

# Strictures of the urethra

**Urethral strictures** are pathological narrowings of the urethra causing infravesical obstruction. These obstructive uropathies lead to a **rise in pressure in the urinary tract above the narrowing**. As a result of pressure on the bladder wall, its trabeculization and the formation of diverticula and pseudo-diverticula occur. Most often, a narrowing of the urethra occurs on the basis of a scar that develops after an injury to the urethra of traumatic or iatrogenic etiology. Histologically, it is spongiofibrosis in the wall of the urethra. Men are more often affected, mainly by strictures of the anterior urethra (i.e. pars spongiosa urethrae). The biggest problem is the frequent recurrence of strictures.

## Klasifikace

According to the etiology, strictures are divided into:

1. congenital - affecting the posterior urethra;
  1. posterior urethral valve;
2. Retrieved
  1. iatrogenic (catheterization, endoscopy of the urinary tract);
  2. post-traumatic;
  3. post-inflammatory;
  4. post-actinic;
  5. post-tumoral.

## Symptomatology of urethral strictures

A slow onset of symptoms is typical. These include:

- Weak stream of urine, splashing of the jet;
- polakisuria, nycturia;
- feeling of incomplete emptying of the bladder after micturition, chronic residual urine;
- post-evacuation incontinence (emptying of residual urine in the urethra above the stricture after activation of the perineal muscles);
- recurrent infections (cystitis, epididymitis, prostatitis)

## Diagnostics

### Medical history

Data on urinary tract instrumentation and transurethral procedures are important. These are, for example, TURP, catheterization after surgery, endoscopy of the urinary tract. Traumas to the urinary tract - pelvic fractures, injuries to the perineum and genital tract or some sports (cycling) are risky.

### Physical examination

Aspection and palpation of the genitalia leads to the search for scars on the penis, exclusion of simple phimosis, hematoma on the perineum. About the patency of the female urethra will give information about its calibration with the help of calibration probes.

### Examination of urine

Chemical examination of urine and sediment will rule out other etiologies of the trouble. With microhematuria, we think of lithiasis, urinary tract tumor or uroinfection. Cystitis is ruled out by urine culture. If a urinary tract tumour is suspected, urine cytology with Papanicolaou staining should be performed.

### Ultrasonography

Ultrasonography is a method that allows you to assess the condition of the upper and lower urinary tract. A sign of urethral narrowing can also be a dilatation of the calyceal system or megaureter (in bladder decompensation). When assessing the lower tract, we note the bladder wall (thickening, trabeculation, diverticula, pseudodiverticula, mural tumor, cystolithiasis). The depth of spongiofibrosis in the urethral wall is determined by ultrasonography of the urethra filled with lubricant.

### Urethrocytography

Urethrocytography is an X-ray examination of the lower urinary tract. During the examination, an iodine contrast agent is injected at the beginning of the urethra (fossa navicularis in men), which advances by



Stricture visible on micturition urethrocytography

pressure ascending into the bladder. It is imaged in the filling and micturition phases. This method localizes the stricture, its length and dynamic significance.

## Urethrocystoscopy

Urethrocystoscopy is an endoscopic method that is indicated especially in case of unclear findings on urethrocystography. It leads to the differentiation of a stricture from a tumor or spasm of the urethral sphincter.

## Urodynamic examination

Uroflowmetry is an examination of the dynamics of urination, the result is a uroflowmetric curve expressing the flow of urine per unit of time. In a healthy man, the maximum flow rate is 15-20 ml/s. With stricture, the result is a sheathed curve. UFM tells about the magnitude of micturition restriction, it is also used to assess the effectiveness of treatment.

## Therapy of urethral stricture

Treatment of urethral strictures is difficult due to **frequent recurrence of stenosis**. The choice of the appropriate treatment procedure is guided by the age and general condition of the patient (coping with surgical anaesthesia), the location and length of the stricture, and whether it is a recurrence. Knowledge of the aetiology of the stricture is important. If the patient has to undergo endoscopic urinary tract examination in the future (e.g. cystoscopy after treatment of a urothelial tumour), definitive treatment is delayed because urinary tract instrumentation increases the likelihood of restenosis.

### Conservative treatment - dilatation of strictures

For dilatation of strictures, catheters (Thieman semirigid catheters) or cones with increasing diameter (up to a maximum of 20-22 Ch) are inserted into the urethra. The disadvantages are **frequent restenosis and the need to repeat the unpleasant procedure**. This method is chosen **in elderly patients in poor health, recurrent stenosis and stenosis of the posterior urethra**.

### Semiconservative treatment

#### Optical urethrotomy

Optical urethrotomy is an endoscopic method that is performed under general or epidural anesthesia. A double-coated endoscope is used. It consists of dissection of the stricture with a cold knife (prevention of thermal damage to the urethra). The disadvantage is frequent restenosis, which occurs in up to 40%.

#### Intraurethral stents

Catheters or spirals are usually inserted into the urethra after endoscopic dissection of the stricture. In our country they are practically not used because of their financial cost and also because they do not reduce the percentage of urethral restenosis.

### Surgical treatment - urethroplasty

There are several types of urethral reconstructive procedures:

#### Resection urethroplasty

- resection of the stricture and subsequent end-to-end urethral anastomosis;
- is suitable for the anterior urethra
- limited by the length of the stricture - up to 2 cm, otherwise there is a risk of shortening of the penis and chorda (bending of the penis).

#### Substitutive urethroplasty

dissection of the urethra at the site of narrowing and filling part of the perimeter with mucous membrane or skin (without established hair follicles!); either mucosa (buccal, bladder mucosa) or skin (foreskin, penile skin) is used for substitution.

#### Combined urethroplasty

in the event that the urethra is significantly shortened after the stricture section is removed, this section is supplemented with a skin or mucosal flap.

#### Urethroplasty

benefits	disadvantages
it is the final solution	not suitable for patients requiring additional urinary tract instrumentation
low percentage of restenosis (around 10%)	prolonged procedures (the patient must be capable of demanding surgery)

## Links

## Related articles

- urolithiasis, urolithiasis in children
- UTIs

## Used literature

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