

# A pain in the scrotum and urethral strictures

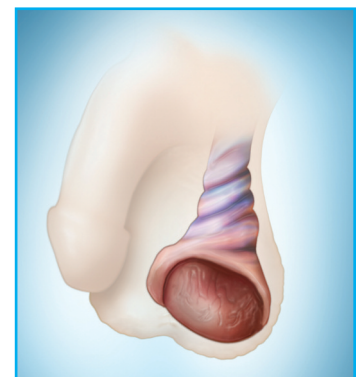
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## We'll be covering these types of pain:

1. Testicular torsion
2. Infection of the testis (orchitis) or the epididymis (epididymitis)
3. Trauma
4. Inguinal hernia
5. Kidney stone (differed pain)
6. Testicular tumour
7. Dilated testicular veins (varicocele)

## What is the scrotum?

The scrotum is the skin sac that contains the testicles, its attached blood vessels and ducts which transport sperm from the testis through the vas deferens, delivering it out the urinary canal through the penis to the outside world. The spermatic cord (a tubular structure containing blood vessels, nerves, lymphatic vessels and the vas deferens) courses from each testicle through the abdomen to empty into the urinary tract below the bladder (see Figure 1).



**Figure 1.** Normal testicle and testicular torsion

### I. Testicular torsion

Testicular torsion (a sudden twisting of the testes) is usually characterized by a sudden onset and severe testicle pain. It occurs mostly during puberty and in teenagers. It may be associated with scrotal swelling or elevation of the affected testicle.

Testicular torsion occurs when the testicle vessels twist spontaneously on themselves (see Figure 1), leading to a decrease in blood flow to the affected testicle. If the blood supply is cut off for more than six hours, the testicle may be permanently damaged. **This condition is a surgical emergency and you should go immediately to the emergency room.** When the urologist has a high suspicion of testicular torsion, your doctor will untwist the testicle and restore the blood flow immediately. If the testicle is still alive, then it is fixed in the inner wall of the scrotum. The other testicle must also be fixed to the scrotum since it is also at risk of twisting on itself. In cases where the lack of blood supply has been prolonged or the testes is no longer viable, removal is often recommended.

If your urologist is unsure of whether you have testicular torsion, you may need an ultrasound to assess the testicle blood flow. If there is no blood circulating into the testicle then you likely have testicular torsion.

## 2. Infection of the testis (orchitis) or the epididymis (epididymitis)

Epididymitis is the inflammation of the epididymis. Symptoms include: acute onset of unilateral testicular pain and swelling, tenderness of the epididymis and vas deferens, and occasionally redness and swelling of the overlying scrotum skin (see Figure 2). The term epididymo-orchitis is mostly used when the epididymis and the testes are inflamed.

In men not yet 35 years old, sexually transmitted infection (STI) accounts for most cases of epididymitis (47% *Chlamydia trachomatis* and 20% *Neisseria gonorrhoeae*). In men over 35, 75% of cases are caused by a urinary tract infection (coliforms or pseudomonas); *Chlamydia trachomatis* or *Neisseria gonorrhoeae* are rare. Infection in this age group is typically the result of an abnormality within the genitourinary system.

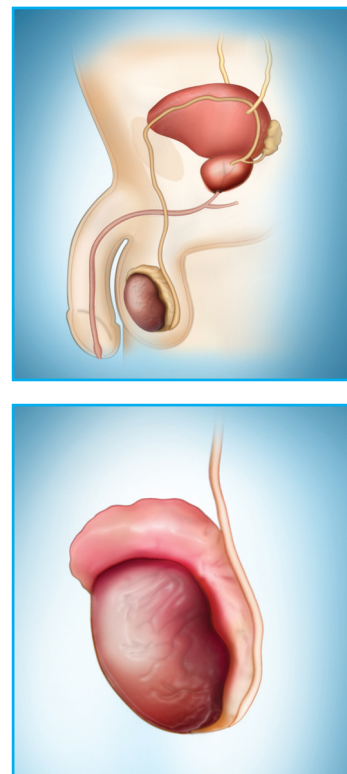
If you have epididymitis, your testicular pain may come with:

- Testicular and/or scrotal tenderness, typically in the area of the epididymis, though it can become more generalized and involve the whole testicle as the illness progresses
- Testicular and/or scrotal swelling and redness on the affected side
- Fever
- Urethral discharge
- Lower urinary tract symptoms (LUTS), such as burning, urgency, or frequency.

