A urethral stricture is a narrowing of a section of your urethra. It causes a blocked or reduced flow of urine which can lead to complications. There are various treatment options which aim to widen the narrowed section of your urethra.

Understanding the urethra

The urethra is the tube that urine flows out of from your bladder. It passes through your penis in men. The urethra is much shorter in women and ends just above your vagina. (In men, semen is also ejaculated through the urethra.)
What is a urethral stricture?
A stricture occurs when a part of your urethra becomes narrowed. Any section of your urethra may be affected. There is usually some scar tissue around the affected part of your urethra that causes the narrowing. The length of strictures varies from less than 1 cm to the full length of the urethra. The diagram below illustrates a fairly long and severe stricture. However, many are shorter than this. Urethral stricture is uncommon in men and rare in women.
What causes a urethral stricture?

- **Injury or damage** to the urethra can heal with scar tissue that may cause a stricture. There are various types of injury that can damage the urethra. For example: an injury may occur during medical procedures to look into your bladder via your urethra; radiotherapy treatment may damage your urethra; a fall astride on to the frame of a bike can cause damage.

- **Infection** of your urethra is another cause - for example:
  - Sexually transmitted infections such as gonorrhoea or chlamydia.
  - Infection as a complication of long-term use of a tube (catheter to drain your bladder.
  - Infection may cause inflammation in the tissues in and around your urethra.

These infections usually clear with treatment but may leave some scar tissue at the site of the inflammation, which can cause a stricture. Note that most urethral infections do not cause a stricture. A stricture is just one possible complication from a urethral infection.

- Some babies are born with a urethral stricture.
- Cancer - very rarely, a cancer of the urethra can be the cause of a stricture.

What are the symptoms of a urethral stricture?
There may not be any symptoms initially. However, the following symptoms - which are likely to worsen with time - may occur:

- Reduced urine flow is the usual first symptom. Straining to pass urine is common but a complete blockage of urine flow is rare.
- Spraying of urine or a double stream may occur.
- Dribbling of urine for a while after going to the toilet to pass urine.
- Frequency sometimes occurs (needing to pass urine more often than normal).
- Urine infections.
- You may have a reduced force of ejaculation.
- Sometimes, pain on passing urine.

Are any tests needed?

- Tests to determine the flow rate of urine and the residual amount of urine are routinely performed in the office by your doctor.
- A look into the urethra by a special thin telescope called a cystoscope will be needed to assess the stricture.
• Xray studies will be performed in the Radiology Department called a 1) Retrograde Urethrogram and 2) Voiding Cystourethrogram. These Xrays will tell your doctor the length of the stricture and the degree of blockage. They will provide a roadmap for your doctor and will help him advise the most appropriate treatment.

![Xray Image]

**Options for Urethral Stricture Treatment**

There are several options for urethral stricture surgery. Dr. Osterberg will review in detail your options based upon your history, prior surgeries, and diagnostic tests.

• Urethral Dilation
  • Procedure: a wire is placed thru the stricture, and over the wire strong catheters of increasing size (measured in “French”) are used to open up the stricture. This may be a good choice for men in the following categories:
    • Other significant medical problems making open urethroplasty surgery unsafe.
    • Urethral stricture is at the membranous urethra/external striated sphincter (urethroplasty in this setting can lead to incontinence)
    • Personal preference for dilation. Some men are happy with periodic self-dilation to avoid surgery and doctor visits; this is acceptable but not ideal
since these patients will have to self-dilate for the rest of their lives to avoid stricture recurrence. In addition, repeated catheterization can cause other strictures.

- **DVIU: Direct Visual Internal Urethrotomy**
  - Procedure: a special camera lens system is inserted thru the urethra to visualize the stricture and a small knife within the system is used to cut the stricture in 1-4 areas, opening up the stricture
  - Long-term cure rates with DVIU are not good: DVIU for a short stricture (< 2cm) has a long-term failure rate of about 50%; dilations, 90%. The failure rate increases for longer strictures. If the first DVIU is unsuccessful, a subsequent DVIU will yield very poor results and is not recommended. Urethroplasty should therefore be sought if there is recurrence of stricture after a patient’s first DVIU/dilation.
  - Men under 60 years old are usually best treated with surgery since they are the most likely to require long-term cure. They are also best able to tolerate the stress of surgery.
  - Treatment of men 60 years old and over is best individualized based on health and long-term goals

