

Urinary incontinence

Urinary incontinence (UI) is any involuntary leakage of urine. It is a common and distressing problem, which may have a profound impact on quality of life. Urinary incontinence almost always results from an underlying treatable medical condition. There is also a related condition for defecation known as fecal incontinence.

Physiology of continence

Continence and micturition involve a balance between urethral closure and detrusor muscle activity. Urethral pressure normally exceeds bladder pressure, resulting in urine remaining in the bladder. The proximal urethra and bladder are both within the pelvis. Intraabdominal pressure increases (from coughing and sneezing) are transmitted to both urethra and bladder equally, leaving the pressure differential unchanged, resulting in continence. Normal voiding is the result of changes in both of these pressure factors: urethral pressure falls and bladder pressure rises.

Types

Stress incontinence

Stress urinary incontinence (SUI) is essentially due to pelvic floor muscle weakness. It is loss of small amounts of urine with coughing, laughing, sneezing, exercising or other movements that increase intraabdominal pressure and thus increase pressure on the bladder. Physical changes resulting from pregnancy, childbirth, and menopause often cause stress incontinence, and in men it is a common problem following a prostatectomy. It is the most common form of incontinence in men and is treatable.

The urethra is supported by fascia of the pelvic floor. If the fascial support is weakened, as it can be in pregnancy and childbirth, the urethra can move downward at times of increased abdominal pressure, resulting in stress incontinence.

Stress incontinence can worsen during the week before the menstrual period. At that time, lowered estrogen levels may lead to lower muscular pressure around the urethra, increasing chances of leakage. The incidence of stress incontinence increases following menopause, similarly because of lowered estrogen levels. Most lab results, such as urine analysis, cystometry and postvoid residual volume; are normal.

Urge incontinence

Urge incontinence is involuntary loss of urine occurring for no apparent reason while suddenly feeling the need or urge to urinate. The most common cause of urge incontinence is involuntary and inappropriate detrusor muscle contractions.

"Idiopathic Detrusor Overactivity" - Local or surrounding infection, inflammation or irritation of the bladder.

"Neurogenic Detrusor Overactivity" - Defective CNS inhibitory response.

Medical professionals describe such a bladder as "unstable," "spastic," or "overactive." Urge incontinence may also be called "reflex incontinence" if it results from overactive nerves controlling the bladder.

Patients with urge incontinence can suffer incontinence during sleep, after drinking a small amount of water, or when they touch water or hear it running (as when washing dishes or hearing someone else taking a shower).

Involuntary actions of bladder muscles can occur because of damage to the nerves of the bladder, to the nervous system (spinal cord and brain), or to the muscles themselves. Multiple sclerosis, Parkinson's disease, Alzheimer's Disease, stroke, and injury--including injury that occurs during surgery--can all harm bladder nerves or muscles.

Functional incontinence

Functional incontinence occurs when a person does not recognize the need to go to the toilet, recognize where the toilet is, or get to the toilet in time. The urine loss may be large. Causes of functional incontinence include confusion, dementia, poor eyesight, poor mobility, poor dexterity, unwillingness to toilet because of depression, anxiety or anger, or being in a situation in which it is impossible to reach a toilet. cite web | title =Functional incontinence | publisher=Australian Government Department of Health and Ageing | work = | url=http://www.health.gov.au/internet/main/publishing.nsf/Content/continence-what-functional.htm | year = 2008 | accessdate=2008-08-29]

People with functional incontinence may have problems thinking, moving, or communicating that prevent them from reaching a toilet. A person with Alzheimer's Disease, for example, may not think well enough to plan a timely trip to a restroom. A person in a wheelchair may be blocked from getting to a toilet in time. Conditions such as these are often associated with age and account for some of the incontinence of elderly women and men in nursing homes.

Overflow incontinence

Sometimes people find that they cannot stop their bladders from constantly dribbling, or continuing to dribble for some time after they have passed urine. It is as if their bladders were like a constantly overflowing pan - hence the general name overflow incontinence. Overflow incontinence occurs when the patient's bladder is always full so that it frequently leaks urine. Weak bladder muscles, resulting in incomplete emptying of the bladder, or a blocked urethra can cause this type of incontinence. Autonomic neuropathy from diabetes or other diseases (e.g Multiple sclerosis) can decrease neural signals from the bladder (allowing for overfilling) and may also decrease the expulsion of urine by the detrusor muscle (allowing for urinary retention). Additionally, tumors and kidney stones

can block the urethra. In men, benign prostatic hyperplasia (BPH) may also restrict the flow of urine. Overflow incontinence is rare in women, although sometimes it is caused by fibroid or ovarian tumors. Spinal cord injuries or nervous system disorders are additional causes of overflow incontinence. Also overflow incontinence in women can be from increased outlet resistance from advanced vaginal prolapse causing a "kink" in the urethra or after an anti-incontinence procedure which has overcorrected the problem.cite web | Christopher M. Tarnay, MD, & Narender N. Bhatia, MD | title =Overflow Incontinence | publisher=Armenian Medical Network | work =Urinary Incontinence - Overview | url=http://www.health.am/gyneco/overflow-incontinence/ | year = 2006 | accessdate=2006-12-20]

Early symptoms include a hesitant or slow stream of urine during voluntary urination. Anticholinergic medications may worsen overflow incontinence.

