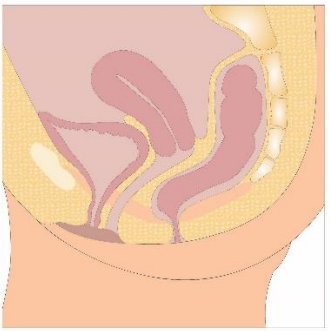
# PELVIC FLOOR DISORDERS:

# A SHORT HANDBOOK FOR WOMEN



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# FOREWORD

Pelvic floor disorders are a common condition affecting many women worldwide and significantly impacts their quality of life. The pelvic floor supports pelvic organs and plays an important role in urinary and fecal continence, sexual activity, and in ensuring body stability. Various factors throughout a woman's life can weaken the pelvic floor, leading to worse functioning.

The most common forms of pelvic floor disorders are urinary incontinence and pelvic organ prolapse. Despite the high prevalence of these disorders, we recognize that there is a lack of communication and awareness regarding them. This is probably partly due to the belief that these problems are normal consequences of ageing or that nothing can be done about them. Additionally, women are often embarrassed and reluctant to speak up about such problems; some feel ashamed or emotionally distressed. The truth is quite the opposite - issues that concern the pelvic floor need to be addressed and spoken about because there are many treatments and alleviations that can significantly improve women's quality of life. To help raise awareness about pelvic floor disorders, we have produced a short handbook for women. Hopefully, it will help you to learn more about your own pelvic floor, the possible problems that can occur, and provide you with tips on how you can further improve your pelvic floor health.

Editors

# 1 THE ANATOMY OF THE PELVIC FLOOR

Katerina Trpkovska

The pelvic floor consists of muscles and their sheaths and ligaments, which together with the pelvis enclose the pelvic outlet. The function of the pelvic floor is to support the weight of the abdominal and pelvic organs and prevent them from prolapsing. In addition to this stabilizing function, it also helps them regulate their functions. Pelvic floor disorders, such as urinary and fecal incontinence and pelvic floor prolapse, are becoming more frequent, which is why it is important to understand the complex anatomy of the pelvic floor that is involved in its occurrence.

The bony pelvic ring is formed by the two hip bones, each of which consists of three smaller bones: ilium, ischium, and pubis. The hip bones are joined anteriorly (in the front) by the pubic symphysis and posteriorly (in the back) by the sacrum. The pelvic floor is formed by the pelvic diaphragm (above) and perineal muscles (below).

## 1.1 The pelvic diaphragm

The pelvic diaphragm is formed by two pairs of muscles – the levator ani muscle and the coccygeus muscle. The levator ani muscle is attached to the pelvic ring and is joined with the muscle from the opposite side to form the larger part of the pelvic floor. It is made up of three muscles: puborectalis, pubococcygeus, and iliococcygeus. The paired puborectalis muscles originate from the pubic symphysis, run posteriorly, and outline the urogenital opening in a U-shape that passes into the urethra, vagina, and rectum (Figure 1).

The pelvic floor muscles are striated muscles. Striated muscles consist of two basic types of fibres: slow-twitch fibres (type 1), which slowly increase and decrease their tension and are fatigue resistant, and fast-twitch fibres (type 2), which work the other way around. Most of the levator ani muscle fibres are slow-twitch, which means that they maintain sustained tension in the muscle. The sustained tension ensures the closure of the urogenital opening during daily standing activities. When we cough, sneeze or lift heavy objects, a conscious contraction of the puborectalis muscles is triggered, which further increases the tension in the muscles and counteracts the increased abdominal pressure and maintains continence.

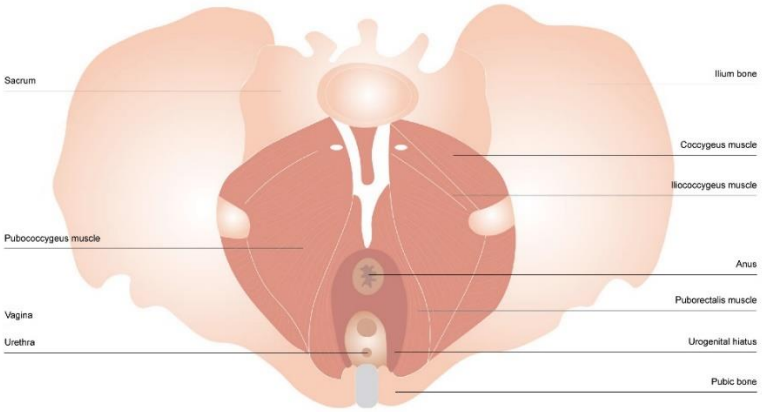


Figure 1: Pelvic floor anatomy, view from above

The levator ani muscle provides the main muscular support of the pelvic organs. Patients that suffer from pelvic floor prolapse and urinary and fecal incontinence are advised to strengthen their pelvic floor muscles by learning to contract their levator ani muscles.

## 1.2 Perineal muscles

The perineal muscles make up a small part of the pelvic floor, lying under the frontal part of the pelvic diaphragm and covering the urogenital opening. They include the superficial and deep transverse perineal muscles, the ischiocavernosus muscle, the bulbospongiosus muscle, the external urethral sphincter muscle, and the external anal sphincter muscle. All these muscles are intertwined between the vagina and the rectum to form a strong connective-muscular unit, which constitutes the central stable part of the perineum. The urethra and vagina pass through the deep transverse muscle of the perineum. The role of the perineal muscles is, among other things, to contract the urogenital opening, to act as a urethral sphincter, and to maintain continence.