- **Side Effects of DVIU/Dilation**
  - Recurrent stricture: common
  - Incontinence: rare as long as stricture is away from membranous urethra/external sphincter
  - Injury to nearby organs (penis, bladder, rectum): extremely rare
  - Failure of symptom improvement: rare
  - Infection: rare
  - Bleeding: common; expect slightly blood-tinged urine
- Urethroplasty (Surgery)
  - Surgery is the gold-standard for curative treatment of urethral strictures with long-term success rates greater than 85-90%.
  - Procedure: an incision is made in the perineum (space in between the scrotum and anus) to access the stricture, and several types of repair can be performed:
    - An anastomotic urethroplasty: stricture is excised or incised and healthy urethral tissue is reconnected
    - **Onlay urethroplasty**: an incision is made thru the stricture and tissue from your mouth (cheek or tongue mucosa) is used to reconstruct the urethra
- **Fasciocutaneous urethroplasty:** skin from the penis or scrotum is used to reconstruct the urethra; this is not favored since it has higher long term failure rates

**Fasciocutaneous Flap Urethroplasty**

A piece of the penile skin with its blood supply is used to replace the scarred urethra.

(Buckley, et. al. “Distal penile circular fasciocutaneous flap for complex anterior urethral strictures.” BJUI 2017.)

- **Perineal urethrostomy:** the urethra is opened and secured to the skin between the anus and the scrotum; this is favored in patients with very long and complex anterior urethral strictures who are unfit for prolonged reconstructive surgery, who have a buried penis, who do not want multiple repeat urethroplasties, or who do not have enough available graft tissue for reconstruction.
- Side effects:
  - Irritative urinary symptoms – occasional
    - Most patients have significant improvement in flow
    - Irritative symptoms can develop if narrowing or scarring reoccurs. This can usually be treated with simple dilation or DVIU.
  - Incontinence – rare
  - Difficulty with erections – more common with transecting anastomotic urethroplasty, but overall quite rare
  - Wound problems – rare

**Buccal Mucosal Grafting**

If your stricture is long or complex, Dr. Osterberg may require a graft from the inside of your cheek to perform your urethroplasty. This is called a buccal mucosal graft (BMG).
Before Your Procedure

Ask about your medications
You may need to stop taking some of your medication before your procedure. We have included some common examples below.

- If you take medication to thin your blood, such as to treat blood clots or to prevent a heart attack or stroke, ask the doctor who prescribes it for you when to stop taking it. Some examples are aspirin, warfarin (Coumadin®), dalteparin (Fragmin®), heparin, tinzaparin (Innohep®), enoxaparin (Lovenox®), clopidogrel (Plavix®), cilostazol (Pletal®), dabigatran (Pradaxa®), and apixaban (Eliquis®).

Tell your doctor or nurse what medications you are taking, including prescription medications, patches, creams, herbal supplements, and over-the-counter medications.

Tell your doctor or nurse if you have had an allergic reaction to contrast media in the past.

Arrange for someone to take you home
You must have someone 18 years or older take you home after your procedure. If you don’t have anyone, call one of the agencies below. They will provide someone to accompany you home, however there is usually a charge for this service and you will also need to provide transportation.

10 days before your procedure
If you take vitamin E, stop taking it 10 days before your procedure, because it can cause bleeding.

7 days before your procedure
If you take aspirin, ask your doctor if you should continue. Aspirin and medications that contain aspirin can cause bleeding.

2 days before your procedure
Stop taking nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (e.g., Advil®, Motrin®) and naproxen (e.g., Aleve®). These medications can cause bleeding.

The Day Before Your Procedure
Note the time of your appointment
A clerk from the Admitting Office will call you after 2:00 PM the day before your procedure. He or she will tell you what time you should arrive at the hospital for your procedure. If you are scheduled for your procedure on a Monday, you will be called on the Friday before.

Do not eat solid foods after midnight.

The Day of Your Procedure
Between midnight and up until 2 hours before your scheduled arrival time, you may drink a total of 12 ounces of clear liquids.

12 ounces of clear liquid
Examples of clear liquids include:
Clear broth, bouillon, or consommé (no particles of dried food or seasonings)
- Gelatin, such as Jell-O®
- Clear fruit juices (no pulp), such as white cranberry, white grape, or apple
- Soda, such as 7-Up®, Sprite®, ginger ale, seltzer, or Gatorade®
- Coffee or tea, without milk or cream

Starting 2 hours before your scheduled arrival time, do not eat or drink anything. This includes water, hard candy, and gum.

Things to remember
- Take a shower with soap and water. You can brush your teeth and rinse your mouth.
- Do not put on any lotion, cream, deodorant, makeup, powder, or perfume.
- Do not wear any metal objects. Remove all jewelry, including body piercings.
- Leave valuables, such as credit cards, jewelry, or your checkbook, at home.
- Bring only the money you may need for a newspaper, bus, taxi, or parking.

What to expect
Your nurse will start an intravenous (IV) line in your vein to give you anesthesia (medication to make you sleep).