Bedwetting (enuresis)

Bedwetting is episodic UI while asleep. It is normal in young children.

Other types of incontinence

Stress and urge incontinence often occur together in women. Combinations of incontinence - and this combination in particular - are sometimes referred to as "mixed incontinence."

"Transient incontinence" is a temporary version of incontinence. It can be triggered by medications, urinary tract infections, mental impairment, restricted mobility, and stool impaction (severe constipation), which can push against the urinary tract and obstruct outflow. Incontinence can often occur while trying to concentrate on a task and avoiding using the toilet.

Diagnosis

Patients with incontinence should be referred to a medical practitioner specializing in this field. [Urologists](#) specialize in the urinary tract, and some urologists further specialize in the female urinary tract. A **urogynecologist** is a gynecologist who has special training in urological problems in women. Gynecologists and obstetricians specialize in the female reproductive tract and childbirth and some also treat urinary incontinence in women. Family practitioners and internists see patients for all kinds of complaints and can refer patients on to the relevant specialists.

A careful history taking is essential especially in the pattern of voiding and urine leakage as it suggests the type of incontinence faced. Other important points include straining and discomfort, use of drugs, recent surgery, and illness.

The physical examination will focus on looking for signs of medical conditions causing incontinence, such as tumors that block the urinary tract, stool impaction, and poor reflexes or sensations, which may be evidence of a nerve-related cause.

A test often performed is the measurement of bladder capacity and residual urine for evidence of poorly functioning bladder muscles.

Other tests include:

- * Stress test - the patient relaxes, then coughs vigorously as the doctor watches for loss of urine.
- * Urinalysis - urine is tested for evidence of infection, urinary stones, or other contributing causes.
- * Blood tests - blood is taken, sent to a laboratory, and examined for substances related to causes of incontinence.
- * Ultrasound - sound waves are used to visualize the kidneys, ureters, bladder, and urethra.
- * Cystoscopy - a thin tube with a tiny camera is inserted in the urethra and used to see the inside of the urethra and bladder.
- * Urodynamics - various techniques measure pressure in the bladder and the flow of urine.

Patients are often asked to keep a diary for a day or more, up to a week, to record the pattern of voiding, noting times and the amounts of urine produced.

Urinary incontinence in women

Urinary Incontinence is highly prevalent in women across their adult life span and its severity increases linearly with age. However a wide range of prevalence estimates exists for urinary incontinence among women in the United States. The lack of specificity is due to at least two factors. The first is lack of a volume of data. The second is that urinary incontinence is one of a few issues that women feel uncomfortable talking about. This leads to under-reporting.

Bladder symptoms affect women of all ages. However, bladder problems are most prevalent among older women [*Password F., View I. How widespread are the symptoms of an overactive bladder and how are they managed? A population-based prevalence study. BJU Int 2001; 87: 760-6.*] Up to 35% of the total population over the age of 60 years is estimated to be incontinent, with women twice as likely as men to experience incontinence. One in three women over the age of 60 years are estimated to have bladder control problems [2. *Hannestad Y.S., Rortveit G., Sandvik H., Hunskaar S. A community-based epidemiological survey of female urinary incontinence: The Norwegian EPINCONT Study. J Clin Epidemiol 2000; 53: 1150-7*] .

Bladder control problems have been found to be associated with higher incidence of many other health problems such as obesity and diabetes. Difficulty with bladder control results in higher rates of depression and limited activity levels [3. *Nygaard I., Turvey C., Burns T.L., Crischilles E., Wallace R. Urinary Incontinence and Depression in Middle-Aged United States Women. acogjnl 2003; 101: 149-56*] .

Further, urinary incontinence often goes undiagnosed and untreated by primary care physicians. In fact more than half of all women with incontinence never discuss their problem with their health care professional. Bladder control remains one of a few subjects that are still taboo among family and friends. Urinary incontinence can have devastating psychological, social, emotional consequences as women may avoid friends and family and live in shame and fear.

Incontinence is expensive both to individuals in the form of bladder control products and to the health care system and nursing home industry. Injury related to incontinence is a leading cause of admission to assisted living and nursing care facilities. More than 50% of nursing facility admissions are related to incontinence [*Thom D.H., Haan M.N., Van den Eeden, Stephen K. Medically recognized urinary incontinence and risks of hospitalization, nursing home admission and mortality. Age Ageing 1997; 26: 367-74*] .

