

Urethral Stricture

A urethral stricture is a scar within the *urethra* that results in a narrowed urethral diameter and the occurrence of obstructive lower urinary tract symptoms.

The male urethra is a tubular structure that begins at the neck of the urinary bladder and ends at the tip of the penis, serving to conduct urine from the bladder through the penis. The urethra is divided into 2 areas, the inner urethra and the outer urethra. The inner urethra is the part closest the bladder and at its innermost level is envelope by the prostate gland. The outer urethra consists of the part that runs through the penis and the perineum (the part of the body located between the scrotum and the anus) and is enveloped by a structure known as the *corpus spongiosum*. The corpora spongiosum is a thick, vascular, cushiony structure.

Typically, urethral strictures result from either trauma or inflammation. External trauma is often caused by either a *straddle* injury (when the perineum abruptly strikes a fence or bicycle top tube) or a *crush* injury. Internal injury is often due to passage of urethral instruments, indwelling urethral catheters, or transurethral surgery. Inflammatory processes such as urethritis and sexually transmitted diseases can result in urethral stricture formation as well.

Urethral strictures will usually one or more of the following lower urinary tract symptoms: urinary hesitancy, decrease in force and caliber of the urinary stream, a stopping and starting quality stream, prolonged emptying time, urinary frequency, painful urination, and urinary tract infections.

When a urethral stricture is suspected, a *urinary flow rate* and an *ultrasound guided post-void residual* will be obtained. These painless and noninvasive procedures will precisely characterize the urinary flow rate as well as the amount of urine remaining in the bladder after urination. Most strictures will result in poor flow rates and elevated bladder residuals. *Urethroscopy* is a procedure in which a narrow, lighted instrument is placed in the urethra in order to directly visualize it. At times, an x-ray of the urethra known as a *urethrogram* is performed. This involves an injection of contrast into the urethra towards the bladder. With physical examination, urethroscopy and urethrography, the depth and density of the scar in the spongy tissue can be deduced.

Mild strictures can be managed with simple *urethral dilation* that may be curative. This involves the passage of sequentially larger instruments through the stricture into the bladder in order to open up the scar tissue.

If a urethral stricture involves only the urethra or superficial spongy tissues, *optical internal urethrotomy* is the treatment of choice. This is a procedure done under anesthesia that utilizes an instrument to open up the urethra. Typically, a

soft catheter is left in the urethra for several days thereafter to maintain the patency of the urethra. This procedure can be performed on an outpatient basis. This will not always be curative because scar tissue can and often does recur. At times, a program of regular urethral dilation after optical urethrotomy has proven effective in maintaining the opening of the scar tissue. If obstructive symptoms recur and studies demonstrate little or no improvement, an open surgical treatment called *urethroplasty* can be a consideration. It is rarely necessary as an initial therapeutic option, but is appropriate for long and recurrent urethral strictures or those involving extensive scarring.