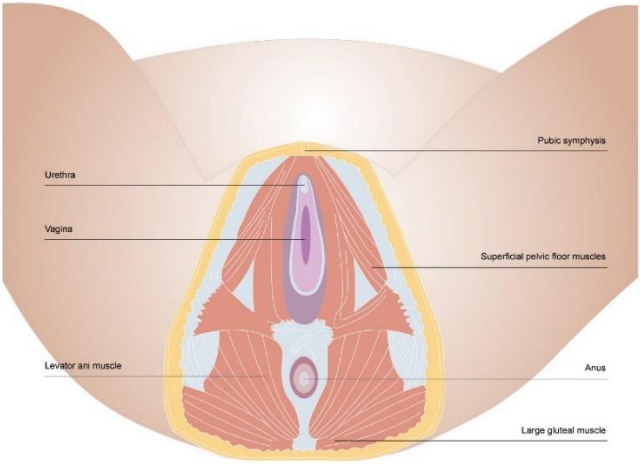


Figure 2: Perineal muscles, view from below

## 1.3 Urinary tract in the lesser pelvis

The organs located in the lesser pelvis are, from front to back, the urethra and bladder, the uterus, the vagina, and the rectum. The ovaries are located on the side walls and the fallopian tubes run from the uterus to the ovaries. The urinary tract is discussed in more detail below.

### 1.3.1 The urinary bladder

The urinary bladder is a hollow muscular organ that acts as a reservoir for urine. It lies just behind pubic symphysis, with the uterus above and behind it. Its size, shape, position, and wall thickness vary in relation to its fullness. It is the outlet of the ureter, which carries urine from the kidneys. The bladder is more strongly attached to its surroundings only in the lower region, which is why its shape and position can change as it fills. The bladder neck, which continues downwards into the urethra, passes through the urogenital opening at the pelvic diaphragm. The bladder neck is supported by passive (connective tissue) and active mechanisms (levator ani).

## 1.3.2 The urethra

**The length of the urethra is one of the reasons why urinary tract infections are more common in women than in men. Why? The female urethra is shorter and closer to the vaginal opening and rectum – this is where bacteria come from, spreading down the urethra to the bladder and causing the infection.**

The urethra is a 3 to 5 cm long tube that runs from the bladder down the urethra. Behind it lies the vagina, with which it is fused together. The urethra starts at the bladder with the internal opening, surrounded by smooth muscle, the internal sphincter of the urethra. As it passes through the urogenital diaphragm, the urethra is surrounded by striated muscle, the external sphincter of the urethra. Much like the levator ani muscle, the external sphincter maintains sustained tension and prevents urine leakage, but it can also be contracted under voluntary control to stop urine leakage. The external opening marks the end of the urethra and lies just in front of the vaginal entrance.

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# 2 HOW DOES THE PELVIC FLOOR WORK?

Sara Ćehić

The pelvic floor is a group of muscles that support pelvic organs (bladder, bowel and uterus) and have important functions:

- **Retention and excretion:** Contraction of the pelvic floor muscles helps to retain urine and feces; relaxation of these muscles allows excretion.
- **Sexual function:** The muscles contribute to better functioning of sexual organs and greater sexual satisfaction.
- **Organ support*:*** The muscles prevent the pelvic organs from prolapsing or falling out.
- **Stability*:*** Together with other muscles, it ensures the stability of the body.

## 2.1 The mechanism of urination

Urination is the process by which urine is discharged from the bladder through the urethra, allowing the body to eliminate excess water and waste products. Urination is a reflex that is amplified and inhibited by higher brain centers. In a healthy individual, the lower urinary tract has two phases of activity: the urine storage phase and the voiding phase. The voiding phase occurs when the individual determines it is appropriate to empty the bladder. The centers in the cerebral cortex decide when we consciously start to urinate and control the lower structures. Information about the sensation of increased bladder pressure is relayed to the spinal cord. When there is only a small amount of urine in the bladder, there are few of these signals, which allows the urine to be stored. As the bladder fills, the frequency of signals increases, resulting in a conscious sensation of a full bladder. When the individual is ready to urinate, they consciously trigger the bladder to begin emptying, which continues until the bladder is completely emptied. Afterward, the bladder is relieved of pressure, and the urine starts to accumulate again.

In adulthood, the average volume that the bladder can hold is between 300 and 400 ml. As the volume of urine held by the bladder increases, the pressure on the bladder wall also increases. If the pressure is too high, we experience pain.

The muscles that enable urination are controlled by nerves that work automatically (part of the autonomic nervous system) and nerves that are controlled by our will and consciousness (part of the somatic nervous system). The autonomic nerves operate in two ways: by relaxing and calming muscles (through the parasympathetic nervous system) or by constricting and contracting them (through the sympathetic nervous system).

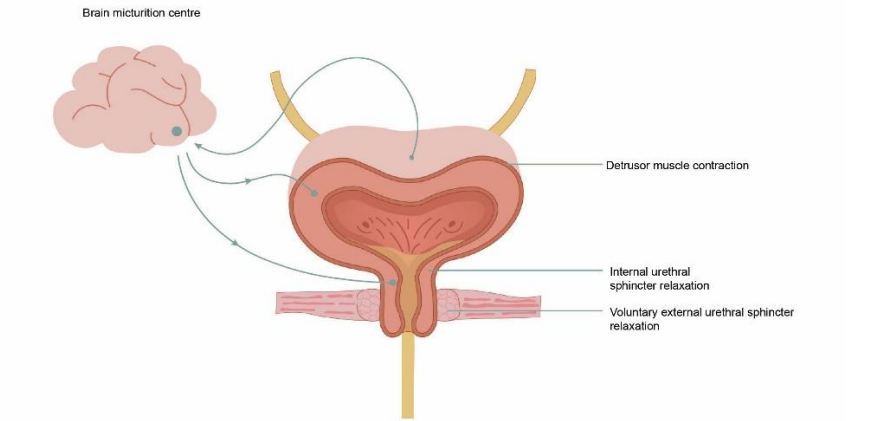


Figure 3: The voiding phase. The internal and external urethral sphincter muscles relax, the detrusor muscle contracts.