Research has found that bladder control can be successfully addressed by educational and fitness programs designed to empower women to take control. Community-based wellness programs, in fact, serve an important role in bridging the gap between consumers and the health care delivery system and enabling women to improve their health and wellness.

Urinary incontinence in men

Men tend to experience incontinence less often than women, and the structure of the male urinary tract accounts for this difference. But both women and men can become incontinent from neurologic injury, congenital defects, strokes, multiple sclerosis, and physical problems associated with [aging](#).

While urinary incontinence affects older men more often than younger men, the onset of incontinence can happen at any age. Incontinence is treatable and often curable at all ages.

Incontinence in men usually occurs because of problems with muscles that help to hold or release urine. The body stores urine - water and wastes removed by the kidneys - in the urinary bladder, a balloon-like organ. The bladder connects to the urethra, the tube through which urine leaves the body.

During urination, muscles in the wall of the bladder contract, forcing urine out of the bladder and into the urethra. At the same time, sphincter muscles surrounding the urethra relax, letting urine pass out of the body. Incontinence will occur if the bladder muscles suddenly contract or muscles surrounding the urethra suddenly relax.

Treatment

Exercises

One of the most common treatment recommendations includes exercising the muscles of the pelvis. Kegel exercises may strengthen a portion of the affected area. According to many industry specialists, the pelvic floor is actually a group of muscles and connective tissues running side-to-side and front to back along the bony ridges of the pelvis. Visualize the pelvic floor as a “hammock” or “bowl”. For everything to be working properly, this hammock should be worked out like every other muscle in the body.

Kegel exercises to strengthen or retrain pelvic floor muscles and sphincter muscles can reduce stress leakage. cite journal |author=Choi H, Palmer MH, Park J |title=Meta-analysis of pelvic floor muscle training: randomized controlled trials in incontinent women |journal=Nursing research |volume=56 |issue=4 |pages=226-34 |year=2007 |pmid=17625461 |doi=10.1097/01.NNR.0000280610.93373.e1 Patients younger than 60 years old benefit the most. The patient should do at least 24 daily contractions for at least 6 weeks.

Increasingly there is evidence of the effectiveness of pelvic floor muscle exercise (PFME) to improve bladder control. For example, urinary incontinence following childbirth can be improved by performing PFME [*Haddow(2005)Effectiveness of a pelvic floor muscle exercise program on UI following childbirth. "Western Australian Centre for Evidence-based Nursing". 3 (5), 103-146.*]

Vaginal cone therapy

A more recently developed exercise technique suitable only for women involves the use of a set of five small vaginal cones of increasing weight. For this exercise, the patient simply places the small plastic cone within her vagina, where it is held in by a mild reflex contraction of the pelvic floor muscles. Because it is a reflex contraction, little effort is required on the part of the patient. This exercise is done twice a day for fifteen to twenty minutes, while standing or walking around, for example doing daily household tasks. As the pelvic floor muscles get stronger, cones of increasing weight can be used, thereby strengthening the muscles gradually. Fact|date=February 2007

The advantage of this method is that the correct muscles are automatically exercised by holding in the cone, and the method is effective after a much shorter time. Clinical trials with vaginal cones have shown that the pelvic floor muscles start to become stronger within two to three weeks, and light to medium stress incontinence can resolve after eight to twelve weeks of use. Fact|date=February 2007

Electrical stimulation

Brief doses of electrical stimulation can strengthen muscles in the lower pelvis in a way similar to exercising the muscles. Electrodes are temporarily placed in the vagina or rectum to stimulate nearby muscles. This can stabilize overactive muscles and stimulate contraction of urethral muscles. Electrical stimulation can be used to reduce both stress incontinence and urge incontinence.

Biofeedback

Biofeedback uses measuring devices to help the patient become aware of his or her body's functioning. By using electronic devices or diaries to track when the bladder and urethral muscles contract, the patient can gain control over these muscles. Biofeedback can be used with pelvic muscle exercises and electrical stimulation to relieve stress and urge incontinence.

Timed voiding or bladder training

Timed voiding (urinating) and bladder training are techniques that use biofeedback. In timed voiding, the patient fills in a chart of voiding and leaking. From the patterns that appear in the chart, the patient can plan to empty his or her bladder before he or she would otherwise leak. Biofeedback and muscle conditioning--known as bladder training--can alter the bladder's schedule for storing and emptying urine. These techniques are effective for urge and overflow incontinence.

Medications

Medications can reduce many types of leakage. Some drugs inhibit contractions of an overactive bladder, others relax muscles, leading to more complete bladder emptying during urination, and yet others tighten muscles at the bladder neck and urethra, preventing leakage. Some hormones, such as estrogen, are believed to cause muscles involved in urination to function normally.

