

# Peyronie's Disease

*National Kidney and Urologic Diseases Information Clearinghouse*



National Institute of  
Diabetes and Digestive  
and Kidney Diseases

## What is Peyronie's disease?

Peyronie's disease is a disorder in which scar tissue, called a plaque, forms in the penis—the male organ used for urination and sex. The plaque builds up inside the tissues of a thick, elastic membrane called the tunica albuginea. The most common area for the plaque is on the top or bottom of the penis. As the plaque builds up, the penis will curve or bend, which can cause painful erections. Curves in the penis can make sexual intercourse painful, difficult, or impossible. Peyronie's disease begins with inflammation, or swelling, which can become a hard scar.

The plaque that develops in Peyronie's disease is not the same plaque that can develop in a person's arteries. The plaque seen in Peyronie's disease is benign, or noncancerous, and is not a tumor. Peyronie's disease is not contagious or caused by any known transmittable disease.

Early researchers thought Peyronie's disease was a form of impotence, now called erectile dysfunction (ED). ED happens when a man is unable to achieve or keep an erection firm enough for sexual intercourse. Some men with Peyronie's disease may have ED. Usually men with Peyronie's disease are referred to a urologist—a doctor who specializes in sexual and urinary problems.

## How does an erection occur?

An erection occurs when blood flow increases into the penis, making it expand and become firm. Two long chambers inside the penis, called the corpora cavernosa, contain a spongy tissue that draws blood into the chambers. The spongy tissue contains smooth muscles, fibrous tissues, spaces, veins, and arteries. The tunica albuginea encases the corpora cavernosa. The urethra, which is the tube that carries urine and semen outside of the body, runs along the underside of the corpora cavernosa in the middle of a third chamber called the corpus spongiosum.

An erection requires a precise sequence of events:

- An erection begins with sensory or mental stimulation, or both. The stimulus may be physical contact or a sexual image or thought.
- When the brain senses a sexual urge, it sends impulses to local nerves in the penis that cause the muscles of the corpora cavernosa to relax. As a result, blood flows in through the arteries and fills the spaces in the corpora cavernosa like water filling a sponge.

- The blood creates pressure in the corpora cavernosa, making the penis expand.
- The tunica albuginea helps trap the blood in the corpora cavernosa, thereby sustaining the erection.
- The erection ends after climax or after the sexual urge has passed. The muscles in the penis contract to stop the inflow of blood. The veins open and the extra blood flows out of the penis and back into the body.

## What causes Peyronie's disease?

Medical experts do not know the exact cause of Peyronie's disease. Many believe that Peyronie's disease may be the result of

- acute injury to the penis
- chronic, or repeated, injury to the penis
- autoimmune disease—a disorder in which the body's immune system attacks the body's own cells and organs

## Injury to the Penis

Medical experts believe that hitting or bending the penis may injure the tissues inside. A man may injure the penis during sex, athletic activity, or an accident. Injury ruptures blood vessels, which leads to bleeding and swelling inside the layers of the

tunica albuginea. Swelling inside the penis will block blood flow through the layers of tissue inside the penis. When the blood can't flow normally, clots can form and trap immune system cells. As the injury heals, the immune system cells may release substances that lead to the formation of too much scar tissue. The scar tissue builds up and forms a plaque inside the penis. The plaque reduces the elasticity of tissues and flexibility of the penis during erection, leading to curvature. The plaque may further harden because of calcification—the process in which calcium builds up in body tissue.

## Autoimmune Disease

Some medical experts believe that Peyronie's disease may be part of an autoimmune disease. Normally, the immune system is the body's way of protecting itself from infection by identifying and destroying bacteria, viruses, and other potentially harmful foreign substances. Men who have autoimmune diseases may develop Peyronie's disease when the immune system attacks cells in the penis. This can lead to inflammation in the penis and can cause scarring. Medical experts do not know what causes autoimmune diseases. Some of the autoimmune diseases associated with Peyronie's disease affect connective tissues. Connective tissue is specialized tissue that supports, joins, or separates different types of tissues and organs of the body.

