



Priapism

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This leaflet contains general information about Priapism. If you have any specific questions about your individual medical situation you should consult your doctor or other professional healthcare provider.

This information was produced by the European Association of Urology (EAU) Patient Information Working Group.

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Priapism

What is priapism?

Priapism is an erection of the penis that lasts for more than 4 hours without physical and mental stimulation. It develops when blood becomes trapped in the penis and is unable to drain. It is often painful. Priapism is relatively rare in general (<1 case per 100 000 people each year).

Symptoms of priapism

Rigid erection with or without sexual stimulation
Erection lasts more than 4 hours
Penile pain or sensitivity

Priapism is a medical emergency that may result in permanent erectile dysfunction. Symptoms include: penile pain and a rigid erection. If you think you might have priapism, don't try to treat it yourself. Instead, get medical care right away.

Your doctor may ask:

- How long have you had the erection?
- How long do your erections usually last?
- Have you used any drugs, legal or illegal, recently?
- Did the symptoms occur after an injury?

What causes priapism?

In most cases, the cause of priapism is unknown (idiopathic). However, patients who suffer from blood disorders, especially sickle cell disease, may develop priapism. Some blood, metabolic, or nervous system disorders and medications put patients at higher risk. In rare cases, priapism can affect children with sickle cell disease.

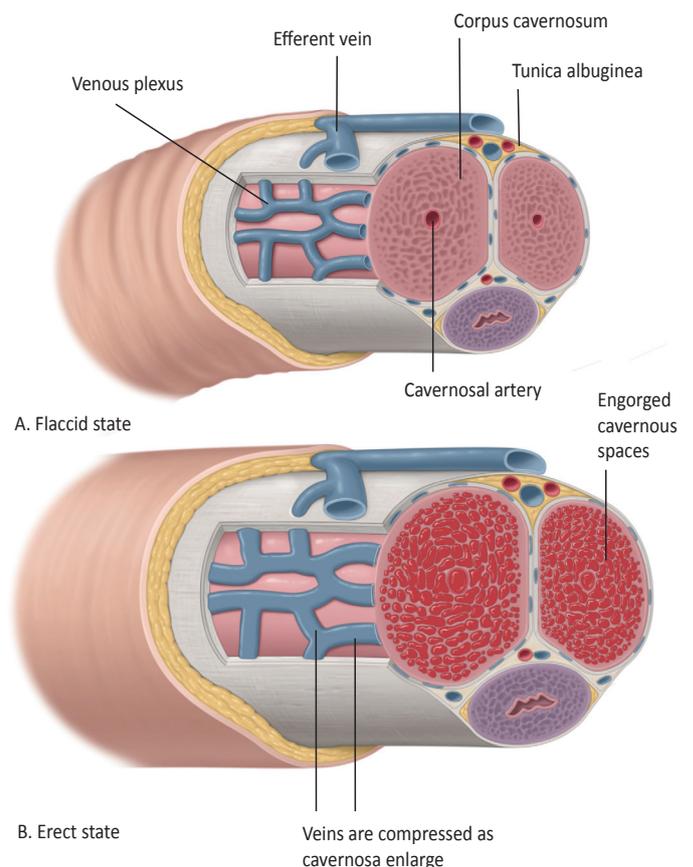
There are three types of priapism:

- **Low-flow (ischaemic) priapism** is the most common type. It happens when blood gets trapped in the penis. If not treated right away, it can lead to scarring and permanent erectile dysfunction.
- **Intermittent (stuttering) priapism** is a type of low-flow priapism characterised by repeating episodes of painful, prolonged erections.
- **High-flow (non-ischemic) priapism** is rarer and usually less painful. It typically happens after an injury to the penis or the area between the scrotum and the anus (perineum). The injury prevents blood in the penis from circulating normally.

Diagnosing priapism

The penis is composed of two chambers (corpora cavernosa) and a mass of spongy tissue (corpus spongiosum). Erection results from relaxation of smooth muscle and increased blood flow into the corpora cavernosa. This causes engorgement and rigidity (see image below). In priapism, the corpus spongiosum and glans penis (the head) are not typically engorged.