Pharmacological treatments of urinary incontinence include:

- *topical or vaginal estrogens - used in cases of vaginal atrophy
- *tolterodine (Detrol)
- *oxybutynin
- *propantheline
- *darifenacin (Enablex)
- *solifenacin (Vesicare)
- *trospium - used in urge incontinence
- *imipramine - used in mixed and stress urinary incontinence
- *pseudoephedrine
- *duloxetine (Cymbalta) - used in stress urinary incontinence

Some of these medications can produce harmful side effects if used for long periods. In particular, estrogen therapy has been associated with an increased risk of cancers of the breast and endometrium (lining of the uterus). A patient should talk to a doctor about the risks and benefits of long-term use of medications.

Pessaries

A pessary is a medical device that is inserted into the vagina. The most common kind is ring shaped, and is typically recommended to correct vaginal prolapse. The pessary compresses the urethra against the symphysis pubis and elevates the bladder neck. For

some women this may reduce stress leakage. If a pessary is used, vaginal and urinary tract infections may occur and regular monitoring by a doctor is recommended.

urgery

Doctors usually suggest surgery to alleviate incontinence only after other treatments have been tried. Many surgical options have high rates of success. Urodynamic testing seems to confirm that surgical restoration of vault prolapse can cure motor urge incontinence.

[Can motor urge incontinence be surgically cured? K. Goeschen Pelviperineology N.26.1.2007

[http://www.pelviperineology.org/pelvic_floor/can_motor_urge_incontinence_be_surgically_cured.html]]

Bladder repositioning

Most stress incontinence in women results from the bladder dropping down toward the vagina. Therefore, common surgery for stress incontinence involves pulling the bladder up to a more normal position. Working through an incision in the vagina or abdomen, the surgeon raises the bladder and secures it with a string attached to muscle, ligament, or bone. For severe cases of stress incontinence, the surgeon may secure the bladder with a wide sling. This not only holds up the bladder but also compresses the bottom of the bladder and the top of the urethra, further preventing leakage.

Marshall-Marchetti-Krantz

The Marshall-Marchetti-Krantz (MMK) procedure, also known as retropubic suspension or bladder neck suspension surgery, is performed by a surgeon in a hospital setting. Developed in 1949 by doctors Victor F. Marshall (urologist), Andrew A. Marchetti (OB/GYN), and Kermit E. Krantz (OB/GYN) is the standard by which new procedures are measured. In 1961 Dr. Burch reported a modification of the MMK operation (the Burch modification.)

The patient is placed under general anesthesia, and a long, thin, flexible tube (catheter) is inserted into the bladder through the narrow tube (urethra) that drains the body's urine. An incision is made across the abdomen, and the bladder is exposed. The bladder is separated from surrounding tissues. Stitches (sutures) are placed in these tissues near the bladder neck and urethra. The urethra is then lifted, and the sutures are attached to the pubic bone itself, or to tissue (fascia) behind the pubic bone. The sutures support the bladder neck, helping the patient gain control over urine flow. The Burch modifications involved placing the surgical sutures at the bladder neck and tying them to the Cooper ligament.

Approximately 85% of women who undergo the Marshall-Marchetti-Krantz procedure are cured of their stress incontinence.

Slings

The procedure of choice for stress urinary incontinence in females is what is called a sling procedure. A sling usually consists of a synthetic mesh material in the shape of a narrow ribbon but sometimes a biomaterial (bovine, porcine) or the patients' own tissue that is placed under the urethra through one vaginal incision and two small abdominal incisions. The idea is to replace the deficient pelvic floor muscles and provide a "backboard" or "hammock" of support under the urethra. According to published peer-reviewed studies, these slings are approximately 85% effective. To date, three major slings have been introduced into the U.S. medical market, the Transobturator Tape Sling, the Tension-free Transvaginal Sling, and the Minisling.

Tension-free transvaginal (TVT) Sling

The tension-free transvaginal (TVT) sling procedure treats urinary stress incontinence by positioning a polypropylene mesh tape underneath the urethra [Meschia, M., Pifarotti, P., Barnasconi, F., Guercio, E., Maffiolini, M., Magatti, F. and Spreafico, L (2001). "Tension-free vaginal tape: analysis of outcomes and compilations in 404 stress incontinent women." *International Urogynecology Journal* (2): S24-27]. The 20-minute outpatient procedure involves two miniature incisions and has an 86 – 95% cure rate [A prospective randomized trial comparing tension-free vaginal-tape & transobturator suburethral tape for surgical treatment of stress urinary incontinence. *American Journal of Obstetrics & Gynecology* (2004). Retrieved on 2008-01-22]. Complications, such as bladder perforation, can occur in the retropubic space if the procedure is not done correctly. However, recent advancements in have proven that the minimally invasive tvt sling procedure is regarded as a common treatment for SUI [Rardin, CR, et al. (2002). *Tension-free vaginal tape: outcomes among women with primary versus recurrent stress urinary incontinence. Obstetrics and Gynecology*, 100(5):893-897].

