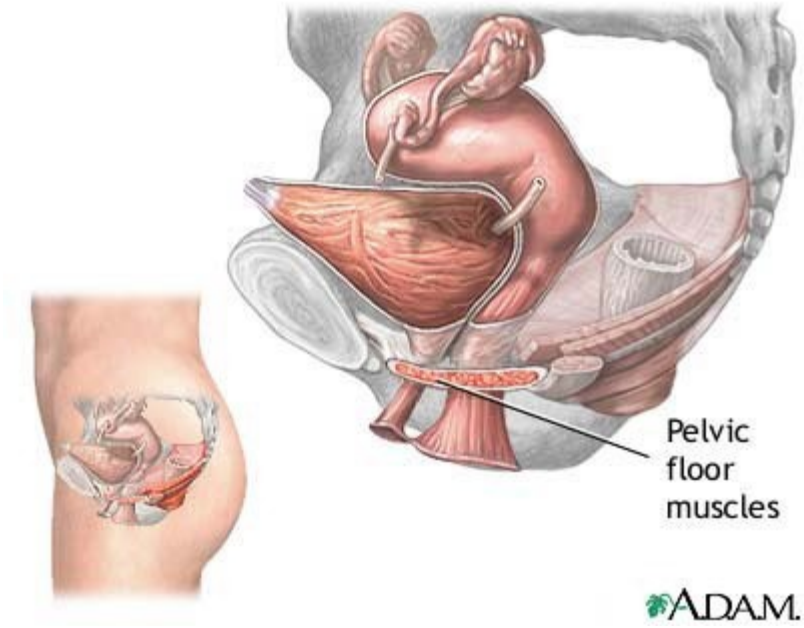
Stress incontinence



Definition

Stress incontinence is an involuntary loss of urine that occurs during physical activity, such as coughing, sneezing, laughing, or exercise.

Causes

The ability to hold urine and control urination depends on the normal function of the lower urinary tract, the kidneys, and the nervous system. You must also have the ability to recognize and respond to the urge to urinate.

The average adult bladder can hold over 2 cups (350ml - 550 ml) of urine. Two muscles are involved in the control of urine flow:

- The sphincter, which is a circular muscle surrounding the urethra. You must be able to squeeze this muscle to prevent urine from leaking out
- The detrusor, which is the muscle of the bladder wall. This must stay relaxed so that the bladder can expand

In stress incontinence, the sphincter muscle and the pelvic muscles, which support the bladder and urethra, are weakened. The sphincter is not able to prevent urine flow when there is increased pressure from the abdomen (such as when you cough, laugh, or lift something heavy).

Stress incontinence may occur as a result of weakened pelvic muscles that support the bladder and urethra or because of a malfunction of the urethral sphincter. The weakness may be caused by:

- Injury to the urethral area
- Some medications
- Surgery of the prostate or pelvic area

Stress urinary incontinence is the most common type of **urinary incontinence** in women.

Stress incontinence is often seen in women who have had multiple pregnancies and vaginal childbirths, and whose bladder, urethra, or rectal wall stick out into the vagina (pelvic prolapse).

Risk factors for stress incontinence include:

- Being female
- Childbirth
- Chronic coughing (such as chronic bronchitis and asthma)
- Getting older
- Obesity
- Smoking

Symptoms

The main symptom of stress incontinence is involuntary loss of urine. It may occur when:

- Coughing
- Sneezing
- Standing
- Exercising
- Engaging in other physical activity
- Engaging in sexual intercourse

Exams and Tests

The health care provider will perform a physical exam, including a:

- Genital exam in men
- Pelvic exam in women
- Rectal exam

In some women, a pelvic examination may reveal that the bladder or urethra is bulging into the vaginal space.

Tests may include:

- Inspection of the inside of the bladder (**cystoscopy**)
- Pad test (after placement of a pre-weighed sanitary pad, the patient is asked to exercise -- following exercise, the pad is reweighed to determine the amount of urine loss)
- Pelvic or **abdominal ultrasound**

- Post-void residual (PVR) to measure amount of urine left after urination
- Rarely, an electromyogram (**EMG**) is performed to study muscle activity in the urethra or pelvic floor
- Tests to measure pressure and urine flow (urodynamic studies)
- **Urinalysis** or urine culture to rule out urinary tract infection
- Urinary stress test (the patient is asked to stand with a full bladder, and then cough)
- X-rays with contrast dye of the kidneys and bladder
- The health care provider may also measure the change in the angle of the urethra when at rest and when straining (Q-tip test). An angle change of greater than 30 degrees often means there is significant weakness of the muscles and tissues that support the bladder.

Treatment

Treatment depends on how severe the symptoms are and how much they interfere with your everyday life.

The doctor may ask that you stop smoking (if you smoke) and avoid caffeinated beverages (such as soda) and alcohol. You may be asked to keep a urinary diary, recording how many times you urinate during the day and night, and how often urinary leaking occurs.

