

## Leaky Pipes

On a Saturday morning pre-COVID, my spouse and I met up with eight of our close hiking friends and a few ambitious dogs at Echo Lake to hike the Chicago Lakes Trail. It is about 11 miles, climbing 3,300 feet. The group was made up of women, ages 43 to 62, with of course the 62-year-old being the fittest and the fastest. One mile into the hike, before I had even had a chance to notice the first buds of spring. I heard a loud sneeze from someone in the group. I didn't know who, but in my usually style I commented loudly, "That was a big sneeze," and a voice responded, "and I peed a bit, too!"

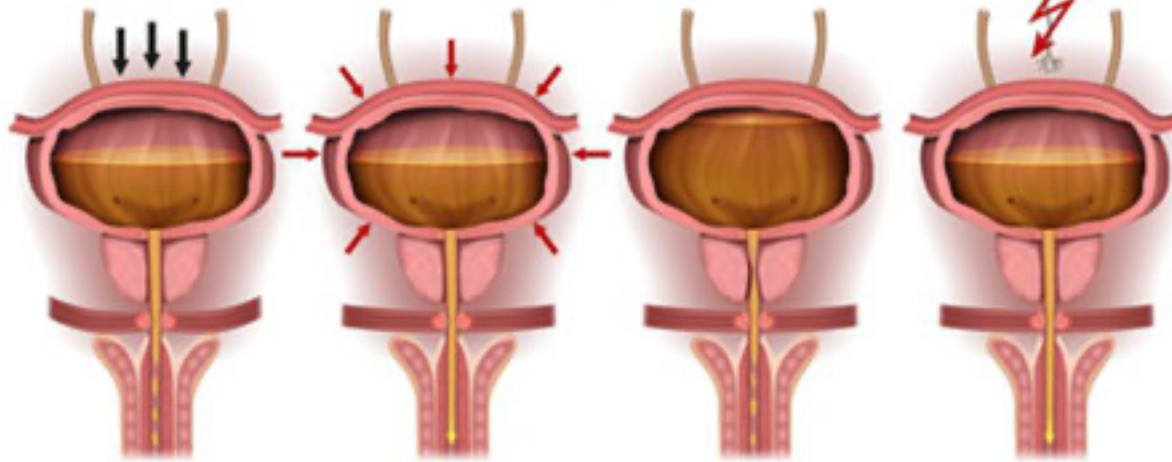
We were laughing so hard that we had to stop hiking to catch our breaths in the thin air. We had all been there at one time or another. How wonderful that I have friends that can talk so freely amongst each other... and I'm the only health care professional. I know that many people have trouble talking about these topics with their doctor, let alone with friends.

Urinary incontinence, or not making it to the toilet in time to urinate, is usually no laughing matter. Sorry gentleman, having to pee at night, just isn't as funny. Urinary leakage can come in drips or in floods and it happens to women and men, though sometimes for different reasons. There are four different types of incontinence:

1. Stress incontinence – due to increased abdominal pressure relative to weak pelvic floor muscles
2. Urge incontinence – due to involuntary contractions of the bladder muscles
3. Overflow incontinence – due to blockage of the urethra, the tube between the bladder and the outside world
4. Neurogenic incontinence – due to impaired functioning of the nervous system

## Types of Incontinence

(*Incontinentia vesicae*)



**Stress Incontinence**  
due to increased abdominal pressure under stress (weak pelvic floor muscles)

**Urge Incontinence**  
due to involuntary contraction of the bladder muscles

**Overflow Incontinence**  
due to blockage of the urethra

**Neurogenic Incontinence**  
due to impaired functioning of the nervous system

Some people have multiple types of urinary incontinence. If the type is not clear, a urologist may recommend urodynamic studies to look at bladder capacity, bladder muscle stability and contractility, and ability to urinate. Let's take a look at them one at a time.

Stress Incontinence - The story described above is the perfect representation of stress incontinence. This is when a sneeze or cough, or other cause of increased abdominal pressure overcomes weakened pelvic floor muscles, the urethral sphincter, or muscle that holds the urine in gives way and a few drops of urine leak out. This is much more common in women as they age, especially those who have had multiple childbirths, are obese, or are menopausal. With menopause, lower estrogen levels lead to lower muscular strength around the urethra and increase the change of leakage. In men, stress incontinence is most commonly seen after a prostatectomy for prostate surgery for cancer or a transurethral resection of the prostate (which I rudely call a "rotor rotor") for benign prostatic hyperplasia(BPH).