Transobturator Tape (TOT) Sling

First developed in Europe and later introduced to the U.S. by urogynecologist Dr. John R. Miklos, the transobturator tape (TOT) sling procedure is meant to eliminate stress urinary incontinence by providing support under the urethra [A prospective randomized trial comparing tension-free vaginal-tape & transobturator suburethral tape for surgical treatment of stress urinary incontinence. *American Journal of Obstetrics & Gynecology* (2004). Retrieved on 2008-01-22]. The minimally-invasive procedure eliminates retropubic needle passage and involves inserting a mesh tape under the urethra through three small incisions in the groin area [Stenchever, M.A. (2001). "Physiology of micturition, diagnosis of voiding dysfunction and incontinence: surgical and nonsurgical treatment section of *Urogynecology*." *Comprehensive Gynecology* (4): 607-639.]. While the procedure has shown risks during its infancy, recent developments have made it the procedure of choice for those suffering from stress urinary incontinence. Studies have shown that the safer, more efficient tot sling procedure decreases the risks of bowel and bladder injury and major bleeding and has a 82% cure rate [Fillon, M. (2005). "Monarc Transobturator Sling Proven Safe & Effective for Stress Urinary Incontinence: Presented at AUGS."

<http://www.docguide.com/news/content.nsf/news/8525697700573E18852570810062840D>] .

Mini-Sling

The mini-sling procedure was released in the United States in late 2006 by Gynecare/Johnson and Johnson under the name of TVT-Secure. The initial results of this method were presented in the beginning of 2007 at the International Urogynecology Meeting and were not as promising as hoped. The reported short term cure rates of the TVT-Secure ranged from 67% to 83%, much lower than the existing TVT and TOT slings. In March 2007, AMS released the most recent mini-sling to the market called the Mini-Arc which has several improvements over the Secure sling. The Mini Arc sling procedure is latest and least invasive treatment for stress urinary incontinence. The 5-10-minute procedure utilizes the same concepts of the tension-free tape mid-urethral slings, but involves a single incision [R Moore, et al. (2007). "Retrospective review of early experience using the AMS Mini Arc Single Incision Sling System to treat stress urinary incontinence in women." *The Journal of Minimally Invasive Gynecology* (14): S129-130] .

The mini arc sling procedure has displayed a 92.3% cure rate and reduces the risk of bowel injury, bladder injury, and major bleeding because it bypasses retropubic needle passage altogether [Staskin, DR and Plzak, L (2002). "Synthetic slings: pros and cons." *Current Urology Reports*. Retrieved 2009-01-22] . In the most recent trial headed by Dr. Robert D. Moore, no complications were noted and no patients reported any pain at the site of the sling at follow-up [http://www.miklosandmoore.com/mini_sling.php Mini-Sling Incontinence Treatment, Vagina Plastic & Cosmetic Surgery, Gynecology]] .

Needleless Sling

Another sling that has quietly emerged from Europe and introduced into the U.S. in early 2007 is what is called 'Needleless', manufactured by Neomedic (same manufacturer as the adjustable sling). It is similar to a mini-sling only in that it is implanted via 1 incision, like the Mini Arc and TVT Secur; however it is different in that it is the closest of the single-incision slings to the TOT, which is the procedure of choice for most surgeons due to its' proven safety and efficacy. The Needleless sling has approximately 138% more surface area than Mini Arc which should better support the pelvic floor and urethra. Additionally, no sharp instruments are required to implant the sling (besides the scalpel used to make the incision) which enhances patient comfort. It has been used for over 2 years in Europe and over 1 year in the U.S. by select surgeons.

Adjustable sling

Slings employ a "one size fits all" philosophy as the body's reaction to the sling is to scar it into place. There is an adjustable sling which consists of a standard synthetic mesh sling combined with sutures that attach to an implatable tensioning device that resides as a permanent implant under the skin in the abdominal wall. Once implanted, this device

can be re-accessed under local anesthesia to fine tune the sling should incontinence reappear months or years after the initial surgery.

Bladder augmentation

Artificial urinary sphincter

In rare cases, a surgeon implants an artificial urinary sphincter [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?itool=abstractplus&db=pubmed&cmd=Retrieve&dopt=abstractplus&list_uids=16945659 "14 years of experience with the artificial urinary sphincter in children and adolescents without spina bifida" Ruiz et al. *J Urol.* 2006 Oct;176(4 Pt 2):1821-5] , a doughnut-shaped sac that circles the urethra. A fluid fills and expands the sac, which squeezes the urethra closed. By pressing a valve implanted under the skin, the artificial sphincter can be deflated. This removes pressure from the urethra, allowing urine from the bladder to pass.

