Peyronie's disease: assessment and treatment options

JOBY TAYLOR AND IAN EARDLEY

Although there is limited evidence for an effective treatment of the early stages of Peyronie’s disease, surgical options for stable disease are usually successful in straightening the penis. However, good patient counselling about associated unwanted effects is imperative.

Peyronie’s disease is a benign condition of the penis, typically seen in middle-aged men. It is named after Francois Gigot de la Peyronie, surgeon to King Louis XV of France, who described the condition in a paper on ejaculatory failure in 1743 (although this is by no means the first description of the condition in print). Initially thought to be uncommon, more recent studies estimate the prevalence to be 3–9 per cent of men. The peak incidence is in the sixth decade, but it can be seen in almost every age group.

The exact aetiology remains unclear, and is likely to be multifactorial. The key initiating event is thought to be repeated microvascular trauma to the tunica albuginea during intercourse (Figure 1). The resultant inflammatory reaction leads to the formation of the fibrous plaque that is the hallmark of the disease. There is an association with Dupuytren’s contracture, and the condition appears to be more common in men with diabetes mellitus.

PRESENTATION
The disease typically has two phases. The initial, acute phase occurs during the period of active inflammation while the plaque is evolving. This usually lasts for 9–18 months before the disease moves into the stable, chronic phase. Classic symptoms of Peyronie’s disease are pain, plaque, penile deformity and erectile dysfunction.

Pain
This is common in the acute phase, with around 70 per cent of men affected. The
pain is usually present only during erection and is typically not severe. As the disease moves into the chronic phase, this pain tends to settle spontaneously.

**Plaque**
The area of fibrosis is usually palpable as a thickening, or lump within the penis. This is most commonly dorsal, but can be lateral, ventral or circumferential. The size of the plaque may change with disease progression, but as the condition enters the chronic phase, it stabilises. Sometimes the plaque can become calcified and such a 'bony' plaque is clinically obvious.

**Penile deformity**
Most affected men (90 per cent) experience penile deformity with erection. This is typically a dorsal curvature arising from the proximal or middle third of the penis, which is not apparent in the flaccid state. The degree of curvature can range from a few degrees to more than 90 degrees. It is caused by the tethering effect of the fibrotic plaque in the tunica albuginea. The direction of curvature tends to reflect the plaque location, and hence a dorsal curvature is commonest (Figure 2). With more severe degrees of angulation, intercourse may become difficult, or even impossible. This is particularly true of ventral or lateral curvature.

Onset of the curvature can occur gradually over the course of weeks or months, but can also occur acutely – even 'overnight' in some cases. The degree of curvature may continue to evolve throughout the acute phase of the disease before eventually stabilising. Once pain has settled and the disease is in the chronic phase, further change, either for better or worse, is uncommon.

In some cases there will be no curvature, but instead 'waisting' of the penis at the site of the plaque. The plaque is typically circumferential in these cases and the narrowing at this point can cause instability – the so-called 'flail penis'.

One final consequence of this deformity is a reduction in erect penile length. Patients often complain bitterly of this symptom, and as will be discussed later, treatment has little to offer in this respect, and this should be clearly emphasised.

It should be remembered that most normal men have a minor degree of curvature to the erect penis, which is usually dorsal in direction, but never exceeds 5–10 degrees. Men will occasionally present complaining of penile curvature, which in fact represents the more pronounced end of this normal variation. Such curvature never precludes penetration, and there is no palpable plaque. These men must be reassured that no pathological process is going on, and that they merely represent one end of a normal continuum.

**Erectile dysfunction**
Some, but not all, patients complain of erectile dysfunction, which may be the presenting symptom or may be seen in conjunction with pain or curvature. The presence of the plaque may impair blood flow to the distal penis, causing flaccidity beyond the plaque, while there may be abnormal leakage of blood through anomalous veins, either within or around the plaque itself.

The psychological impact of the disease may include patient concerns of malignancy or infection and may contribute to impaired erectile function. In addition, several conditions are seen in association with Peyronie's disease, including diabetes mellitus, hypertension, atherosclerosis and hyperlipidaemia. It is not clear whether these have any causative role in the disease itself, but they are certainly risk factors for erectile dysfunction.1,2

**ASSESSMENT**
A good history and clinical examination are usually sufficient to diagnose the condition. An estimate of the degree of curvature should be obtained, ideally with a patient photograph, although a drawing by the patient may be of sufficient accuracy. In some cases it may be necessary to use an intracavernosal prostaglandin injection to produce an erection in the clinic to allow full assessment.

The size, site and number of plaques should be documented. Detailed information...
should be obtained on sexual function, both to aid decisions in management and to provide a baseline for comparison after any intervention. It is also important to assess accurately the stretched length of the flaccid penis (the distance between the pubic bone and the tip of a stretched penis), as this correlates well with erect length. This is often reduced by the disease, and should be explained to the patient, particularly when considering surgical intervention.