There are four major categories of treatment for stress incontinence:

- Behavioral changes
- Medication
- Pelvic floor muscle training
- Surgery

BEHAVIORAL CHANGE

Examples of behavior changes include:

- Decreasing any excessive fluid intake (you should not decrease your fluid intake if you drink normal amounts of fluid)
- Urinating more frequently to decrease the amount of urine that leaks
- Changing physical activities to avoid jumping or running movements, which can cause more urine leakage
- Regulating bowel movements with dietary fiber or laxatives to avoid constipation (which can worsen incontinence)
- Quitting smoking to reduce coughing and bladder irritation (and your risk of bladder cancer)
- Avoiding alcohol and caffeine, which can overstimulate the bladder
- Losing weight if you are overweight
- Avoiding food and drinks that irritate the bladder, such as spicy foods, carbonated beverages, and citrus
- Keeping blood sugar under control if you have diabetes

PELVIC FLOOR MUSCLE TRAINING

Pelvic muscle training exercises (called **Kegel exercises**) may help control urine leakage. These exercises improve the strength and function of the urethral sphincter.

Some women may use a device called a vaginal cone along with pelvic exercises. The cone is placed into the vagina, and the woman tries to contract the pelvic floor muscles in an effort to hold it in place. The device may be worn for up to 15 minutes. This procedure should be done two times a day. Within 4 - 6 weeks, most women have some improvement in their symptoms.

Biofeedback and electrical stimulation may be helpful for those who have trouble methods can help you identify the correct muscle group to work. Biofeedback is a method that helps you learn how to control certain involuntary body responses.

Electrical stimulation therapy uses low-voltage electrical current to stimulate and contract the correct group of muscles. The current is delivered using an anal or vaginal probe. The electrical stimulation therapy may be done at the doctor's office or at home.

Treatment sessions usually last 20 minutes and may be done every 1 - 4 days. Newer techniques are being investigated, including one that uses a specially designed electromagnetic chair that causes the pelvic floor muscles to contract when the patient is seated.

MEDICATIONS

Medicines tend to work better in patients with mild to moderate stress incontinence. There are several types of medications that may be used alone or in combination. They include:

- Anticholinergic agents (oxybutynin, tolterodine, enablex, sanctura, vesicare, oxytrol)
- Antimuscarinic drugs block bladder contractions (many doctors prescribe these types of drugs first)
- Alpha-adrenergic agonist drugs, such as phenylpropanolamine and pseudoephedrine (common ingredients in over-the-counter cold medications), help increase sphincter strength and improve symptoms in many patients
- Imipramine, a tricyclic antidepressant, works in a similar way to alpha-adrenergic drugs

Estrogen therapy can be used to improve urinary frequency, urgency, and burning in postmenopausal women. It also can improve the tone and blood supply of the urethral sphincter muscles.

SURGERIES

Surgical treatment is only recommended after the exact cause of the urinary incontinence has been determined. Most of the time, your doctor will try bladder retraining or Kegel exercises before considering surgery.

- **Anterior vaginal repair** or paravaginal repair procedures are often done in women when the bladder is bulging into the vagina (a condition is called a cystocele). Anterior repair is done through a surgical cut in the vagina, and a paravaginal repair is done through a surgical cut in the vagina or abdomen
- Artificial urinary sphincter is a surgical device used to treat stress incontinence mainly in men (rarely in women)
- **Collagen injections** make the area around the urethra thicker, which helps control urine leakage (the procedure may need to be repeated after a few months to achieve bladder control)
- Retropubic suspension are a group of surgical procedures done to lift the bladder and urethra. They are done through a surgical cut in the abdomen. The Burch colposuspension and Marshall-Marchetti-Krantz (MMK) procedures differ based on the structures that are used to anchor and support the bladder
- **Tension-free vaginal tape**
- Vaginal sling procedures are often the first choice for the treatment of uncomplicated stress incontinence in women (it is rarely

done in men). A sling made of synthetic material is placed so that it supports the urethra

Most health care providers advise their patients to try other treatments before having surgery.

Depending on the success of treatment and other medical problems the person may have, some people may require a urinary catheter to drain urine from the bladder.

Outlook (Prognosis)

Behavioral changes, pelvic floor exercise therapy, and medication usually improve symptoms rather than cure stress incontinence. Surgery can cure most carefully selected patients.

Treatment does not work as well in people with:

- Conditions that may prevent healing or make surgery more difficult
- Other genital or urinary problems
- Previous surgical failures

Possible Complications

Complications are rare and usually mild. They can include:

- Erosion of surgically placed materials such as a sling or artificial sphincter
- Fistulas or abscesses
- Irritation of the vulva (vaginal lips)
- Pain during intercourse
- Skin breakdown and pressure ulcers in bed- or chair-bound patients
- Unpleasant odors
- Urinary tract infections
- Vaginal discharge

The condition may affect or disrupt social activities, careers, and relationships.

When to Contact a Medical Professional

Call for an appointment with your health care provider if you have symptoms of stress incontinence and they are bothersome.

Prevention

Performing Kegel exercises (tightening the muscles of the pelvic floor as if trying to stop the urine stream) may help prevent symptoms. Doing Kegel exercises during and after pregnancy can decrease the risk of developing stress urinary incontinence after childbirth.

References

Gerber GS, Brendler CB. Evaluation of the urologic patient: History, physical examination, and urinalysis. In: Wein AJ, ed. *Campbell-Walsh Urology*. 9th ed. Philadelphia, Pa: Sauders Elsevier; 2007: chap 3.

Holroyd-Leduc JM, Tannenbaum C, Thorpe KE, Straus SE. What type of urinary incontinence does this woman have? *JAMA*. 2008;

299:1446-1456.

Rogers RG. Clinical practice. Urinary stress incontinence in women. *N Engl J Med*. 2008; 358:1029-1036.

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