Differentiating low-flow from high-flow priapism is critical because treatment for each is different. Your doctor will review your medical history and perform a physical examination to help determine the cause of priapism. Once the emergency is resolved, further blood tests might be prescribed to assess your blood health.



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Fig. 1: a) Flaccid penis b) Erect penis.

Potential causes of low-flow priapism

Diseases of the blood (haematological disease)
<ul style="list-style-type: none"> • Sickle cell disease • <u>Thalassemia</u>
Infections
Metabolic disorders
<ul style="list-style-type: none"> • <u>Amyloidosis</u> • <u>Fabry's disease</u> • Gout
Neurogenic disorders
<ul style="list-style-type: none"> • Spinal cord injury • Stroke • Brain tumour • Spinal anaesthesia
New abnormal tissue growth (<u>neoplasm</u>) that has infiltrated surrounding tissue or spread to the organs
Medications
<ul style="list-style-type: none"> • Recreational drugs, including alcohol, marijuana, and cocaine • Prescription medications, including antidepressants, blood thinners, and calcium channel blockers (used to lower blood pressure)

Treating priapism

The goal of any treatment for priapism is to make the erection go away and to prevent permanent erectile dysfunction.

- Low-flow priapism is an emergency and should be treated as soon as possible. The duration of the erection affects the severity of erectile dysfunction that can result.
- High-flow priapism might not require emergency treatment because blood flow to the penis is not reduced. However, only your doctor can distinguish between the two types of priapism.

If you suspect priapism, please contact your doctor immediately and do not attempt any home treatment.

If you have any cardiovascular disease, be sure you tell your doctor before any treatment is performed.

Conservative, first- and second-line treatments

Conservative treatment options include exercise, ejaculation, and ice packs. However, they are rarely successful in resolving prolonged erections caused by low-flow priapism.

First-line treatment options are performed by a doctor. They are suggested for patients who have low-flow priapism of >4 hours duration. These treatment options are less likely to be successful when duration of priapism lasts >72 hours.

Second-line treatment typically refers to penile surgery. Surgery should be considered in cases of emergency, only when conservative and first-line treatment options have failed. Surgery is performed to minimise tissue damage from low blood flow to the penis and to reduce the chance of permanent erectile dysfunction.

Treating low-flow priapism

The first-line treatment for low-flow priapism is drawing blood from the corpus cavernosum. The penis is numbed, aspirated for blood, and then irrigated with saline and drugs called alpha-agonists (if necessary) injected into the corpus cavernosum. This procedure has a high rate of success and can be repeated in time.

Second-line treatment typically refers to penile surgery. It should be used in case of emergency, only after conservative and first-line treatments have failed.

There are two main types of surgery for low-flow priapism: penile shunt surgery and penile prosthesis implantation.

Determining type of priapism

Medical history	Includes duration of erection, presence and degree of pain, previous history of priapism and its treatment, current erectile function, use of medication and drugs, other specific disease (sickle cell disease), trauma to the penis or the area between the scrotum and anus (perineum)
Physical examination	Includes careful examination of the penis and the perineum
Blood tests	Includes blood aspiration and gas analysis from the corpora cavernosa of the penis to determine the type of priapism (a small needle is placed in the penis, some blood is drawn, and then it is sent to a laboratory for analysis)
Penile imaging	Includes penile colour Doppler ultrasound to show how blood is flowing in the penis and MRI to examine muscle health and look for fibrous tissue in the penis.

* The underlined terms are listed in the glossary.