It is essential to document the duration of symptoms, and particularly whether pain is still present. Ongoing pain, or symptoms less than 12 months in duration, suggests the disease may be still in the acute phase and such patients would not be surgical candidates.

Laboratory and radiological studies generally add little to the patient assessment outside of clinical trials. Those patients with associated erectile dysfunction should undergo standard laboratory tests (Box 1). Ultrasound scan can demonstrate the size and degree of calcification in the plaque, and blood-flow parameters can be assessed with duplex scanning, but as this often has little bearing on treatment, it is very much an optional investigation.

The differential diagnosis is limited. Some young men have a congenital penile deformity that becomes apparent during adolescence. A few others develop a deformity secondary to a penile fracture.

**MANAGEMENT**

Currently there is no cure for Peyronie’s disease, so treatment is aimed at modifying symptoms. In milder cases an explanation of the disease and reassurance of its benign nature are often all that is required. For those with more severe symptoms, treatment options are dependent on the phase of the disease.

**Treatment of early disease**

In this stage patients typically complain of pain with erection, and curvature is still in evolution. Treatment is aimed at improving pain and reducing or stabilising curvature. In spite of numerous reported oral and injectional therapies, there is yet to be a treatment for which there is robust evidence of efficacy. Clinical trials often show conflicting results and a lack of standardised assessments can make comparisons difficult. Reported benefits are often a reduction in pain, or a reduction in measured plaque size, and this can occur without any treatment being instituted, so placebo-controlled trials are essential. Few studies have been able to demonstrate an improvement in penile curvature.

The more common treatment strategies are shown in Box 2. In spite of the lack of good-quality evidence, most patients are offered treatment. In the UK the most widely used medications are potassium para-aminobenzoate and vitamin E.

**Treatment of stable disease**

In this phase of the disease, pain has resolved and any penile curvature tends to be stable. Treatment is essentially surgical, and is principally indicated in patients who are unable to have successful penetrative intercourse because of their curvature. Surgery aims to provide sufficient straightening of the penis to allow intercourse. Overall, around 25–35 per cent of men with Peyronie’s disease undergo surgery, with the rest either having deformities that do not interfere with intercourse, or not being interested in reconstructive surgery.

Any erectile dysfunction should be addressed early in the management strategy. Treatment options are similar to those for the general population, with phosphodiesterase type 5 inhibitors being the therapy of choice. For those responding well, further treatment aimed at correcting pain or curvature may be considered. For those who fail to respond to oral or injection therapies, insertion of a penile prosthesis may be the only realistic option.
There are three main surgical techniques: plication, incision and grafting, and prosthesis insertion (Table 1).

For men with good erectile function and less than 60 degrees of curvature, plication procedures are usually recommended. For curvature greater than 60 degrees, or when there is significant ‘waisting’, an incision and grafting procedure is preferred. For those with erectile dysfunction unresponsive to medical therapy, prosthesis implantation is the procedure of choice.

The key to a successful outcome is good patient counselling in order to establish realistic treatment aims. Important areas that need to be considered include penile shortening, residual curvature, erectile dysfunction and altered sensation.

Penile shortening: It must be explained, and even demonstrated, to the patient that the disease itself will cause penile shortening. Further shortening is common with surgery, particularly plication procedures.

Residual curvature: Patients must be warned not to expect an absolutely straight penis, as there is a risk of recurrent or residual curvature. It should be emphasised that the goal is an erection straight enough to permit intercourse.

Erectile dysfunction: Those with preoperative problems are at increased risk of worsening function after surgery, but any patient may suffer. The risk appears greatest with incision and grafting procedures.

Altered sensation: This sometimes occurs, particularly distal to the point of surgery. Uncircumcised men should also be warned that a circumcision is typically performed as part of the procedure.

With good patient selection and appropriate counselling, outcomes can be good, with patient satisfaction levels reaching 80 per cent.

CONCLUSION

Peyronie’s disease is an idiopathic condition characterised by penile plaque formation, penile deformity, painful erections and erectile dysfunction. It typically progresses for 12–24 months before stabilising. There is no licensed medical therapy and surgical treatment is reserved for those with deformities that prevent sexual intercourse or make it uncomfortable for either partner. Around a quarter of patients undergo surgery, which is usually effective in straightening the penis, although there is always some degree of penile shortening and a risk of erectile dysfunction.

Declaration of interests: none declared.

REFERENCES

4 Clinical trials database. www.clinicaltrials.gov/ct2/show/NCT01243411?term=collagenase+peyronie+per+cent27s&rank=2