Catheterization

If an incontinence is due to overflow incontinence, in which the bladder never empties completely, or if the bladder cannot empty because of poor muscle tone, past surgery, or spinal cord injury, a catheter may be used to empty the bladder. A catheter is a tube that can be inserted through the urethra into the bladder to drain urine. Catheters may be used once in a while or on a constant basis, in which case the tube connects to a bag that is attached to the leg. If a long-term(or indwelling)catheter is used, urinary tract infections may occur..

Other procedures

Many people manage urinary incontinence with pads that catch slight leakage during activities such as exercising. Also, incontinence may be managed by restricting certain liquids, such as coffee, tea, and alcohol.

Finally, many people who could be treated resort instead to wearing absorbent, reusable undergarments which can hold 6 oz. or disposable diapers which can hold more. The reusable undergarments may be positive from a self-esteem perspective though depending on the amount of fluid being passed, disposable diapers can also be positive as they can hold more liquid and may eliminate leakage. Either can lead to skin irritation and sores if the urine is left in contact with the skin. The possible effectiveness of treatments such as timed voiding, pelvic muscle exercises, and electrical stimulation should be discussed with a doctor.

Kneading the perineum immediately after urination can help expel unvoided urine retained by a urethral stricture, a urethral sphincter that is slow to close, or overdeveloped abdominal floor muscles and connective tissue (as may be developed by the stresses of bicycle seats.)

Hospitals often use some type of incontinence pad, a small but highly absorbent sheet placed beneath the patient, to deal with incontinence or other unexpected discharges of bodily fluid. These pads are especially useful when it is not practical for the patient to wear a diaper.

There are also trials taking place in the UK at the moment using Botox. It has been tested with some success under general anaesthetic conditions, and is currently (February 2006) being tried under local anaesthetic. While it originally appears that it may be quite successful for women, it does not appear to be as successful for men. Botox works for around 6-9 months when the treatment has to be redone.

Urinary incontinence in children

In the United States, at least 13 million people have problems holding urine until they can get to a toilet. This loss of urinary control is called "urinary incontinence" or just "incontinence." Although it affects many young people, it usually disappears naturally over time, which suggests that incontinence, for some people, may be a normal part of growing up.

No matter when it happens or how often it happens, incontinence causes great distress. It may get in the way of a good night's sleep and is embarrassing when it happens during the day. That's why it is important to understand that occasional incontinence is a normal part of growing up and that treatment is available for most children who have difficulty controlling their bladders.

Babies are never considered incontinent, as they cannot physically attain bowel and bladder control and incontinence is a loss of pre-existing control.

Urinary system

Urination, or voiding, is a complex activity. The bladder is a balloonlike muscle that lies in the lowest part of the abdomen. The bladder stores urine, then releases it through the urethra, the canal that carries urine to the outside of the body. Controlling this activity involves nerves, muscles, the spinal cord, and the brain.

The bladder is made of two types of muscles: the detrusor, a muscular sac that stores urine and squeezes to empty, and the sphincter, a circular group of muscles at the bottom or neck of the bladder that automatically stay contracted to hold the urine in and automatically relax when the detrusor contracts to let the urine into the urethra. A third group of muscles below the bladder (pelvic floor muscles) can contract to keep urine back.

A baby's bladder fills to a set point, then automatically contracts and empties. As the child gets older, the nervous system develops. The child's brain begins to get messages from the filling bladder and begins to send messages to the bladder to keep it from automatically emptying until the child decides it is the time and place to void.

Failures in this control mechanism result in incontinence. Reasons for this failure range from the simple to the complex.

Incontinence happens less often after age 5: About 10 percent of 5-year-olds, 5 percent of 10-year-olds, and 1 percent of 18-year-olds experience episodes of incontinence. It is twice as common in girls as in boys.

Causes of nighttime incontinence

: "See main article [Bedwetting](#)." After age 5, wetting at night--often called bedwetting or sleepwetting--is more common than daytime wetting in boys. Experts do not know what causes nighttime incontinence. Young people who experience nighttime wetting tend to be physically and emotionally normal. Most cases probably result from a mix of factors including slower physical development, an overproduction of urine at night, a lack of ability to recognize bladder filling when asleep, and, in some cases, anxiety. For many, there is a strong family history of bedwetting, suggesting an inherited factor.

lower physical development

Between the ages of 5 and 10, incontinence may be the result of a small bladder capacity, long sleeping periods, and underdevelopment of the body's alarms that signal a full or emptying bladder. This form of incontinence will fade away as the bladder grows and the natural alarms become operational.