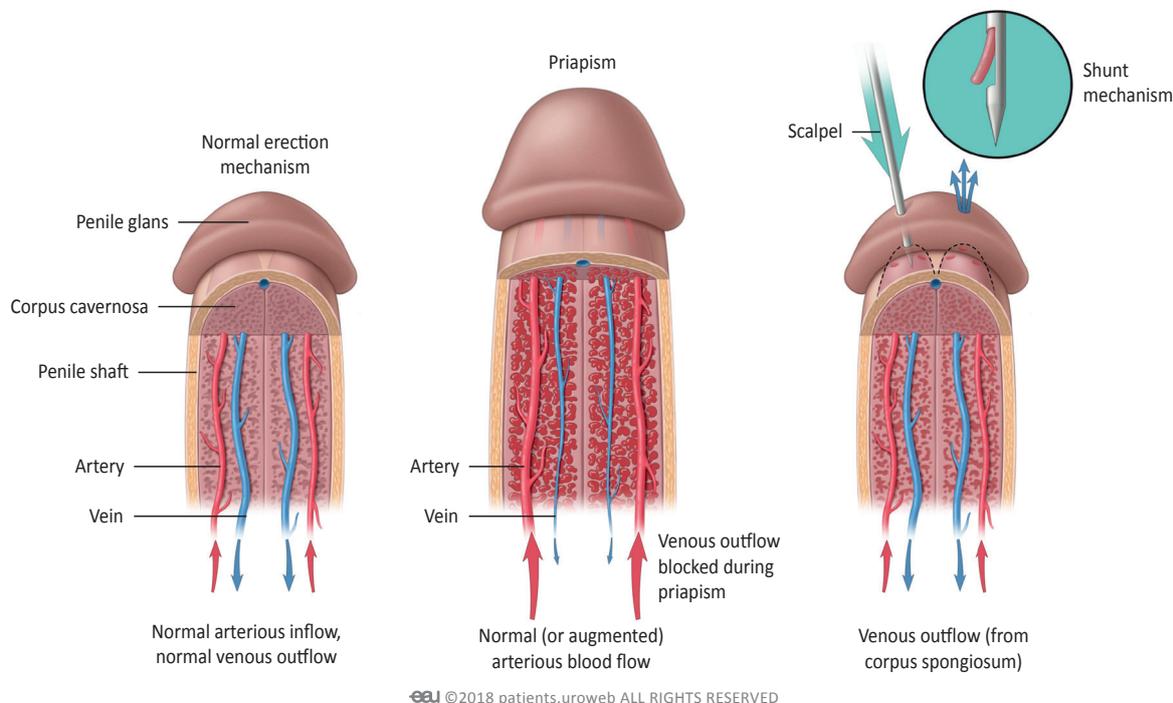


Fig. 2: Shunt procedure.

Penile shunt surgery

Penile shunt surgery is performed to restore an exit for blood and to re-establish blood circulation within the penis. A connection (“shunt”) is created between the corpora cavernosa and the glans of the penis. Talk to your doctor if you would like more information about the techniques used.

Penile prosthesis implant

Penile prosthesis implantation can be performed immediately if shunt surgery does not work or if low-flow priapism has lasted 48-72 hours. Prolonged low-flow priapism can cause fibrous tissue to develop in the penis and cause permanent damage.

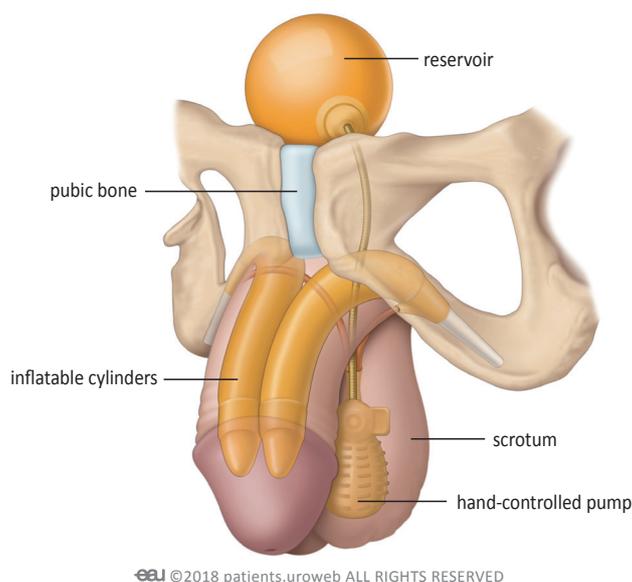


Fig. 3: A common type of inflatable penile implant.