### **Your evaluation will include:**

- Collection of specimens to identify *Chlamydia trachomatis* or *Neisseria gonorrhoeae* by urethral swab or in urine
- Urinalysis and urine culture.

If it can be arranged without delay, a scrotal ultrasound may be useful to know whether the problem is epididymitis or testicular torsion. In cases with epididymitis, the testicle blood flow would be increased.



**Figure 2.** Epididymitis and orchitis

### ***Treatment options include:***

- Mainly antibiotics (based on the bacteria and your sexual history)
- Pain medication
- Anti-inflammatory agents
- Ice packs
- Scrotal support
- Rest

If you have a sexually-related epididymitis, all your sexual partners from 60 days before your symptoms or 60 days before your diagnosis (if asymptomatic) should be located, clinically evaluated and treated regardless of clinical findings and without waiting for test results.

**In children and young adults, it is important to consider non-infectious causes of scrotal swelling, such as trauma, torsion of the testicle and tumour. Torsion of the testicle is a surgical emergency and should be suspected when the onset of scrotal pain is sudden.**

Mumps orchitis is a viral infection that occurs most commonly in children under 10 years old and does not require antibiotics.

Rare causes of non-infectious acute epididymitis include amiodarone use (a heart medication), or some inflammatory states. Some cases of epididymitis remain unknown.

If you have symptoms of discomfort and/or pain for at least three months in the scrotum, testicle or epididymis, you have “chronic epididymitis.” There is no clear history of the condition.

### **3. Trauma**

Any type of trauma or injury to the testicles can cause discomfort, severe pain, bruising and/or swelling.

The most common are blunt trauma, which can occur from sports injuries, a direct kick to the area or straddle injuries. Other types of injuries to the testicles include penetrating trauma like needles, knife or gunshots.

In most cases, testicular pain from blunt trauma will resolve with pain medication, rest and time. However, a few violent trauma, like receiving a high velocity slap shot to the testicles, may cause the envelope of the testicle to rupture and the content to come out. It can be seen on scrotal ultrasound and in case of testicular rupture, immediate surgical repair is necessary to preserve testicular function and viability.

### **4. Inguinal hernia**

Some type of inguinal hernia, called indirect, can cause a bulge into the scrotum especially with straining or coughing. An indirect inguinal hernia occurs when a portion of the abdominal cavity content, usually part of the intestine, pass into the scrotum because of a weakness of the lower abdominal muscle wall. It can sometimes cause scrotal pain.

The definitive treatment of inguinal hernias is surgical repair by a general surgeon because it doesn't go away on its own. Occasionally, inguinal hernias should prompt surgical repair if unable to be pushed back into the abdomen or if blood flow to the herniated content is compromised.

## 5. Kidney stone (differed pain)

Sometimes, the pain associated with kidney stones can extend into the groin area and cause testicular pain. However it is without scrotal swelling or redness and there is no pain when touching the testes. Kidney stones are diagnosed by kidney/ureter/bladder (KUB) X-ray, ultrasound or CT scan and the testicular pain from kidney stone usually disappears with stone removal.

## 6. Testicular tumour

A testicular tumour is generally a painless mass of the testicle, but it can sometimes be painful and uncomfortable. It usually happens in young men aged between the ages of 15 and 35. The treatment is surgical excision. For more detail, please refer to chapter on testis cancer.

## 7. Dilated testicular veins (varicocele)

Varicocele is an abnormal enlargement of the testicular veins. It may cause aching pain within the scrotum or visible enlarged veins. It is more common on the left side. Upward flow of blood in the testicular veins is ensured by small one-way valves that prevent backflow. Varicocele results from backflow of blood into the testicle. This is essentially the same process as varicose veins which can occur in the legs or in the anus known as hemorrhoids. The treatment is either surgery (varicocelectomy) or by embolization of the testicular vein. This involves passing a small wire through the testicular vein using radiologic imaging to obstruct it with coils. Although most men with varicoceles are able to father children, sometimes varicoceles may be a problem for male fertility.

# Urethral strictures

## 1. What is a urethral stricture?

A urethral stricture is a narrowing of the urethra (urinary channel) resulting from an injury or scar. The urethra is a tube that carries urine from the bladder through the tip of the penis. A stricture may happen in any part of the urethra (see Figure 1).

There are two types: (1) congenital urethral stricture which is uncommon in infant boys and (2) acquired urethral strictures more frequent in men.

The main cause of acquired urethral strictures is trauma either by falling, receiving a hit or prior introduction of instruments through the urethra. Strictures are less due to infections such as gonorrhoea, tuberculosis or schistosomiasis, and may rarely be a complication of urethral or penile cancer.