Management:

- Avoid caffeinated beverages, spicy foods, carbonated beverages, alcohol and citrus as they irritate the bladder.
- Quitting smoking also reduces incontinence because smoking irritates the bladder and induces coughing.
- For women with a BMI > 25, a 5% weight loss can result in a 70% improvement in symptoms. Weight loss also helps men, but has not been studied as precisely.

- Kegel exercises to strengthen the pelvic floor tend to benefit women under 60 years of age the most. Though men can do them too for added benefit. 24 contractions (reps) of the urinary sphincter per day are recommended. Kegel exercises can be difficult to do correctly. Consider using a perineometer like the Elvie for women, ask your doctor, or a Pelvic Floor Physical Therapist if you are doing the exercises correctly.
- Incontinence pads, while not a treatment, can help manage the situation and are recommended over using feminine pads designed for menses. Special pads are also made for men who are averse to wearing larger incontinence briefs.
- Women with bladder prolapse can benefit from pessaries, though exercises are most effective.
- There are no FDA approved medications for stress incontinence, though patients on duloxetine (Cymbalta) demonstrated a 50% reduction in incontinence episodes and an improved quality of life.
- When these above options fail, surgery is an option for some while others feel it is not worth the risks and invasion.
  - The surgical procedure of choice for women is the sling operation in which a sling is implanted. The sling implant is a synthetic mesh, piece of your own tissue, or tape that is used to support the urethra. It's like a hammock for your urethra, only not as much fun.
  - In women, an intravesical balloon device has been shown to improve quality of life and to be safe.
  - Peri/transurethral injections add bulk to the urethra to increase outlet resistance but the procedure is temporary and works better in people with more stable, immobile urethras (more common in men).
  - Implantation of an artificial urinary sphincter is more commonly used in men. It acts like a blood pressure cuff around the urethra that a patient can manually release and refill.
  - Men can also undergo a sling procedure but this less common.
- Future possibilities:
  - Acupuncture has been studied with mixed results, meaning rare studies show benefits and many do not.
  - Transurethral radiofrequency collagen denaturation has been tried with unknown benefits.
  - Pulsed magnetic stimulation is being studied.
  - Vaginal laser treatment has yet to show benefit.

Urge Incontinence - This is also sometimes called overactive bladder. Technically, overactive bladder refers to the frequent sensation of needing to urinate. The classic story is one of a person who frequently feels like they have to go to the bathroom, especially at night, and then urinates just a little bit. When a person has an overactive bladder as soon as the bladder loses control of urine it is called urge incontinence. This is more common in obese people, who drink caffeine, and tend to be constipated. While this can occur at all ages, it tends to worsen with age.

## Management:

- Avoid caffeinated beverages in particular, though the previously mentioned bladder irritants may also need to be eliminated.
- Weight loss also helps in both men and women, but has not been studied as precisely as with stress incontinence.
- Kegel exercises to strengthen the pelvic floor can be helpful, as above with 24 contractions (reps) of the urinary sphincter per day. Kegel exercises can be difficult to do correctly. Consider using a perineometer like the Elvie for women, ask your doctor or a Pelvic Floor Physical Therapist if you are doing the exercises correctly.
- Treat constipation.
- Timed voiding and bladder retraining has been the most successful for my patients.
  - On day 1, wake up in the morning, urinate and record the time. Then record each episode of urination and each episode of incontinence, before you go to bed at night.
  - Determine the shortest period of time between urinating and incontinence and subtract 15 minutes. Say you urinated at noon and then had an episode of incontinence at 1:15 before you had the urge to go to the bathroom. Your shortest period of time of guaranteed dryness is 1 hour and 15 minutes minus 15 minutes, which equals 1 hour.
  - On day 2, wake up in the morning, urinate and record the time. Set an alarm to ring or vibrate every 1 hour. Every time it rings, get up and try to urinate on the toilet even if you don't have the urge. This will prevent episodes of incontinence.
  - Then gradually increase the time interval between going to the toilet every few days. Ideally, try to increase the interval between trips to the bathroom by 15 minutes per day. Your goal is to eventually get to 3-4 hours.
  - Note it takes at least 4-6 weeks to see results.
- There are two classes of medications used to treat overactive bladder. Anti-muscarinic medications like oxybutynin (Ditropan) and tolterodine (Detrol) are the most frequently used but have a lot of side effects. The newest class of medication is a B3 adrenergic receptor agonist, mirabegron (Myrbetriq). It has less side effects but I have found it to be more expensive for my patients.
- Procedures to help with urge incontinence such as botulinum toxin A injections (Botox) last about 9 months.
- Treatment using electrical stimulation are still being actively explored. Percutaneous stimulation of the tibial nerve (PTNS) is being utilized with anecdotal improvements. Sacral neuromodulation has shown more consistent improvement, but involves surgical implantation of a stimulation device.
- Future possibilities:
  - Hypnotherapy was studied and was not as effective as medication
  - Acupuncture reported conflicting results again.