**Urine storage phase**

- The internal urethral sphincter is contracted, preventing urine from leaking out of the bladder.
- The detrusor muscle is relaxed, allowing the bladder to stretch and store urine.
- Continence is based on the principle that the pressure of the urethral sphincter exceeds the pressure in the bladder, ensuring that urine stays in the bladder.
- The external urethral sphincter, controlled by the somatic nervous system, remains contracted and further contributes to the retention of urine.

**Urine voiding phase**

- The internal urethral sphincter relaxes, allowing urine to flow out.
- The detrusor muscle contracts – this increases the pressure in the bladder which exceeds the pressure in the urethra and allows voiding.
- The external urethral sphincter, which is consciously controlled, also relaxes and allows the bladder to fully empty (Figure 3).

In a healthy adult, continence is possible because of the urethral sphincters and the pelvic floor. The pelvic floor is namely a supportive apparatus and plays a role in maintaining continence. It is a disc made up of muscles and connective tissues that

closes the pelvic outlet, supports the pelvic and abdominal organs, and holds the bladder neck and urethra in a normal position. Exertion increases the pressure in the bladder, while the pelvic floor, together with the sphincter muscles, squeezes the urethra. This closes the urethra and effectively prevents urine leakage.

## 2.2 The mechanism of defecation

The smooth muscles of the bowel have the task of slowly moving the intestinal contents forward towards the outlet. A large peristaltic wave occurs several times a day, which moves the intestinal contents into the rectum and causes the rectum to fill and expand. This movement is detected by the receptors in the rectal wall, which leads to the relaxation of the internal anal sphincter, and a reflex contraction of the external anal sphincter. We experience this as an urge to defecate.

Coordinated functioning of the rectum, anal canal, internal and external anal sphincters, and the puborectalis muscle is extremely important for normal defecation. The rectum, which is oriented posteriorly, continues into the anal canal (anus), which is oriented anteriorly. Together they form what is known as the anorectal angle, which measures about 90 degrees, and plays a crucial role in the retention of feces and defecation. The puborectalis muscle, which is part of the levator ani muscle and is in contact with the external anal sphincter, can decrease this angle if the muscle contracts, or increase it if it relaxes. People usually sit down during defecation – this position slightly increases the anorectal angle. The angle is further increased by the voluntary relaxation of the external anal sphincter and consequently the puborectalis muscle. This allows us to defecate without difficulty and with minimal straining of the abdominal wall muscles. During fecal retention, sneezing, coughing, and lifting heavy objects, the anal sphincter contracts and the angle decreases. Excretion is thus prevented.

In Western countries, sitting on the toilet is the most common way to defecate but it is not the most effective. A greater bend at the hips increases the anorectal angle and makes defecation significantly easier. This can be achieved by using a footstool or adopting a squatting position – squatting is believed to be the most effective defecation technique. Studies have shown that the squatting position allows for more efficient relaxation of the puborectalis muscle and helps in aligning the anorectal angle (Figure 4). In this way, defecation is possible with less effort and straining, and the bowel empties more effectively.

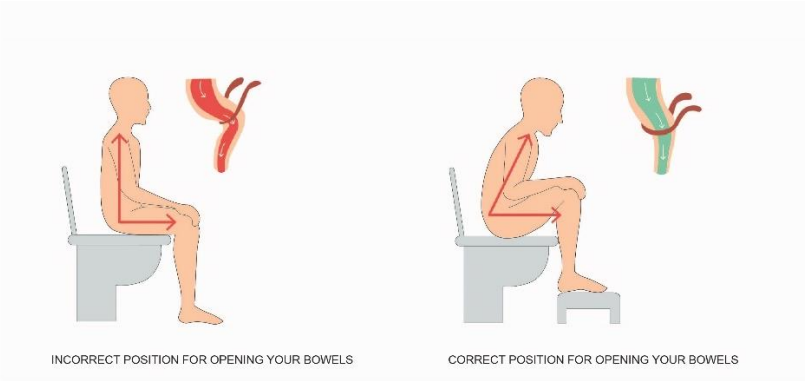


Figure 4: Illustration of the incorrect and correct position during defecation

The urge to defecate occurs the moment the feces reach the rectum and lasts for a few seconds. If the content in the rectum is not too large, we feel an urge that subsides within a few seconds as the rectum adjusts. If a larger amount of feces enters the rectum, the rectum cannot adjust, and the urge persists. The anal sphincter can maintain maximum tone for only a short period, so the feces must be expelled quickly. Otherwise, transient (temporary) fecal incontinence may occur.

The most common bowel movement pattern is once a day, which is true for a third of women. In adults, the normal frequency of defecation ranges from up to three times a day to at least three times a week.

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# 3 WHAT ARE PELVIC FLOOR DISORDERS?

Nina Razgoršek

The pelvic floor is a unit composed of muscles, ligaments, and connective tissues that is essential for functions such as retention and discharge of urine and feces, as well as sexual activity. Pelvic floor problems are categorized into:

**Due to the ageing of the population, pelvic floor disorders will become even more common in the future.**

- bladder control problems;
- bowel control problems;
- pelvic organ prolapse.

Pelvic floor disorders are a common problem that affects at least half of all women. Women report bladder control problems most frequently at 56%; symptomatic pelvic organ prolapse at 14% and bowel control problems at 10%.

There are many symptoms that indicate pelvic floor disorders. However, the most common have to do with bladder control problems and pelvic organ prolapse.

The risk factors leading to pelvic floor disorders are:

- number of vaginal births;
- instrumental delivery (e.g. vacuum extraction);
- pregnancy;
- age;
- being overweight;
- large fetus;
- lifting heavy loads;
- chronic cough;
- prolonged constipation with flatulence.