## How common is Peyronie's disease?

Researchers estimate that Peyronie's disease may affect 1 to 23 percent of men between 40 and 70 years of age.<sup>1</sup> However, the actual occurrence of Peyronie's disease may be higher due to men's embarrassment and health care providers' limited reporting.<sup>1</sup> The disease is rare in young men, although it has been reported in men in their 30s.<sup>1</sup> The chance of developing Peyronie's disease increases with age.<sup>2</sup>

## Who is more likely to develop Peyronie's disease?

The following factors may increase a man's chance of developing Peyronie's disease:

- vigorous sexual or nonsexual activities that cause microscopic injury to the penis
- certain connective tissue and autoimmune disorders
- a family history of Peyronie's disease
- aging

## Vigorous Sexual and Nonsexual Activities

Men whose sexual or nonsexual activities cause microscopic injury to the penis are more likely to develop Peyronie's disease.

## Connective Tissue and Autoimmune Disorders

Men who have certain connective tissue and autoimmune disorders may have a higher chance of developing Peyronie's disease. A common example is a condition known as Dupuytren's disease, an abnormal cordlike thickening across the palm of the hand. Dupuytren's disease is also known as Dupuytren's contracture. Although Dupuytren's disease is fairly common in older men, only about 15 percent of men with Peyronie's disease will also have Dupuytren's disease.<sup>2</sup> Other connective tissue disorders associated with Peyronie's disease include

- plantar fasciitis—inflammation of the plantar fascia, thick tissue on the bottom of the foot that connects the heel bone to the toes and creates the arch of the foot

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<sup>1</sup>Peyronie's disease. Urology Care Foundation website. [www.urologyhealth.org/urology/index.cfm?article=115](http://www.urologyhealth.org/urology/index.cfm?article=115). Updated March 2013. Accessed May 14, 2014.

<sup>2</sup>Montague D, Angermeier K, Chopra A, contributors. Peyronie disease. MD Consult website. [www.mdconsult.com/das/pdxmd/body/405480262-4/1418355225?type=med&eid=9-u1.0-\\_1\\_mt\\_1016342](http://www.mdconsult.com/das/pdxmd/body/405480262-4/1418355225?type=med&eid=9-u1.0-_1_mt_1016342). Updated March 7, 2012. Accessed May 14, 2014.

- scleroderma—abnormal growth of connective tissue, causing it to get thick and hard; scleroderma can cause swelling or pain in muscles and joints

Autoimmune disorders associated with Peyronie’s disease include

- systemic lupus erythematosus— inflammation and damage to various body tissues, including the joints, skin, kidneys, heart, lungs, blood vessels, and brain
- Sjögren’s syndrome— inflammation and damage to the glands that make tears and saliva
- Behcet’s syndrome— inflammation of the blood vessels

### Family History of Peyronie’s Disease

Medical experts believe that Peyronie’s disease may run in some families. For example, a man whose father or brother has Peyronie’s disease may have an increased chance of getting the disease.

### Aging

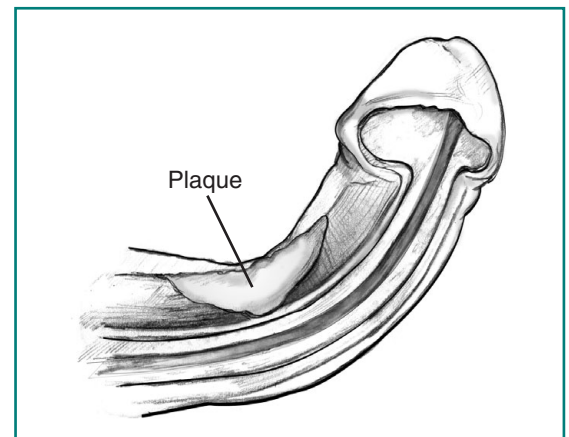
The chance of getting Peyronie’s disease increases with age. Age-related changes in the elasticity of tissues in the penis may cause it to be more easily injured and less likely to heal well.

## What are the signs and symptoms of Peyronie’s disease?

The signs and symptoms of Peyronie’s disease may include

- hard lumps on one or more sides of the penis
- pain during sexual intercourse or during an erection
- a curve in the penis either with or without an erection
- narrowing or shortening of the penis
- ED

Symptoms of Peyronie’s disease range from mild to severe. Symptoms may develop slowly or appear quickly. In many cases, the pain decreases over time, although the curve in the penis may remain. In milder cases, symptoms may go away without causing a permanent curve.