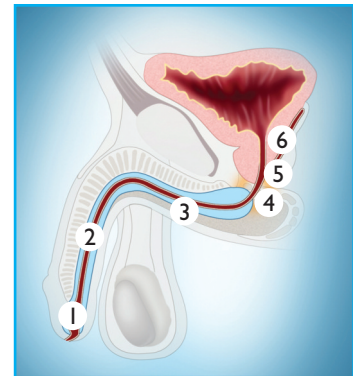
A stricture restricts the flow of urine in the urethra (Figure 2) and can cause urinary retention, inflammation, urinary tract infection or lower urinary tract symptoms (weak stream, splaying of the urinary stream). However, these symptoms can also be present in several other urological diseases like prostatic benign hyperplasia (BPH), prostatitis, urinary tract infection, urethral foreign bodies, stone or tumour.

## 2. How is a urethral stricture diagnosed?

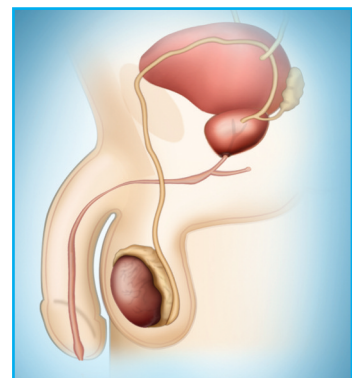
- Urethro-cystoscopy: Passing a small camera through the penis could reveal a narrowing scar of the urethra and its location along the urethra. If there is no urethral stricture then the camera can pass easily through the bladder.
- Retrograde urethrogram: This is a radiologic exam by injecting a contrast agent through a small catheter placed in the tip of the penis. While injecting contrast agent, X-rays are taken to locate and assess any strictures (see Figure 3).

## 3. How are urethral strictures treated?

- Urethral dilation: This is the oldest and simplest treatment. The goal is to stretch the scar without producing more scarring. The urethra may be widened (dilated) during urethro-cystoscopy by inserting a thin instrument to stretch the urethra while under local anesthesia. You may also be able to treat your stricture by learning to dilate the urethra at home.
- Incision of the stricture: When urethral stricture is seen during urethro-cystoscopy, it can be incised at the same time and this procedure is called transurethral direct-vision internal urethrotomy. The incision can be made with a knife.
- Laser: Laser can also be used through the urethro-cystoscope to vaporize the scar (see Figure 4). To date, the results of laser urethrotomy are mixed. With new lasers and more experience with them, we may have better results in the future.

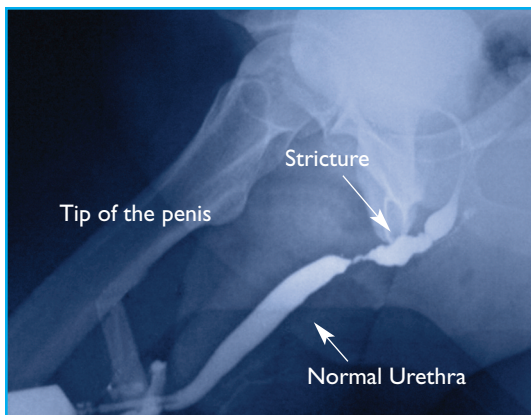


**Figure 1.** Sagittal section of the pelvis. The urethra is subdivided into the following sections: 1, fossa navicularis; 2, pendulous or penile urethra; 3, bulbous urethra; 4, membranous urethra; 5, prostatic urethra; 6, bladder neck. By common usage, the divisions of the fossa navicularis, pendulous urethra, and bulbous urethra compose the anterior urethra; and the divisions of the membranous urethra, prostatic urethra, and bladder neck compose the posterior urethra.



**Figure 2.** Urethral stricture.

- Urethral stents: These are used to prevent the scar from narrowing again after internal urethrotomy or dilation. These stents are not widely used in Canada because they are not suitable for all patients; long term success is disappointing and there are many complications.
- Urethroplasty (open surgical repair): Unfortunately, most people get again another urethral stricture even after dilation or incision of the stricture. Urethroplasty is the complete excision of the scar with primary anastomosis (bringing together both sides of the urethra). This is the “gold standard” for repairing urethral strictures. This procedure is performed only in the operating room.



**Figure 3.** Retrograde urethrogram



**Figure 4.** A urethro-cystoscopy view of a urethral stricture. The blue tip is the laser fibre and at its extremity is the stricture.