The most important risk factor is vaginal delivery, which can cause damage to the muscles and ligaments of the pelvic floor, while nerve damage can also impair function.

**Most women suffering from pelvic floor disorders do not seek medical help, even though the problems have a negative effect on their quality of life.**

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# 4 URINARY INCONTINENCE

Sara Ćehić, Tinkara Studen

## 4.1 What is urinary incontinence?

Uncontrolled leaking of urine or urinary incontinence is a type of pelvic floor disorder defined as any involuntary release of urine. It is a social or hygiene problem and has a negative impact on an individual's quality of life.

Risk factors for incontinence include age, multiple pregnancies and childbirths, pelvic floor injuries from vaginal deliveries, surgeries of the lesser pelvis, menopause, removal of the uterus, excess weight, reduced physical activity, urinary tract infections, chronic cough, prolonged heavy lifting, congenital connective tissue weakness, and chronic constipation.

## 4.2 Which types of urinary incontinence are there?

The basic mechanisms of urinary incontinence are roughly divided into **stress, urge, mixed, and overflow** urinary incontinence (Figure 5). Patients experience a variety of symptoms and signs and report a wide range of problems, from mildly bothersome to severely limiting.

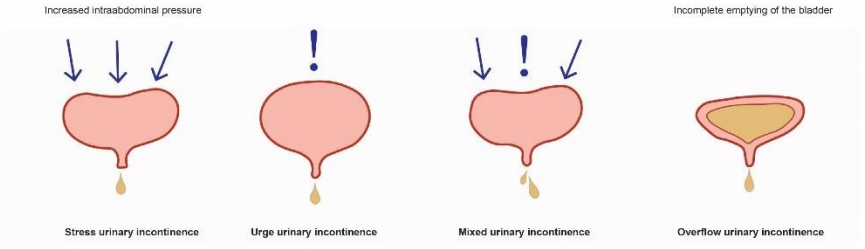


Figure 5: Illustration of different types of urinary incontinence

- **Stress urinary incontinence**

This condition involves involuntary leakage of urine during straining and exertion, or during sneezing and coughing. It is the most common type of urinary incontinence and accounts for almost half of all cases of urinary incontinence in women. It is most prevalent between the ages of 45 and 59.

Stress incontinence in women is most commonly caused by weakened pelvic floor muscles, damaged urethral sphincters, or reduced bladder neck support due to pregnancy, childbirth, menopause or excessive pressure on the pelvic organs.

- **Urge urinary incontinence**

This condition involves involuntary leakage of urine through the urethra, which occurs together with the feeling of a sudden strong urge to urinate (i.e. urgency). Most commonly, it occurs on the way to the toilet, when listening to running water, or when working with cold water. It is caused by uncontrolled bladder contractions.

Urge urinary incontinence is only part of the syndrome known as overactive bladder (OAB). In addition to the immediate urge for urination, it is usually accompanied by frequent urination and urination during the night without the presence of a urinary tract infection or other obvious disease.

- **Mixed urinary incontinence**

This condition is defined as involuntary leakage of urine connected to both urgency and physical exertion, sneezing or coughing. It is the second most common type of urinary incontinence; its prevalence increases with age.

- **Overflow incontinence**

Overflow incontinence is a type of urinary incontinence that occurs when the bladder cannot be completely emptied, causing urine to gradually accumulate and then leak uncontrollably. This condition is often associated with overfilling of the bladder. In women, it is a rarer type of incontinence and accounts for 5-10% of all urinary incontinence, while the prevalence increases with age. Overflow incontinence in women is most often caused by weakened bladder muscles, neurological conditions, or mechanical barriers such as pelvic organ prolapse or scarring after surgery, which make it difficult to empty the bladder completely.

## 4.3 How prevalent is urinary incontinence?

Pelvic floor disorders are a widespread health problem affecting about half of all women. Although there are considerable discrepancies between individual studies in this field, the estimated prevalence worldwide ranges between 24% and 45%.

Prevalence of urinary incontinence by age group:

- **young women** (18-44 years): 20-30%;
- **middle-aged women** (45-59 years): 31%;
- **older women** (over 60 years): 30-50%.

## 4.4 How do we diagnose urinary incontinence?

Diagnosing urinary incontinence involves a comprehensive approach that includes clinical assessment, laboratory testing, imaging methods and functional tests. The first step is a detailed medical history, which provides information on the type and frequency of problems, triggers, impact on quality of life, and previous treatment history. Keeping a **voiding (or bladder) diary** also plays an important role as it provides additional information to assess the symptoms more accurately.

A voiding diary is a simple tool that the patient uses for several days in a row to record when and how much she urinates, how much fluid she consumes, and whether she experiences urinary leakage or urgency. This identifies urination patterns and the times when leakage is most frequent. The information collected in the diary makes it easier for doctors to identify the causes of incontinence and helps them in planning the most appropriate treatment.

The clinical examination includes a gynecological examination, an assessment of pelvic organ prolapse, and assessment of pelvic floor muscle strength. This may be accompanied by an ultrasound examination, which is used to determine the residual urine volume after urination and to exclude any anatomical abnormalities.

A **stress test** may follow to assess the degree of urine leakage. The stress test is a simple way for doctors to assess whether the patient is leaking urine when there is an increase in pressure in the abdomen, as is the case when coughing or sneezing. During the test, the patient is usually standing or sitting, and the doctor observes for signs of urine leakage as the patient makes a certain movement, such as coughing or picking up an object. The test helps the doctor understand whether the patient has stress incontinence, where urine leakage is caused by an increase in abdominal pressure, such as during physical activity.