Cross section of a curved penis during erection

## What are the complications of Peyronie’s disease?

Complications of Peyronie’s disease may include

- the inability to have sexual intercourse
- ED
- anxiety, or stress, about sexual abilities or the appearance of the penis
- stress on a relationship with a sexual partner
- problems fathering a child because intercourse is difficult

## How is Peyronie’s disease diagnosed?

A urologist diagnoses Peyronie’s disease based on

- a medical and family history
- a physical exam
- imaging tests

### Medical and Family History

Taking a medical and family history is one of the first things a urologist may do to help diagnose Peyronie’s disease. He or she will ask the man to provide a medical and family history, which may include the following questions:

- What is the man’s ability to have an erection?
- What are the problems with sexual intercourse?

- When did the symptoms begin?
- What is the family medical history?
- What medications is the man taking?
- What other symptoms is the man experiencing?
- What other medical conditions does the man have?

### Physical Exam

A physical exam may help diagnose Peyronie’s disease. During a physical exam, a urologist usually examines the man’s body, including the penis.

A urologist can usually feel the plaque in the penis with or without an erection. Sometimes the urologist will need to examine the penis during an erection. The urologist will give the man an injectable medication to cause an erection.

### Imaging Tests

To help pinpoint the location of the plaque buildup inside the penis, a urologist may perform

- ultrasound of the penis
- an x ray of the penis

For both tests, a specially trained technician performs the procedure in a health care provider’s office, an outpatient center, or a hospital, and a radiologist—a doctor who specializes in medical imaging—interprets the images. The patient does not need anesthesia.

**Ultrasound.** Ultrasound uses a device, called a transducer, that bounces safe, painless sound waves off organs to create an image of their structure.

**X ray.** An x ray is a picture created by using radiation and recorded on film or on a computer. The amount of radiation used is small. The man will lie on a table or stand during the x ray, and the technician may ask the man to change positions for additional pictures.

## How is Peyronie’s disease treated?

A urologist may treat Peyronie’s disease with nonsurgical treatments or surgery.

The goal of treatment is to reduce pain and restore and maintain the ability to have intercourse. Men with small plaques, minimal penile curvature, no pain, and satisfactory sexual function may not need treatment until symptoms get worse. Peyronie’s disease often resolves on its own without treatment.

A urologist may recommend changes in a man’s lifestyle to reduce the risk of ED associated with Peyronie’s disease.

### Nonsurgical Treatments

Nonsurgical treatments include medications and medical therapies.

**Medications.** A urologist may prescribe medications aimed at decreasing a man’s penile curvature, plaque size, and inflammation. A man may take prescribed medications to treat Peyronie’s disease orally—by mouth—or a urologist may inject medications directly into the plaque. Verapamil is one type of topical medication that a man may apply to the skin over the plaque.

- **Oral medications.** Oral medications may include
  - vitamin E
  - potassium para-aminobenzoate (Potaba)
  - tamoxifen
  - colchicine
  - acetyl-L-carnitine
  - pentoxifylline
- **Injections.** Medications injected directly into plaques may include
  - verapamil
  - interferon alpha 2b
  - steroids
  - collagenase (Xiaflex)

To date, collagenase is the first and only medication specifically approved for Peyronie’s disease.

**Medical therapies.** A urologist may use medical therapies to break up scar tissue and decrease plaque size and curvature. Therapies to break up scar tissue may include

- high-intensity, focused ultrasound directed at the plaque
- radiation therapy—high-energy rays, such as x rays, aimed at the plaque
- shockwave therapy—focused, low-intensity electroshock waves directed at the plaque

A urologist may use iontophoresis—painless, low-level electric current that delivers medications through the skin over the plaque—to decrease plaque size and curvature.

A urologist may use mechanical traction and vacuum devices aimed at stretching or bending the penis to reduce curvature.

## Surgery

A urologist may recommend surgery to remove plaque or help straighten the penis during an erection. Medical experts recommend surgery for long-term cases when

- symptoms have not improved
- erections, intercourse, or both are painful
- the curve or bend in the penis does not allow the man to have sexual intercourse

Some men may develop complications after surgery, and sometimes surgery does not correct the effects of Peyronie’s disease—such as shortening of the penis. Some surgical methods can cause shortening of the penis. Medical experts suggest waiting 1 year or more from the onset of symptoms before having surgery because the course of Peyronie’s disease is different in each man.