Excessive output of urine during sleep

Normally, the body produces a hormone that can slow the making of urine. This hormone is called antidiuretic hormone, or ADH. The body normally produces more ADH during sleep so that the need to urinate is lower. If the body does not produce enough ADH at night, the making of urine may not be slowed down, leading to bladder overfilling. If a child does not sense the bladder filling and awaken to urinate, then wetting will occur.

Anxiety

Experts suggest that anxiety-causing events occurring in the lives of children ages 2 to 4 might lead to incontinence before the child achieves total bladder control. Anxiety experienced after age 4 might lead to wetting after the child has been dry for a period of 6 months or more. Such events include angry parents, unfamiliar social situations, and overwhelming family events such as the birth of a brother or sister.

Incontinence itself is an anxiety-causing event. Strong bladder contractions leading to leakage in the daytime can cause embarrassment and anxiety that lead to wetting at night.

Genetics

Certain inherited genes appear to contribute to incontinence. In 1995, Danish researchers announced they had found a site on human chromosome 13 that is responsible, at least in part, for nighttime wettingFact|date=February 2007. If both parents were bedwetters, a child has an 80 percent chance of being a bedwetter also. Experts believe that other, undetermined genes also may be involved in incontinence.

Obstructive sleep apnea

Nighttime incontinence may be one sign of another condition called obstructive sleep apnea, in which the child's breathing is interrupted during sleep, often because of inflamed or enlarged tonsils or adenoids. Other symptoms of this condition include snoring, mouth breathing, frequent ear and sinus infections, sore throat, choking, and daytime drowsiness. In some cases, successful treatment of this breathing disorder may also resolve the associated nighttime incontinence.

Structural problems

Finally, a small number of cases of incontinence are caused by physical problems in the urinary system in children. A condition known as urinary reflux or vesicoureteral reflux, in which urine backs up into one or both ureters, can cause urinary tract infections and incontinence. Rarely, a blocked bladder or urethra may cause the bladder to overfill and leak. Nerve damage associated with the birth defect spina bifida can cause incontinence. In these cases, the incontinence can appear as a constant dribbling of urine.

Causes of daytime incontinence

[Daytime incontinence](#) that is not associated with urinary infection or anatomic abnormalities is less common than nighttime incontinence and tends to disappear much earlier than the nighttime versions. One possible cause of daytime incontinence is an overactive bladder. Many children with daytime incontinence have abnormal voiding habits, the most common being infrequent voiding. This form of incontinence occurs more often in girls than in boys.

An overactive bladder

Muscles surrounding the urethra (the tube that takes urine away from the bladder) have the job of keeping the passage closed, preventing urine from passing out of the body. If the bladder contracts strongly and without warning, the muscles surrounding the urethra may not be able to keep urine from passing. This often happens as a consequence of urinary tract infection and is more common in girls.

Infrequent voiding

Infrequent voiding refers to a child's voluntarily holding urine for prolonged intervals. For example, a child may not want to use the toilets at school or may not want to interrupt enjoyable activities, so he or she ignores the body's signal of a full bladder. In

these cases, the bladder can overflow and leak urine. Additionally, these children often develop urinary tract infections (UTIs), leading to an irritable or overactive bladder.

Other causes

Some of the same factors that contribute to nighttime incontinence may act together with infrequent voiding to produce daytime incontinence. These factors include

- * a small bladder capacity
- * structural problems
- * anxiety-causing events
- * pressure from a hard bowel movement (constipation)
- * drinks or foods that contain caffeine, which increases urine output and may also cause spasms of the bladder muscle, or other ingredients to which the child may have an allergic reaction, such as chocolate or artificial coloring

Sometimes overly strenuous toilet training may make the child unable to relax the sphincter and the pelvic floor to completely empty the bladder. Retaining urine (incomplete emptying) sets the stage for urinary tract infections.

Treatment

Growth and development

Most urinary incontinence fades away naturally. Here are examples of what can happen over time:

- * Bladder capacity increases.
- * Natural body alarms become activated.
- * An overactive bladder settles down.
- * Production of ADH becomes normal.
- * The child learns to respond to the body's signal that it is time to void.
- * Stressful events or periods pass.

Many children overcome incontinence naturally (without treatment) as they grow older. The number of cases of incontinence goes down by 15 percent for each year after the age of 5.

Medications

Nighttime incontinence may be treated by increasing ADH levels. The hormone can be boosted by a synthetic version known as desmopressin, or DDAVP, which recently became available in pill form. Patients can also spray a mist containing desmopressin into their nostrils. Desmopressin is approved for use by children.

Another medication, called imipramine, is also used to treat sleepwetting. It acts on both the brain and the urinary bladder. Unfortunately, total dryness with either of the medications available is achieved in only about 20 percent of patients.

If a young person experiences incontinence resulting from an overactive bladder, a doctor might prescribe a medicine that helps to calm the bladder muscle. This medicine controls muscle spasms and belongs to a class of medications called anticholinergics.

