

GUIDELINES ON PENILE CURVATURE

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Eur Urol 2012 Sep;62(3):543-52

Congenital penile curvature

Congenital penile curvature has an unknown cause and a prevalence rate of 4-10% in the absence of urethral abnormalities. It is diagnosed from the medical and sexual history. Physical examination during erection helps to document curvature and exclude other pathologies. Erectile function is normal, but can be compromised by excessive curvature.

Congenital penile curvature can only be treated surgically, using the same principles as in Peyronie's disease (*see below*), except surgery can be performed at any time in adults. Surgery is almost exclusively plication, resulting in high curvature correction rates of 67-97%.

Peyronie's disease

Epidemiology, physiopathology and natural history

The cause of Peyronie's disease is unknown, but the most widely accepted hypothesis is trauma to the tunica albuginea. The most commonly associated comorbidities and risk factors are diabetes, hypertension, lipid abnormalities, ischaemic cardiopathy, erectile dysfunction, smoking and excessive alcohol consumption. It has a prevalence rate of 0.4-9%. Dupuytren's contracture is more common in Peyronie's disease (9-39%), while Peyronie's disease occurs in 4% of patients with Dupuytren's contracture. However, it is unclear if these factors contribute to the pathophysiology of Peyronie's disease.

Two phases of the disease can be distinguished. The first is the acute inflammatory phase, which may be associated with pain. The second is the fibrotic phase, identified by formation of hard palpable plaques that can be calcified, which results in disease stabilisation. With time, penile curvature is expected to worsen in 30-50% of patients or stabilise in 47-67% of patients. Spontaneous improvement has been reported by only 3-13% of patients and is more likely early in the disease. Pain tends to resolve with time in 90% of men, usually during the first 12 months after disease onset.

Patient evaluation

Particular attention should be given to whether the disease is still active, as this will influence medical treatment or the timing of surgery. Patients most likely to have active disease are those with short symptom duration, pain during erection, or a recent change in penile curvature. Resolution of pain and stability of the curvature for at least 3 months are well-accepted criteria for disease stabilisation and referral for surgical intervention.

A palpable node or plaque is usually identified on a routine genitourinary assessment. However, there is no correlation between plaque size and degree of curvature. The measurement of length during erection is important because it impacts directly on treatment decisions. An objective assessment of penile curvature with an erection is mandatory. This can be obtained by a home (self) photograph of a (preferably) natural erection, a vacuum-assisted erection, or an intra-cavernosal injection using vasoactive agents. Erectile dysfunction is common (> 50%) due to penile vascular disease. The presence of erectile dysfunction may impact on treatment strategy.

Ultrasound (US) measurement of the plaque's size is inac-

curate and operator-dependent and is not recommended in everyday clinical practice. Doppler US may be necessary to assess vascular parameters.

Non-operative treatment

Conservative treatment of Peyronie's disease is primarily focused on patients in the early stages of disease. Several options have been suggested, including oral pharmacotherapy (vitamin E, potassium para-aminobenzoate, tamoxifen, colchicine, acetyl esters of carnitine, pentoxifylline), intralesional injection therapy (steroids, verapamil, clostridial collagenase, interferon) and other topical treatments (verapamil, iontophoresis, extracorporeal shock wave therapy, traction devices, vacuum devices).

The role of conservative treatment in men with stable/chronic disease has not yet been adequately defined. No single drug has been approved by the European Medical Association for the treatment of Peyronie's disease.

The results of the studies on conservative treatment for Peyronie's disease are often contradictory because of several methodological problems that make it difficult to provide recommendations in everyday real life.

Recommendations on non-operative treatment for Peyronie's disease	LE	GR
Conservative treatment for Peyronie's disease is primarily aimed at treating patients in the early stages of disease. It is an option in patients not fit for surgery or when surgery is not acceptable to the patient.	3	C

Oral treatment with potassium para-aminobenzoate may result in a significant reduction in penile plaque size and penile pain and an increase in penile curvature stabilisation.	1b	B
Intralesional treatment with verapamil may result in a significant reduction in penile curvature and plaque volume.	1b	C
Intralesional treatment with clostridial collagenase showed significant decreases in the deviation angle, plaque width and plaque length.	2b	C
Intralesional treatment with interferon may improve penile curvature, plaque size and density, and pain.	1b	B
Topical verapamil gel 15% may improve penile curvature and plaque size.	1b	B
Iontophoresis with verapamil 5 mg and dexamethasone 8 mg may improve penile curvature and plaque size.	1b	B
Extracorporeal shock-wave treatment fails to improve penile curvature and plaque size, and should <u>not</u> be used to reduce plaque size. However, it may help improve penile pain.	1b	B
Penile traction devices and vacuum devices may reduce penile deformity and increase penile length.	3	C
Recommendations AGAINST		
Intralesional treatment with steroids does not reduce penile curvature, plaque size or penile pain and is not recommended.	1b	B
Oral treatment with vitamin E and tamoxifen is not recommended.	2b	B
Other oral treatments (acetyl esters of carnitine, pentoxifylline) are not recommended.	3	C

Surgical treatment

Although conservative treatment for Peyronie's disease should resolve painful erections in most men, only a small percentage experience any significant straightening of the penis. The aim of surgery is to correct curvature and allow satisfactory intercourse. Surgery is indicated only in patients with stable disease for at least 3 months, although a 6-12 month period has also been suggested.

