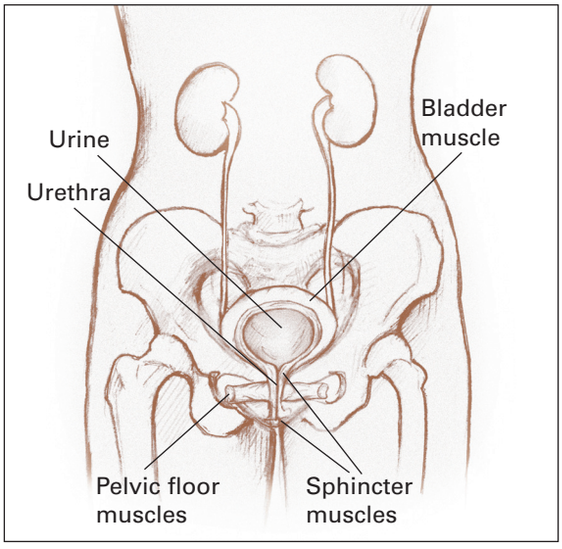


Figure 2. Pelvic floor muscles. From the National Institute of Diabetes and Digestive and Kidney Diseases Web site. http://www.catalog.niddk.nih.gov.

decreasing incontinence. Joseph (2001) points out that avoiding fluids and foods that stimulate the bladder will help to control incontinence. Similarly, blood glucose control is essential for patients with diabetes (Joseph, 2001). It is important that patients understand that more urine is produced to rid the body of excess glucose, thus contributing to incontinence. Finally, patients can be taught to drink six to eight glasses of water daily and to space these fluids throughout the day for better control over incontinence (Joseph, 2001). Although it is beyond the scope of this article, the WOC nurse and the home healthcare clinician must be aware of the use of medication and surgery for incontinence not responding to noninvasive treatment, and make appropriate referrals.

Conclusion

Prostate cancer is the most frequently diagnosed cancer in men. Although surgery to remove diseased tissue is an important treatment, patients must be informed about the potential for incontinence before surgery and prepared to cope with this. Patients need evidenced-based information before surgery to make informed decisions.

There are many unanswered questions regarding post-prostatectomy incontinence and further research is needed. Many of the studies cited in this article utilized a small sample size and must be replicated with larger groups. Studies must utilize a uniform definition of incontinence to allow for comparison of results. WOC nurses and home healthcare clinicians can play a pivotal role in providing care, teaching and counseling to the patient both before and after surgery. The outcome will be an improved quality of life for the post-prostatectomy patient and his significant others. ☗

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