After Your Procedure
In the hospital
When you wake up, you will be in the Post Anesthesia Care Unit (PACU). While you are in the PACU, your nurse will check your heart beat, breathing rate, temperature, and blood pressure. Your nurse will also check your urine output to make sure your flow of urine is not blocked. You will have a urinary catheter in place.

You will go home with a catheter in place, your nurse will show you how to care for it before you go home. You will need to take antibiotics to prevent infection or medications to relieve discomfort. You will take antibiotics the entire time you have the catheter in place.

If you had a graft taken from inside your mouth, you will feel the sutures and your mouth will be sore. You should apply an ice pack to the mouth.
Your nurse will explain your discharge instructions to you and your caregiver before you go home.

At home
Do not drive for 24 hours after your procedure.

You will most likely experience hematuria (blood in your urine bag) after your procedure. This should go away within 1 week.

Urinary catheter
While the urinary catheter is in place, you may feel a strong urge to urinate. This happens because the small inflated balloon that keeps it in place may cause your bladder to feel full. Relaxing and allowing the urine to flow will decrease this urge.

Mouth Care
If you had a buccal mucosal grafting performed, you will use Magic Mouthwash © three times per day. You should avoid any seeds, nuts, or other small foods that could get stuck in your graft site.

Activity

- If you need to go on car trips that are longer than 1 hour for 1 week after your procedure, talk with your doctor or nurse.
- Don’t lift objects heavier than 10 pounds (4.5 kilograms) for 2 weeks after your procedure.
- Don’t do strenuous exercise, such as tennis, jogging, or exercise programs, for 2 weeks after your procedure.
- You can walk and climb stairs right away after your procedure.

Call your doctor or nurse if you have:

- Continuous bright red blood or blood clots in your urine
- Bleeding (pink urine) for more than 1 week that is not getting better
- Pain or burning when you urinate for more than 3 days that is not getting better
- Frequent urination for more than 3 days that is not getting better
- A temperature of 101° F (38.3° C) or higher
- Shaking chills
- Pain in your lower back
- Catheter stops draining
How long will recovery take?

Recovery time depends a lot on the type of surgery that was performed. Typical patients will be in the hospital overnight after surgery. As soon as you can eat, walk, and care for their catheter, you can leave the hospital. It is important to limit activities after urethroplasty until adequate healing has occurred. This means no heavy lifting, strenuous exercise, or work for at least two weeks.

**IMPORTANT: Do NOT sit on your incision. Always sit on your tail bones and slouch. Do NOT ride bikes, motorcycles, horses, tractors.**

Generally, it is best if patients do not work while the catheter is in place, however, patients can start doing work that is not physical after 10–14 days. The catheter can be worn draining to a smaller bag that straps to the lower leg under a pair of pants. Wearing a catheter like this is unobtrusive and very manageable. Your nurse will provide you with a leg bag prior to discharge.

Prescriptions at home

Dr. Osterberg will send you home with some pain medication and an antibiotic which you will take daily while your catheter is in place.

**Long Term Follow up**

What is the follow-up after surgery?

The follow-up after urethroplasty is very important; this is because most urethral strictures recur within the first year or two after surgery. Prior to when patients return to clinic, the bladder is filled with x-ray contrast and the catheter is gently removed.

While x-rays are being taken, the patient voids and the area of the surgery is evaluated. If the area of surgery is healed, then the catheter is left out and patients begin to void normally. This is typically done at 3-4 weeks after surgery. Ideally, within the same day, Dr. Osterberg will also arrange your first postoperative visit.
Thereafter, patients are seen every three to six months in their first year after surgery.

At the second postoperative appointment patients undergo cystoscopy of the urethra in the office and the urinary flow rate and residual urine is measured in our office. Cytoscopy is a scope exam of the urethra where a small scope is placed into the urethra from the penis, very similar to catheterization, and the area of the surgery is examined for recurrent strictures. The follow-up schedule is individualized depending upon the findings of these exams.

What happens when strictures come back after surgery?

When strictures come back after surgery they often are thin and web-like. These strictures can cause obstruction but often can be treated internally by cutting the stricture with a scope procedure. This is not similar to the initial stricture that often has too much scarring to respond long-term to an internal cutting procedure. Some strictures are too dense and do not respond to internal cutting and the patient may need further surgery.

What is the success after urethroplasty?

Different surgeries have different success rates. Generally, strictures can be resolved in 75–85% of cases. If strictures come back, only about one half cause symptoms. In other words if a stricture comes back, it has to be very tight to cause blockage of urinary flow, just like the original stricture.

If patients have symptoms, then an internal cutting surgery with a scope is usually tried (direct vision internal urethrotomy). If this doesn’t work, then patients may need additional surgery, which is a rare circumstance.