A urologist may recommend the following surgeries:

- **grafting.** A urologist will cut or remove the plaque and attach a patch of skin, a vein, or material made from animal organs in its place. This procedure may straighten the penis and restore some lost length from Peyronie’s disease. However, some men may experience numbness of the penis and ED after the procedure.
- **plication.** A urologist will remove or pinch a piece of the tunica albuginea from the side of the penis opposite the plaque, which helps to straighten the penis. This procedure is less likely to cause numbness or ED. Plication cannot restore length or girth of the penis and may cause shortening of the penis.

- **device implantation.** A urologist implants a device into the penis that can cause an erection and help straighten it during an erection. Penile implants may be considered if a man has both Peyronie’s disease and ED. In some cases, an implant alone will straighten the penis adequately. If the implant alone does not straighten the penis, a urologist may combine implantation with one of the other two surgeries. Once a man has an implant, he must use the device to have an erection.

A urologist performs these surgeries in a hospital.

## Lifestyle Changes

A man can make healthy lifestyle changes to reduce the chance of ED associated with Peyronie’s disease by

- quitting smoking
- reducing alcohol consumption
- exercising regularly
- avoiding illegal drugs

Read more in *Erectile Dysfunction* at [www.urologic.niddk.nih.gov](http://www.urologic.niddk.nih.gov).

## How can Peyronie’s disease be prevented?

Researchers do not know how to prevent Peyronie’s disease.

## Eating, Diet, and Nutrition

Researchers have not found that eating, diet, and nutrition play a role in causing or preventing Peyronie’s disease.



## Points to Remember

- Peyronie’s disease is a disorder in which scar tissue, called a plaque, forms in the penis—the male organ used for urination and sex.
- Medical experts do not know the exact cause of Peyronie’s disease. Many believe that Peyronie’s disease may be the result of
  - acute injury to the penis
  - chronic, or repeated, injury to the penis
  - autoimmune disease—a disorder in which the body’s immune system attacks the body’s own cells and organs
- The following factors may increase a man’s chance of developing Peyronie’s disease:
  - vigorous sexual or nonsexual activities that cause microscopic injury to the penis
  - certain connective tissue and autoimmune disorders
  - a family history of Peyronie’s disease
  - aging
- The signs and symptoms of Peyronie’s disease may include
  - hard lumps on one or more sides of the penis
  - pain during sexual intercourse or during an erection
  - a curve in the penis either with or without an erection
  - narrowing or shortening of the penis
  - erectile dysfunction (ED)
- Complications of Peyronie’s disease may include
  - the inability to have sexual intercourse
  - ED
  - anxiety, or stress, about sexual abilities or the appearance of the penis
  - stress on a relationship with a sexual partner
  - problems fathering a child because intercourse is difficult
- A urologist diagnoses Peyronie’s disease based on
  - a medical and family history
  - a physical exam
  - imaging tests
- A urologist may treat Peyronie’s disease with nonsurgical treatments or surgery.
- Researchers do not know how to prevent Peyronie’s disease.

## Hope through Research

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) conducts and supports a variety of research in kidney diseases and urinary tract disorders. The knowledge gained from these studies is advancing scientific understanding of why kidney diseases and urinary tract disorders develop and is leading to improved methods of diagnosing, treating, and preventing them.

Clinical trials are research studies involving people. Clinical trials look at safe and effective new ways to prevent, detect, or treat disease. Researchers also use clinical trials to look at other aspects of care, such as improving the quality of life for people with chronic illnesses. To learn more about clinical trials, why they matter, and how to participate, visit the NIH Clinical Research Trials and You website at [www.nih.gov/health/clinicaltrials](http://www.nih.gov/health/clinicaltrials). For information about current studies, visit [www.ClinicalTrials.gov](http://www.ClinicalTrials.gov).

## For More Information

### **National Organization for Rare Disorders**

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### **Office of Rare Diseases Research**

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This publication may contain information about medications and, when taken as prescribed, the conditions they treat. When prepared, this publication included the most current information available. For updates or for questions about any medications, contact the U.S. Food and Drug Administration toll-free at 1-888-INFO-FDA (1-888-463-6332) or visit [www.fda.gov](http://www.fda.gov). Consult your health care provider for more information.

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