If necessary, a urodynamic test can be performed, which measures the pressure in the bladder and urethra. This is a key diagnostic method for diagnosing urge and mixed incontinence and complicated cases. A less frequently used diagnostic procedure is **cystoscopy**, which uses a special camera to examine the inside of the bladder and the urethra to exclude the presence of tumors, urethral strictures, or urinary stones. Meanwhile, pelvic floor MRI is used to assess the integrity and function of the pelvic organs, especially in more complex cases of pelvic organ prolapse.

## 4.5 What are the treatment options?

Treatment of urinary incontinence is determined based on the type and severity of the problem, using a variety of approaches: behavioral, pharmacological, physiotherapeutic, and surgical.

### 4.5.1 Exercises for strengthening the pelvic floor muscles

Physiotherapy can significantly contribute to managing urinary incontinence. It focuses on targeted strengthening of pelvic floor muscles, which are crucial for supporting the bladder and controlling urination. One of the fundamental pelvic floor exercises are the **Kegel exercises**, which help patients correctly identify and strengthen their pelvic floor muscles to improve bladder control. Developed by gynecologist Dr. Arnold Kegel, these exercises are primarily aimed at preventing and treating urinary incontinence and improving sexual function.

Performing exercises to strengthen the pelvic floor muscles:

- **Identifying the correct muscles*:*** First, pelvic floor muscles need to be located, which can be done by contracting the pelvic floor muscles as if trying to hold in urine or gas. It is important not to contract the abdominal, thigh or buttock muscles when doing this.
- **Correct technique:** We perform the exercise by squeezing the pelvic floor muscles for 3-5 seconds, then relax and repeat. This should be repeated 10-15 times three times a day.
- **Advanced techniques:** Once the basic exercises become easy, the duration of muscle contraction can be increased to 10 seconds. To enhance the effect, these exercises can be done in different positions – standing, sitting, or lying down.

**Benefits of pelvic floor muscle strengthening exercises:**

- improved control over urination and reduced urine leakage in stress incontinence;
- strengthened pelvic floor muscles after pregnancy and childbirth;
- reduced risk of suffering from pelvic organ prolapse;
- improved sexual health and increased sexual satisfaction.

**Long-term effectiveness:** consistency and proper execution are key to achieving the best results. The first improvements are usually visible after 4-6 weeks of regular exercise. Long-term exercise can significantly improve pelvic floor function and reduce the need for invasive treatments.

### 4.5.2 Bladder training for overactive bladder

Bladder training is one of the most effective methods for managing urge urinary incontinence. The goals of such training are to improve the ability to control urgent urination and to increase bladder capacity.

**Bladder training principles:**

- **Recognizing and controlling urge:** Patients learn to recognize and control the urge to urinate by gradually increasing the time between toilet visits.
- **Scheduled voiding:** It is recommended that patients follow a structured voiding schedule and avoid spontaneous responses to urinary urgency.
- **Use of relaxation techniques:** Deep breathing, refocusing and muscle relaxation techniques can help to reduce the urge to urinate.
- **Gradual increase of intervals:** To achieve optimal intervals between voiding, patients can start with small time intervals (e.g. 5-10 minutes) and gradually increase them over time.

**Benefits of bladder training:**

- reduced frequency of urination and uncontrolled episodes of incontinence;
- improved ability to control urinary urgency;
- increased bladder capacity;
- long-term effectiveness without the need for medication.

Bladder training is often combined with other behavioral changes such as pelvic floor muscle exercises and can significantly improve the quality of life for patients suffering from urge urinary incontinence.

### 4.5.3 Other physiotherapy interventions

Next to the classic exercises, physiotherapists may recommend electrical stimulation. This treatment uses low-frequency electrical stimuli to further stimulate and strengthen muscles, which is especially helpful for patients who already have problems with basic muscle contraction.

Patients with an overactive bladder, who often feel the urge to urinate or experience multiple episodes of urine leakage, may also benefit from stimulation of the posterior tibial nerve. This is done using a small electrode or a thin needle in the ankle area, where nerve stimuli travel upwards and settle the overactive bladder.

Selected exercises and physiotherapy techniques can reduce the frequency or intensity of urinary leakage episodes, while improving quality of life and giving the patient a greater sense of security and confidence in daily activities.

### 4.5.4 Behavioral Therapy

**Behavioral therapy** is the first choice of treatment because it is non-invasive and has no side effects. It includes bladder training, which helps prolong the intervals between urinations, exercises to strengthen pelvic floor muscles, and biofeedback techniques that help improve control over pelvic muscles.

Lifestyle changes such as limiting caffeine and alcohol intake (Figure 6), maintaining adequate fluid intake, and weight reduction also play an important role.


Figure 6: Beverages that irritate the bladder and should be avoided, and beverages that do not irritate the bladder

### 4.5.5 Drug treatment

**Drug treatment (pharmacological treatment)** includes medicines that calm the bladder muscle (detrusor) and are used for urge urinary incontinence. The drug is usually prescribed by a gynecologist or urologist but it is important to be aware that the effect of medication can be seen after a few weeks of usage. Local hormonal

**Specific drinks can make bladder problems worse.**

**These include caffeinated drinks (coffee, teas), fizzy drinks, drinks high in simple sugars, and acidic drinks (lemonade, tomato juice).**

therapy (estrogens) can be used at the same time, which improve the quality of mucosa in menopausal women.

### 4.5.6 Surgical treatment

**Surgical treatment is used for cases of stress urine incontinence** when other more conservative methods have failed. In most cases, surgeons will insert a synthetic band which offers support to the urethra and reduces urine leakage during physical activity.

The procedure of inserting a synthetic band is a short surgical procedure during which a surgeon inserts a band under the urethra through a small incision in the vagina (Figure 7). The band supports the urethra and prevents urine leakage during coughing or physical strain. The surgery is normally done under general or local anesthesia and takes less than one hour. Afterwards, the patient can usually go home after a day or two but lifting heavy burdens and excessive physical activity are not advised to allow the tissue to properly heal.