Bladder training and related strategies

Bladder training consists of exercises for strengthening and coordinating muscles of the bladder and urethra, and may help the control of urination. These techniques teach the child to anticipate the need to urinate and prevent urination when away from a toilet. Techniques that may help nighttime incontinence include

- * determining bladder capacity
- * stretching the bladder (delaying urinating)
- * drinking less fluid before sleeping
- * developing routines for waking up

Unfortunately, none of the above has demonstrated proven success.

Techniques that may help [daytime incontinence](#) include

- * urinating on a schedule, such as every 2 hours (this is called timed voiding)
- * avoiding caffeine or other foods or drinks that may contribute to a child's incontinence
- * following suggestions for healthy urination, such as relaxing muscles and taking your time

Moisture alarms

At night, [moisture alarms](#) can awaken a person when he or she begins to urinate. These devices include a water-sensitive pad worn in pajamas, a wire connecting to a battery-driven control, and an alarm that sounds when moisture is first detected. For the alarm to be effective, the child must awaken or be awakened as soon as the alarm goes off. This may require having another person sleep in the same room to awaken the bedwetter.

Incontinence is also called enuresis

- * Primary enuresis refers to wetting in a person who has never been dry for at least 6 months.
- * Secondary enuresis refers to wetting that begins after at least 6 months of dryness.
- * Nocturnal enuresis refers to wetting that usually occurs during sleep (nighttime incontinence).
- * [Diurnal enuresis](#) refers to wetting when awake (daytime incontinence).

Points to remember

- * Urinary incontinence in children is common.
- * Nighttime wetting occurs more commonly in boys.
- * Daytime wetting is more common in girls.
- * After age 5, incontinence disappears naturally at a rate of 15 percent of cases per year.
- * Treatments include waiting, dietary modification, [moisture alarms](#), medications, and bladder training.

See also

- * Double dye test

References

External links

- * [<http://www.incontact.org/> UK charity supporting people with bowel and bladder control problems.]
- * [http://www.pelvicfloordigest.org/2006/pelvic_incontinence_urology.html Selected abstracts from recent medical literature on Urinary Incontinence]

См. также в других словарях:

- [INCONTINENCE](#) — . f. Difficulté de se coteir, particulièrement das l'ordre de la chasteté. être adoé à l'icotiece. So icotiece fut cause de sa perte. Il a ruié sa saté par so icotiece. Par extesio, Icotiece de parole. Spécialement,... (Dictionnaire de l'Académie Française, 8ème édition (1935))
- [INCONTINENCE](#) — s. f. Vice opposé à la vertu de cotiece, à la chasteté. Être adoé à l'icotiece. So icotiece fut cause de sa perte. Il a ruié sa saté par so icotiece. E Médec., Icotiece d'urie, Écoulement ivolotaire de... (Dictionnaire de l'Académie Française, 7ème édition (1835))
- [incontinence](#) — fl) невоздержанность, несдержанность2) мед. недержаниеincontinence d'urine недержание мочи... (Большой французско-русский и русско-французский словарь)
- [incontinence](#) — noun Date: 14th century the quality or state of being incontinent: as a. failure to restrain sexual appetite ; unchastity b. inability of the body to control the evacuative functions of urination or defecation... (New Collegiate Dictionary)
- [incontinence](#) — 1> несдержанность 2> невоздержанность (особенно половая) 3> _мед. недержание _Ех: incontinence of urine _мед. недержание мочи _Ех: incontinence of milk _вет. галлакторея, недержание молока... (Новый большой англо-русский словарь)
- [incontinence](#) — noun 1) несдержанность 2) невоздержанность (особ. половая) 3)med. недержание... (Англо-русский словарь Мюллера)

- [Incontinence](#) — Icotiee I co"ti ece, Icotiecy I co"ti e cy, . [L. icotietia: cf. F. icotiee.] [1913 Webster] 1. Icapacity to hold; hece, icapacity to hold back or restrai; the quality or state of beig icotiet; lack of... (The Collaborative International Dictionary of English)
- [Недержание \(Incontinence\)](#) — 1. Непроизвольное мочеиспускание. Недержание мочи при напряжении (stress icotiee) характеризуется невозможностью удержать мочу при кашле или каком-либо физическом напряжении. Часто встречается у женщин с ослабленными после родов мышцами... (Медицинские термины)
- [stress incontinence](#) — noun Date: 1935 involuntary leakage of urine from the bladder accompanying physical activity (as laughing or coughing) which places increased pressure on the abdomen compare urge incontinence... (New Collegiate Dictionary)
- [urge incontinence](#) — noun Date: 1980 involuntary leakage of urine from the bladder when a sudden strong need to urinate is felt compare stress incontinence...

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<http://www.tvt-messed-up-mesh.org.uk/new-patient-advice.html>