Why does incontinence occur after prostate cancer surgery?

Incontinence is the unwanted leakage of urine. There are two sphincter muscles that keep men continent before radical prostatectomy (RP), the internal urethral sphincter and the external urethral sphincter. The internal sphincter is not under your control and is found at the bottom of the bladder, called the "bladder neck," and in the prostate. This is removed during your surgery because the prostate cannot be taken out without removing this sphincter. You control your external sphincter, which is the muscle you can use to stop your urine stream and the one you can strengthen with pelvic floor muscle (Kegel) exercises. Normally, an intact, healthy external sphincter is sufficient to provide continence. However, after RP, there can be some damage or dysfunction of the external sphincter, which can prevent you from recovering your bladder control. This may be due to damage to the nerves, blood supply, supporting structures, or the muscle itself as the external sphincter is located at the apex of the prostate gland.

What types of incontinence can occur after RP surgery?

There are two main types of urinary incontinence in men after RP.

Urgency incontinence is when you feel the “urge” to urinate but cannot make it to the toilet in time. This is generally due to bladder spasms and often responds to medical therapy. This type of incontinence is thought to be mostly due to changes in the way the bladder behaves after surgery.

Stress urinary incontinence (SUI), is leakage of urine with exertion or effort and can happen when you cough, sneeze, lift something heavy, change position, swing a golf club or exercise. This type of incontinence may be because of damage to your external sphincter muscle as described above. Almost all men will have some degree of SUI immediately after catheter removal, and you were probably given instructions on how to perform pelvic floor exercises to improve urinary control.

Do all men have incontinence after RP surgery?

No, most men see a quick improvement in continence over the first several months after the catheter is removed, but incontinence can remain troublesome in some men 1 year after surgery. Most surgeons will consider a man continent if they do not regularly use incontinence pads and only have occasional dribbling with lots of activity. Most importantly, however, is how bothersome your urinary incontinence is to you, as our goal is to improve your quality of life as much as possible.

Who is at risk for developing incontinence?

We are not sure why some men have troublesome incontinence that continues after surgery, while other men do not. There is some evidence that many things may contribute to the persistence of SUI after surgery, including:

- Older age
- Larger prostate size
- Smoking
- Diabetes or other neurological disease
- Excessive blood loss during surgery
- Need for cutting nerves during surgery
- Size or stage of prostate tumor
• Radiation after surgery (see below)
• Previous surgery for BPH

How can radiation therapy after prostatectomy affect incontinence?

Some men may need additional therapy after prostatectomy. This might include radiation therapy to the "prostate bed" (the area where the prostate was located). While every effort is made to minimize the amount of radiation exposure to normal tissue surrounding the prostate bed, some normal tissue including the external urinary sphincter will be receiving a low dose of radiation. This causes some "irritation" of the external sphincter, urethra, and bladder during radiation therapy and for a short time after radiation therapy is completed. This can result in increased incontinence that generally improves in the weeks to months after completing radiation. A small number of men will develop increased incontinence in the months to years after radiation therapy, due to the development of scar tissue in these tissues, which can become "stiff" and weak. This can cause the external sphincter to not properly open and close.

What should I do after radiation therapy to reduce incontinence?

After radiation therapy, we recommend that men continue with the daily pelvic floor (Kegel) exercises they performed after their prostatectomy. Pelvic floor exercises help strengthen the muscles at your bladder outlet, which helps to improve, regain, or maintain bladder and bowel control.

To identify your pelvic floor muscles, stop urination in midstream or tighten the muscles that keep you from passing gas. If you contract pelvic floor muscles while looking in the mirror, the base of your penis will move closer to your abdomen and your testicles will rise. Do not tighten the muscles in your belly, thighs, or buttocks.

Once you have identified the muscles, aim to perform 3-10 sets of 10 repetitions every day. Some sets should be with long muscle contractions and others with quick muscle contractions:

• Long contractions: Over a period of time slowly increase the time you can hold the contraction until you can hold for 10 seconds. Rest for 10 seconds between each contraction.
• Quick contractions: Quickly tightened then relax the muscles.

Decreasing intake of caffeine, alcohol, and bladder irritants can also help decrease incontinence. Also aim to have a good water intake of at least 4-6 glasses (32-48 oz) every day.

What if the incontinence does not improve or is bothersome?

If you have a bothersome amount of incontinence or it does not improve with the above measures, many men will benefit from seeing an incontinence practitioner, as a wide range of treatments are available.