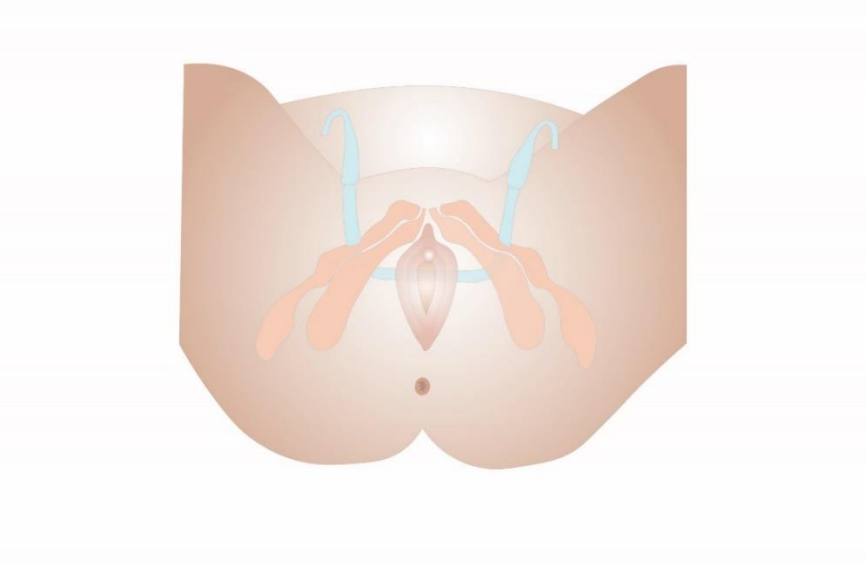

Figure 7: Illustration of a band placed under the urethra. The procedure with a synthetic band is used to treat stress urine incontinence.

In more severe cases of urgent urinary incontinence, botulin toxin, which calms the over-activity of the bladder muscle, can be injected into the bladder. During the

procedure, a doctor injects botulin toxin through the urethra into multiple spots inside the bladder wall. The surgery is normally done under local anesthesia and lasts only a couple of minutes. In most cases, the patient can go home shortly after the surgery. The effect of botulin toxin lasts a few months which is why the procedure needs to be repeated if necessary. The main aim is to reduce the frequency and strong urgency of urination, thus improving bladder control.

## Conclusion

Successful management of urinary incontinence requires a holistic approach that includes a specific diagnosis and treatment adjusted to the patient. A combination of behavioral, pharmacological, physiotherapeutical, and surgical methods provides the best outcomes but it is crucial that the patient and the medical experts work together. Future improvements in diagnostics and treatment will contribute to even better management of this common health issue.

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# 5 PELVIC ORGAN PROLAPSE

Nina Razgoršek, Katerina Trpkovska

## 5.1 What is pelvic organ prolapse?

Organs in a woman's pelvis (uterus, bladder, and colon) are being held in their anatomical position by muscles and ligaments called the pelvic floor (Figure 8). If the pelvic floor is weakened pelvic organs can move downward from their correct position, which can lead to the organs being prolapsed through the vagina or anus.

**The first historical writings about pelvic organ prolapse trace back to 1500 B.C.E.**

**Later writings from ancient Greece give us a unique insight into the first attempts to treat pelvic organ prolapse – from turning a woman upside down to rinsing a prolapsed uterus with wine.**

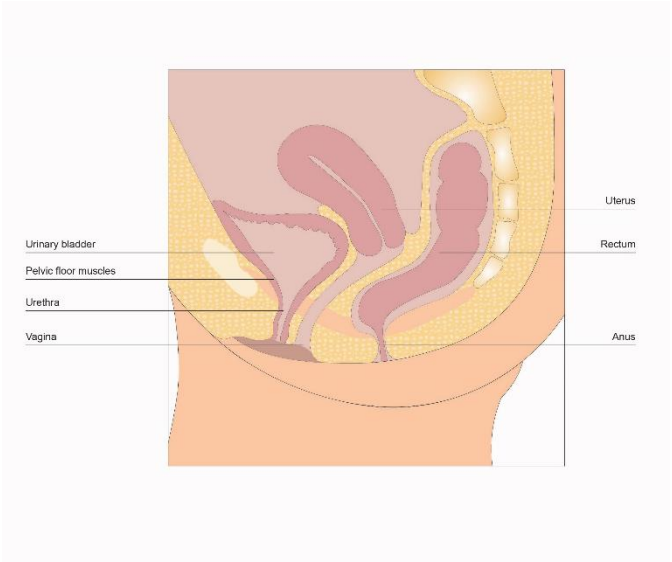


Figure 8: Illustration of pelvic organs.

## 5.2 Which types of pelvic organ prolapse are the most common?

Types of pelvic organ prolapse can be differentiated based on which pelvic organ prolapses into the vagina. Multiple types of prolapse can be present simultaneously. Based on how low the organs drop, there are also different grades of prolapse.

The most common types of prolapse are as follows (Figure 9):

**Women who have close female relatives with pelvic organ prolapse have a 2.7 times higher risk of developing pelvic organ prolapse compared to women with no family history of pelvic organ prolapse.**

- **Anterior vaginal wall prolapse:** when the bladder and/or urethra bulge against the anterior wall of the vagina – also called cystocele or cystourethrocele.
- **Posterior vaginal wall prolapse:** when the rectum (last part of the large intestine) bulges against the posterior wall of the vagina – also called rectocele. It is also possible for part of the small intestine to bulge, which is called enterocele.
- **Uterine prolapse:** prolapse of the uterus into the vagina or through the entrance of the vagina.
- **Vaginal vault prolapse after hysterectomy:** develops in one in ten women after surgical removal of the uterus (hysterectomy).