Two major types of repair may be considered for both congenital penile curvature and Peyronie's disease: penile shortening and penile lengthening procedures. Penile shortening procedures include the Nesbit wedge resection and the plication techniques performed on the convex side of the penis. Penile lengthening procedures are performed on the concave side of the penis and require the use of a graft. They are used to minimise penile shortening caused by Nesbit resection or plication of the tunica albuginea or to correct complex deformities. Several types of grafts include autologous grafts (dermis, vein grafts, tunica albuginea, tunica vaginalis, temporalis fascia, buccal mucosa), allografts (cadaveric pericardium, cadaveric fascia lata, cadaveric dura matter, cadaveric dermis), xenografts (porcine small intestine submucosa, bovine pericardium, porcine dermis) and synthetic grafts (Gore-Tex, Dacron). Finally, in patients with Peyronie's disease and erectile dysfunction not responding to medical treatments, surgical correction of the curvature with concomitant penile prosthesis implantation should be considered.

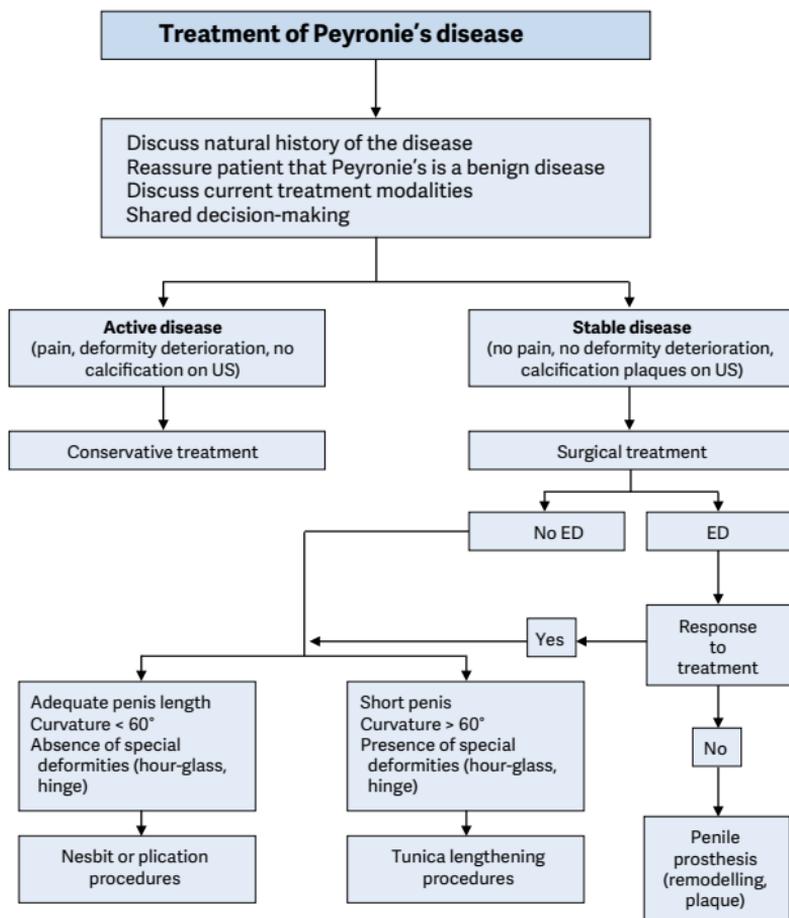
The decision on the most appropriate surgical procedure to correct penile curvature is based on pre-operative assessment of penile length, the degree of the curvature, and erectile function status. The results of the different surgical approaches are presented in Table 1. It must be emphasised that there are no randomised controlled trials available

addressing surgery in Peyronie's disease. The treatment algorithm is presented in Figure 1.

Recommendations on surgical treatment for penile curvature	LE	GR
Surgery is indicated when Peyronie's disease is stable for at least 3 months (without pain or deformity deterioration), which usually occurs after 12 months from the onset of symptoms, and intercourse is compromised by the deformity.	3	C
Penile length, curvature severity, erectile function (including response to pharmacotherapy in case of erectile dysfunction) and patient expectations must be assessed prior to surgery.	3	C
Tunical shortening procedures, especially plication techniques are the first treatment options for congenital penile curvature and for Peyronie's disease with adequate penile length, curvature < 60° and absence of special deformities (hour-glass, hinge).	2b	B
Grafting techniques are the preferred treatment option for patients with Peyronie's disease with no adequate penile length, curvature > 60° and presence of special deformities (hour-glass, hinge).	2b	B
Penile prosthesis implantation, with or without any additional procedure (modelling, plication or grafting), is recommended in Peyronie's disease patients with erectile dysfunction not responding to pharmacotherapy.	2b	B

Table 1: Results of surgical treatments for Peyronie's disease (data from different, non-comparable studies)			
	Tunical shortening procedures		Tunical lengthening procedures
	Nesbit	Plication	Grafts
Penile shortening	4.7-30.8%	41-90%	0-40%
Penile straightening	79-100%	58-100%	74-100%
Persistent or recurrent curvature	4-26.9%	7.7-10.6%	0-16.7%
Post-operative erectile dysfunction	0-13%	0-22.9%	0-15%
Penile hypoesthesia	2-21%	0-21.4%	0-16.7%
Technical modifications	1	At least 3	Many types of grafts and techniques used

Figure 1: Treatment algorithm for Peyronie's disease



This short booklet text is based on the more comprehensive EAU guidelines (978-90-79754-83-0), available to all members of the European Association of Urology at their website, <http://www.uroweb.org>.