Overflow incontinence – Overflow incontinence is like have a dam in a river that just can't hold back the tide and water starts to flow over the dam and leaks out. Most people with overflow incontinence are not able to fully empty their bladder when they urinate. They often start and stop the urine stream trying to empty the bladder. After urinating, the partially emptied bladder is quick to fill up again and overflow the dam. Sometime the dam is the prostate, a urethral stricture in men (scar tissue kinking the urethra), bladder stones, or weak bladder muscles. Either way, the leakage of urine is often sudden, unexpected and of larger volume. It can even occur at night.

Management:

- For women, medications rarely treat overflow incontinence. Intermittent self-catheterization in which a person inserts a tube through the urethra into the bladder 4 times a day may be necessary to empty the bladder. Some women opt for a continuous indwelling Foley catheter to drain urine, but that puts a person at much higher risk for recurrent urinary tract infections. When possible, intermittent self-catheterization is preferred.
- Sometimes surgery can help correct overflow incontinence by removing stones or abnormal growths obstructing the flow of urine.
- In men, overflow incontinence is usually caused by an enlarged prostate. Medications can be used to shrink the prostate helping the bladder to empty more completely with urination and improve urinary flow
- Men can also benefit from surgery to remove tissue from the prostate that is obstructing the urethra. The most common procedure is the transurethral resection of the prostate (TURP).
- Of note, post-urination dribbling of a few drops in men is rarely dangerous or from a disease.

Neurogenic Bladder – People whose nerves to their bladder have been damaged can experience incontinence. This is commonly seen in diseases such as multiple sclerosis, Parkinson's, spinal cord injuries, and diabetes mellitus. This occurs because patients either can't feel when their bladder is full and don't know when to empty it or they have lost control of the muscles that allow you to hold and release urine voluntarily. The most common symptom is being unable to control urination. Some also report a weak stream, frequent urination, and urgency to get to the toilet when they need to go.

Management:

- Avoid caffeinated beverages in particular, though the previously mentioned bladder irritants may also need to be eliminated.
- Weight loss also helps in both men and women, but has not been studied as precisely as with stress incontinence.
- Some people need to perform intermittent self-catheterization in which a person inserts a tube through the urethra into the bladder 4 times a day to empty the bladder. Some people opt for a continuous indwelling Foley catheter to drain urine, but that

puts a person at much higher risk for recurrent urinary tract infections. When possible, intermittent self-catheterization is preferred.

- If the bladder is overactive the same medications for urge incontinence can be used. As mentioned, there are 2 classes of medications used to treat overactive bladder. Anti-muscarinic medications like oxybutynin (Ditropan) and tolterodine (Detrol) are the most frequently used but have a lot of side effects. The newest class of medication a B3 adrenergic receptor agonist, mirabegron (Myrbetriq) has less side effects but I have found it to be more expensive for my patients.
- Procedures to help with neurogenic bladders include botulinum toxin A injections (Botox), which last about 9 months, bladder augmentation and ileal conduits. Bladder augmentation is a surgery that removes a piece of your sigmoid colon (large intestines) and adds it to your bladder to make it bigger. An ileal conduit surgery creates a new bladder from your small intestines and the urine collects in this new bladder and then empties into a bag that is attached to the outside of your body like a colostomy bag.
- Sacral neuromodulation has shown more consistent improvement, but involves surgical implantation of a stimulation device.

People with dementia also struggle with incontinence. Sometimes they have one of the conditions that we mentioned above. When there is not a problem with the bladder or urinary tract, people with dementia can remain continent for a long time if taken to the toilet every 2 hours during the day easing strain on caregivers. Dementia robs people of the ability to recognize that their bladder is full, the ability to remember how to ask for assistance, and the ability to find the bathroom, but people remember what to do on the toilet well into the severe stages of dementia. Scheduled toileting is the best way to manage incontinence with people who have dementia. Set a timer.