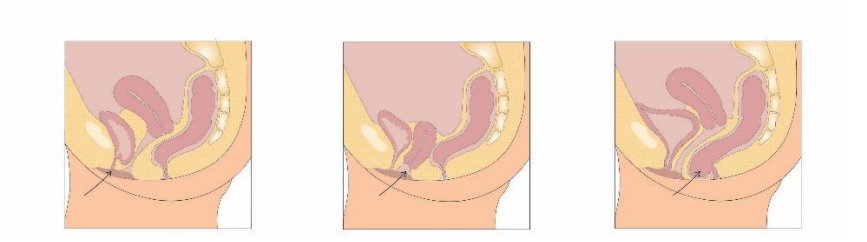

Figure 9: Illustration of different types of pelvic organ prolapse: cystocele (first image), uterine prolapse (second image), and rectocele (third image).

## 5.3 How prevalent is pelvic organ prolapse?

Although pelvic organ prolapse can affect women of all ages, it is most common in older women. The prevalence is higher in women between the ages of 60 and 69, when 5-10% of women report problems. Even though prolapse is present in 40-50% of women during their clinical examination, only 3% of them report problems caused by prolapse.

## 5.4 Why does pelvic organ prolapse occur?

Pelvic organ prolapse is a consequence of weakened pelvic floor, most commonly caused by multiple risk factors such as:

- pregnancy;
- vaginal birth;

- instrumentally induced delivery;
- aging – especially the years following menopause;
- being overweight;
- chronic cough;
- longterm constipation with flatulence;
- frequent heavy lifting;
- genetics – inherited connective tissue weakness;
- previous gynecological or urological surgical procedures.

## 5.5 How do the symptoms of pelvic organ prolapse manifest?

The symptoms vary based on the type and grade of prolapse. They include:

- a bulge in the vagina, which can be palpated and observed;
- unpleasant or burning sensation in the genital area;
- a more frequent and urgent need to urinate and/or difficulty urinating and/or a feeling that the bladder is not emptying completely;
- urine leakage during coughing, sneezing, laughing, or lifting heavy objects;
- difficulty retaining and discharging feces - sometimes it is necessary to put pressure on the bulge by hand to allow the bowel to empty;
- discomfort, pain, or reduced sensitivity during intercourse;
- more frequent bladder infections (cystitis).

Some of the symptoms listed above may not be directly related to pelvic organ prolapse.

## 5.6. How do we diagnose pelvic organ prolapse?

**By the age of 80 years, 11-20% of women will have had at least one surgical procedure for pelvic organ prolapse and/or urine leakage, and this number is expected to increase in the future due to the aging of the population.**

Prolapse can be diagnosed based on interview and clinical examination. A gynecologist can precisely determine which organ has prolapsed with an examination. Prolapses can be categorized based on their grade, from 0 to 4. Grades 0 and 1 are physiological and do not cause issues. Patients usually experience disturbing symptoms when the prolapse reaches or surpasses the entrance to the vagina, which happens at grade 2 or above. If there are problems with retention and urine leakage, further investigations are carried out to identify the leakage.

## 5.7 Treatment of pelvic organ prolapse

**Is treatment necessary?**

No. Pelvic organ prolapse is not a life-threatening condition, therefore patients can decide to wait for the symptoms to improve. However, it is important to know that the symptoms can worsen, which could potentially negatively affect the quality of life.

**What are the treatment options?**

Treatment options depend on the type and grade of pelvic organ prolapse, age, overall health, sexual activity, previous abdominal or pelvic surgeries, and the desire to have children. The purpose of all listed options is to ease the symptoms and reduce the progression of pelvic organ prolapse.

**The recommended lifestyle changes** are as follows:

- weight loss in the case of excess body weight;
- giving up smoking;
- treatment of persistent cough;
- avoiding constipation;
- avoiding heavy lifting;
- avoiding physical activity that affects the pelvic floor (e.g. running or jumping on a trampoline).

Alongside lifestyle changes, the aforementioned **pelvic floor muscle strengthening exercises**, or Kegel exercises, are also recommended. These help to contract the anal sphincter and reduce the problems with urine discharge. They can be done in different positions (lying down, standing, squatting). The muscles need to be contracted and held as if to disrupt the flow of urine and at the same time to stop the wind from escaping from the bowel without holding the breath, clenching the buttock, or clenching the abdominal muscles. The contraction of the muscles should be as strong as possible and should last at least 5 seconds, then the muscles need to be relaxed. The exercise should then be repeated multiple times. Kegel exercises cannot cure pelvic organ prolapse but they can significantly improve the symptoms and improve the outcome in the case of a surgical treatment. They are also recommended when no symptoms are present as they can prevent prolapse altogether. It has been proven that the appropriate number of performed exercises is between 45 and 60 per day, divided into 2 to 3 segments, with the physiotherapeutical training lasting for at least 16 weeks. If the exercises prove effective, it is advisable to continue doing them.

Another way to alleviate symptoms and reduce the progression of prolapse is to use a **pessary** (Figure 10). A pessary is a silicon device that fits the vagina and offers support for pelvic organs. Pessaries are appropriate for the majority of women; however, it is mainly chosen by women who want to conceive and those who cannot undergo surgery. Pessaries come in different shapes and sizes - the most commonly used are the ring-shaped ones but a consultation with a gynecologist is needed to recommend the most appropriate shape for each individual woman. As there are so many different types, it is possible that the first pessary inserted may not fit, which should be communicated with the gynecologist. The gynecologist will also provide instructions on how to remove and clean the pessary. This should be done every three to six months; in Slovenia this is usually done by the primary care gynecologist. With certain types of pessaries, patients can have sexual intercourse, although some may choose to remove it before intercourse and reinsert it afterward. If there are any problems or questions, you should contact your gynecologist. If pelvic floor muscle strengthening exercises are effective, it is recommended to perform them at the same time as using the pessary.