Treating high-flow priapism

Blood flow to the penis is not reduced in high-flow priapism, so it does not require emergency treatment. However, only your doctor can distinguish between high -and low-flow priapism.

Ice packs to the perineum or compression of the injury may bring down swelling for high-flow priapism. Your doctor will block the blood vessel that is causing the problem (artery embolisation). When a ruptured artery causes priapism, your doctor will perform an operation to tie it off (surgical ligation). This procedure is a final treatment option if blocking the artery has failed.

Treating intermittent (stuttering) priapism

The primary goal for treatment of intermittent priapism is the prevention of future episodes. This can usually be achieved with drug therapy, although there is not a universally accepted treatment. Treatment is generally adapted to the patient.

Suggested drug therapies include:

- Hormonal therapies, which can be used for patients who have reached sexual maturity.
- Phosphodiesterase type 5 inhibitors (for example, Viagra), which can alleviate and prevent intermittent episodes in patients with priapism that is idiopathic (unknown cause) or associated with sickle cell disease. Treatment should be initiated only when the penis is flaccid.

Read more about Phosphodiesterase type 5 inhibitors in EAU Patient Information on Erectile Dysfunction at patients.uroweb.org.

Other systemic drugs can be considered but are not supported by research.

Treatment options	
Low-flow priapism	
Conservative	Do not attempt any home treatment. Please contact your doctor immediately.
First-line	The penis is numbed, and blood is drawn (aspiration) from the corpus cavernosum. Saline and medication are then injected (irrigation) into the penis to reduce pressure and swelling.
Second-line	Penile shunt surgery or penile prosthesis implantation
High-flow priapism	
Conservative	Ice packs to the perineum or compression of the injury may bring down swelling.
First-line	Block the blood vessel that is causing the problem (artery embolisation).
Second-line	Surgical ligation to tie off the ruptured artery: this procedure is a final treatment option if blocking the artery has failed.
Intermittent (stuttering) priapism	
First-line	The treatment of each acute episode is similar to that of low-flow priapism.
Drug therapy	Hormonal therapies and/or antiandrogens or phosphodiesterase type 5 inhibitors, depending on the patient's medical profile

What's the outlook?

Most people who experience priapism recover completely if treated quickly. Treating priapism quickly reduces the risk of permanent problems getting and keeping erections.

* The underlined terms are listed in the glossary.

Glossary of terms

Amyloidosis

A disease that occurs when a substance called amyloid builds up in your organs. Amyloid is an abnormal protein that is usually produced in your bone marrow and can be deposited in any tissue or organ.

Aspiration

The process of drawing a substance (eg, blood) from the body

Corpus cavernosum (plural, corpora cavernosa)

Two chambers that run the length of the penis and are filled with spongy tissue. Blood flows in and fills the open spaces in this spongy tissue to create an erection.

Corpus spongiosum

The mass of spongy tissue surrounding the male urethra within the penis

Doppler ultrasound

A non-invasive test that can be used to estimate your blood flow through blood vessels by bouncing high-frequency sound waves (ultrasound) off circulating red blood cells.

Fabry's disease

Abnormal deposits of a fatty substance called globotriaosylceramide in blood vessel walls throughout the body

Glans

The rounded part forming the end of the penis

Irrigation

Injection of a solution into the body to cleanse and administer drugs at a specific site

Ischemia

A restriction in blood supply to tissues, causing a shortage of oxygen and glucose needed to keep tissue alive. Ischemia is generally caused by problems with blood vessels and causes damage to tissue.

Neoplasm

New abnormal growth of tissue

Penis

The male reproductive organ that also carries urine out of the body

Sickle cell disease

A condition in which there are not enough healthy red blood cells to carry adequate oxygen throughout the body

Thalassemia

A blood disorder characterised by less haemoglobin and fewer red blood cells in the body than normal

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