Once you decide to see an incontinence practitioner, be prepared to answer questions regarding the type of symptoms you are having, the number and type of pads you might be using, previous treatments you have had for prostate cancer and for incontinence, how much the incontinence bothers you, and how willing you are to have additional treatments, potentially including surgical procedures.

During your first visit, the incontinence specialist will generally take your history and perform an exam. You will likely be asked to give a urine sample to rule out infection or blood in the urine. A "bladder scan" (quick ultrasound of the bladder done in the office) is typically performed to determine how completely you are emptying your bladder when you urinate.

The treatments that will be discussed include conservative measures such as a more rigorous pelvic floor exercise program, use of a biofeedback machine which allows you to see how strong your pelvic floor muscles are and performing exercises correctly, and various medication therapies.

What if these treatments do not work?

If these interventions do not work, you may be referred to a urologist for additional tests on your bladder and sphincter to determine what type of incontinence you have, how well your bladder is working, and what other treatments might be best for...
you. This generally involves a urodynamic test and a cystoscopy. Both of these procedures are performed in the office, usually during the same visit, and provide your urologist with specific information that is crucial in determining which procedure might be best for you, and how effective any procedure might be.

The urodynamic test involves placing a very small catheter in your bladder. This catheter is used to fill the bladder with fluid and measure bladder activity and pressure during filling and voiding. You will also be asked to cough and strain so your provider can see if and how easily you leak urine. A cystoscopy may also be performed to look at the urethra, the anastamosis (the area where the bladder is put back together with the urethra after the prostate is removed) and the bladder. After these tests, your doctor will go over the results with you and recommend which treatments are best suited for your condition.

**What are the different surgeries for incontinence?**

There are three main types of surgical treatments men who have incontinence following a RP, and they are:

1. Urethral bulking procedures are minimally invasive treatments performed endoscopically (through a cystoscope) to inject one of several materials just underneath the lining of the urethra. This makes the urinary passageway smaller and can lead to an improvement in incontinence. This is usually performed as an outpatient procedure, either with or without anesthesia. You can generally return to normal activity immediately, and the risks of the procedure are minimal. Since your body usually reabsorbs the material over time, this procedure often needs to be repeated every 9-15 months as the incontinence may recur. Risks of this procedure are generally minor and can include, but are not limited to, bleeding, urinary tract infection, and temporary urinary retention. Rarely, patients may feel that their incontinence is made worse by the procedure.

2. Male perineal sling procedures are done in the operating room under anesthesia. The operation entails a small incision in your perineum (the area between the scrotum and anus). A strip of mesh is placed underneath the urethra and used to elevated and slightly compress the urethra to provide continence. The procedure generally takes 45 minutes to an hour, and patients can go home either the same day or the next day. Recovery is very short and there is usually minimal discomfort or pain after the procedure. You will be asked to limit your activity for 4-6 weeks after surgery to allow the sling to scar into place so it does not move after the procedure. Success tends to be best in men with minimal to moderate incontinence (1-3 pads per day). Risks of the procedure include but are not limited to bleeding, skin or mesh infection, pain, erosion into the urethra (rare), inability to urinate (rare) and failure of the surgery to improve continence.

3. The Artificial Urinary Sphincter (AUS) is the most reliable and often most effective surgical treatment for incontinence after RP. It is a silicone implant with 3 parts, a cuff that goes around the urethra and squeezes it closed, a small fluid reservoir, and a control pump that is placed underneath the skin in the scrotum. The cuff is normally closed and squeezes the urethra shut, which prevents leakage of urine. You must squeeze the small pump in the scrotum to open the cuff and urinate. The cuff refills and closes on its own after 3-4 minutes. The operation usually takes approximately 90 minutes under anesthesia, and you are kept overnight in the hospital. The operation can be performed either through one small incision at the top of the scrotum, or through two separate incisions: one in the perineum and one in the groin. Recovery is also short with this procedure, although the device will not be activated for 4-6 weeks after surgery. Your incontinence will not change until the device is activated in the office. This procedure is suitable for all degrees of incontinence severity. This surgery, however, has slightly more risk of serious complications, mostly relating to the implant itself. Risks include but are not limited to bleeding, skin or device infection, erosion into the urethra, device malfunction, and urethral atrophy (the tissue surrounding the urethra becomes compressed and thin over time which may lead to recurrent incontinence).

Talk to your urologist for more details about your options and the risks and benefits in your situation.