

superior to the others. The type of operation is best determined by surgeon preference and experience. Regardless of approach, the principles are the same: a broad base support directly under the urethra, which is placed with only minimal tension.

The American Urologic Association Female Stress Urinary Incontinence Clinical Guidelines Panel conducted a comprehensive review and in-depth analysis of published outcome data pertaining to different surgical procedures for urinary incontinence. This panel concluded that urethral slings, along with retropubic bladder neck suspensions, are the most efficacious procedures for long-term success in the treatment of urinary incontinence secondary to urethral hypermobility. They report a greater than 85% probability of improvement of urinary incontinence at 48 months or longer with the use of urethral slings. Although outcome literature is sparse for patients with intrinsic sphincteric deficiency treated with slings, it was the panel's opinion that this procedure is also an effective type of treatment for intrinsic sphincteric deficiency patients. Possible complications of sling procedures include prolonged urinary retention, urgency and urgency-related incontinence. The risk of postoperative urgency ranges from 7–46% and can be quite debilitating to the patient. Urinary urgency is best managed with behavioral training (fluid moderation, timed voiding, pelvic floor exercises) or anticholinergic medications. In general, if urgency is present preoperatively, there is a significant risk that these symptoms will persist postoperatively. The risk of permanent retention, however, is low at less than 5% and can be managed with clean intermittent catheterization or urethrolisis.

The urethral sling addresses urethral hypermobility and may address intrinsic sphincteric deficiency. This versatility, along with excellent cure rates and low complication rates, have led many to apply this operation to most types of stress urinary incontinence to those patients who have opted for surgical intervention.

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Peyronie's Disease: A Difficult Sexual Dysfunction Problem

PEYRONIE'S DISEASE IS a physically and psychologically devastating problem that affects up to 2% of men. Those affected are primarily between the ages of forty and sixty. Peyronie's disease is manifested by fibrous, inelastic scar tissue involving the tunica albuginea of the penis, the fibrous jacket surrounding the spongy, vascu-

lar tissue of the corpora cavernosa, which expands during the development of an erection. The inelastic scar is palpable in the flaccid penis, but a penile deformity such as bending, narrowing, hinging, and/or shortening can be visible when the penis becomes erect. Painful erections may occur particularly in the early phase of the disease. All of these changes can result in difficulty with vaginal penetration and may be further exacerbated by concomitant disorders such as diabetes, hypertension, elevated serum lipids, or a smoking history that could cause decreased arterial inflow or venous leakage.

The disease received its name in the 1740s from Francois de la Peyronie, who was the first surgeon to King Louis XV. Despite all treatment options available since then, it still remains a therapeutic dilemma. Most commonly, the characteristic Peyronie's plaque is found on the dorsum of the penis causing an upward curvature during erection. However, other plaque locations can occur, resulting in various penile deformities. To understand how the erection deformity occurs, imagine the effect of placing a piece of tape on a child's balloon. As the balloon expands, it will curve around the inelastic segment caused by the tape.

The cause of Peyronie's disease remains an enigma. There have been many theories, including sexually transmitted, inflammatory, or autoimmune. The mechanical injury theory suggests that trauma to the erect penis activates the disease process. More current proposals suggest that Peyronie's disease may, in fact, be a wound healing disorder, much like a keloid or hypertrophic scar. It has been noted in patients with Peyronie's disease that elastin, the protein which allows for normal tunical expansion, is decreased or abnormal in the outer jacket. Therefore, pressure on the erect penis during intercourse can stretch the tunical fibers, and, due to the decreased tolerance to stress, a delamination or fracture injury typically involving the septal and inner circular fibers of the tunica may occur. Following injury, the release of cytokines activate fibroblast proliferation and collagen, the primary extracellular matrix component of a Peyronie's plaque, is produced. Disregulation in the genetic code could cause a loss of balance between scar formation and remodeling. The result is the deposition of an exuberant scar which does not remodel properly.

Although Peyronie's disease may resolve spontaneously, this appears to be uncommon (around 15%). Treatment options include conservative therapy, which is the treatment of choice for many patients (30%). This would include observation of the man who has minor curvature (e.g. <30°), which does not interfere with his ability to have sexual relations, and neither he nor his partner experience pain during intercourse. This patient should be reassured that this is a disease that will not degenerate into malignancy. Oral therapies have also been used, although there is no clear, reliable, efficient choice. The most common oral medications currently used are vitamin E, Potaba (potassium aminobenzoate) and colchicine. Drugs injected directly into the plaque have also been used, including steroids, verapamil, and collagenase. The use of steroids has fallen out

of favor due to significant failure rates and uncommon but worrisome side effects, including local tissue atrophy and adrenal suppression. Verapamil, a calcium channel blocker known to change fibroblast function in vitro in doses that can be achieved by intralesional administration, has been used clinically with reported success.

Fibroblasts exposed to calcium channel blockers change from stimulating a synthetic cell manufacturing scar to more of a degradative process. Clinical trials with intralesional verapamil injections into a Peyronie's plaque show positive effects in about 60% of patients with respect to deformity improvement and in 75% by subjective report. Over 70% of patients have improved sexual function. For those patients with acute disease associated with painful erections, 97% have rapid resolution of their penile pain with 1 to 4 injections. Typically, 10 mg of this drug diluted up to 10 ccs with saline is injected into the Peyronie's plaque after performing a buprivicinal penile block to anesthetize the penis (6–12 sessions). No cardiovascular or hypotensive events have been noted. The primary side effect is ecchymosis due to the puncturing of the subcutaneous tissues, 2–3 punctures in the skin and 200–300 in the plaque. It appears that modifiers of cytokine and fibroblast function may be the future for therapy of early Peyronie's disease.

Surgery is used for patients with more advanced deformity and/or decreased rigidity. Tunica plication is a type of surgery that straightens the penis by shortening the long side (convex) of the penis to equal the shorter side. Plaque incision or excision has also been employed

successfully. The defect created in the tunica is patched with a variety of autologous tissues, including dermis, vein and temporalis fascia. In the man who has penile deformity as well as insufficient rigidity, then placement of a penile prosthesis is indicated.

In conclusion, therapeutic advances have not resulted in a reliable cure to this problem, probably because of an incomplete understanding of the basic pathophysiology of Peyronie's disease. Recent advances in the understanding of wound healing and its dysregulation may offer new treatment options such as modifiers of cytokine and fibroblast function. Eventually, multimodality protocols may be developed that might include combined collagenase/verapamil intralesional injections with concurrent oral therapy, such as colchicine, to stabilize or improve the deformity. Of course, for those patients who do not succeed with conservative therapy, surgery may be offered. Surgery is also indicated for patients with severe deformity, extensive plaque calcification, those who have failed conservative therapy or have erectile failure, or any patient who insists upon a more rapid, reliable result.

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