**Data show that two thirds of women choose a pessary as their initial treatment.**

Figure 10: A selection of different shapes of pessaries. The ring-shaped pessary is most commonly used (top right in the picture).

For postmenopausal women, **estrogen treatment** is usually prescribed by a gynecologist in the form of a pill, cream, or ring inserted into the vagina. Estrogens improve tissue elasticity and prevent wounds inflicted due to the pressure of the

organ on the vaginal wall and thus alleviate the uncomfortable feeling that is caused by the pelvic organ prolapse. Hormone therapy is also prescribed to women who often suffer from vaginal wounds and bleeding when using pessaries.

**The first records of the use of pessaries are found in Egyptian papyri.**

**Over the centuries, different materials have been used for pessaries - pomegranate halves, mushrooms soaked in vinegar, utensils made of cotton, brass or cork, and later rubber.**

**Surgical treatment** is the last resort if the previous solutions do not work. Every surgery carries a certain risk, and the latter is higher for smokers and patients who are overweight or have other health problems. If the patient is planning a family, her gynaecologist will advise her to postpone surgery, as pregnancy and childbirth can increase the risk of pelvic organ prolapse recurrence.

**Which surgical options are available?**

There are several surgical treatments for pelvic organ prolapse. The most suitable option is advised to the patient by her gynaecologist. Women with a uterine prolapse who want to preserve their uterus may opt for colporrhaphy (surgical lifting of the anterior or posterior vaginal wall), the Manchester procedure (shortening of the cervix), or sacrohysteropexy (the uterus is stitched to the ligament anterior to the sacrum using a mesh). Women who do not wish to preserve their uterus can, in addition to the above procedures, opt for a vaginal hysterectomy (removal of the uterus) or removal of the upper part of the uterus, leaving the cervix. The cervix is attached to the ligament anterior to the sacrum by means of a mesh, in a procedure called sacrocervicopexy. Women who have vaginal vault prolapse opt for vaginal sacrospinous fixation (the vaginal vault is sewn to the sacrospinal ligament at the sacrum) or laparoscopic sacrocolpopexy with mesh (the vaginal vault is sewn to the sacrum with mesh). Women who no longer wish to have vaginal intercourse may also be suitable for colpoclesis (partial or total vaginal suturing). The latter is rarely performed in Slovenia.

**What are the options for anesthesia?**

Depending on the patient's condition, anaesthesia options are presented to the patient by a gynaecologist and an anaesthetist. Depending on the type of surgery, there is general anaesthesia (where you fall asleep), spinal anaesthesia (where you don't feel any pain from the waist down), and local anaesthesia (numbing only a specific area).

**What are the benefits and risks of the operation?**

**BENEFITS:** feeling more comfortable and experiencing less difficulties with urination and defecation.

**COMMON RISKS AFTER THE SURGERY:** bleeding, infection, pain during sexual intercourse, and recurrence of pelvic organ prolapse - it is possible that urinary drainage may not improve or that urine leakage may develop.

**LESS PROBABLE RISKS:** bladder or bowel damage, clot formation in the legs or lungs, and pelvic pus formation.

**What is the recovery process after surgery?**

After surgery, patients usually stay in the hospital for a few days. The length of their stay depends on the type of surgery and how quickly they recover. Heavy lifting and sexual intercourse should be avoided for 6 to 8 weeks after surgery.

**How successful is surgery?**

No surgery can completely cure pelvic organ prolapse, but most can alleviate symptoms. Data suggest that 25-30% of women suffer a recurrence, with higher risk observed in those who are overweight, have prolonged constipation and persistent prolonged coughing, or engage in more strenuous physical activity.

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# 6 GLOSSARY

Tinkara Studen

**B**

**Behavioral therapy**

A non-pharmacological approach to treating urinary tract disorders (e.g. urinary incontinence, overactive bladder). Includes behavioral counseling, bladder training and other techniques.

**Birth injury**

Injuries of muscles, connective tissues, or nerves in the pelvic floor area that can occur during childbirth and present one of the main factors in developing pelvic floor disorders later in life.

**Bladder diary**

Monitoring the intake of fluids, frequency, and the amount of urine leakage over a period of several days. It helps in the diagnosis and evaluation of treatment of incontinence or overactive bladder.

**Bladder training**

A gradual increase in the amount of time between urination so that bladder capacity and/or control improves.

**C**

**Cystocele**
A prolapse of the anterior vaginal wall in which the bladder slips into the vagina due to weakened support.

**D**

**Detrusor**
Smooth bladder muscles responsible for contracting and emptying the bladder. An overactive detrusor activity is typical for an overactive bladder.

**Dyspareunia**
A painful sexual intercourse that can be the result of injuries or pelvic floor disorders, infections, scars, etc.

**Dysuria**
Pain, burning sensation or discomfort while urinating, often related to urinary tract infections.

**F**

**Fecal incontinence**

Uncontrolled passing of feces. Often caused by damage to the pelvic floor muscles or damage to the nerve pathways that control the anal sphincter muscle.

**Frequency**
An increased urge to urinate that exceeds normal bathroom visits (more than eight times a day).

**G**

**Genital opening**

The opening in the pelvic floor between the muscles through which the urethra and the vagina pass, ensuring their mobility.

**M**

**Mixed urinary incontinence**

Simultaneous presence of stress and urge urine incontinence.

**N**

**Nocturia**
The urge to get up and urinate frequently at night. May be associated with overactive bladder, reduced bladder capacity, etc.

**O**

**Overactive bladder**

A syndrome characterized by frequent urination, urgency (a sudden strong urge to urinate) with or without urge incontinence and a frequent urge to urinate at night (nocturia).

**P**

**Pelvic floor**

A group of muscles, fascias, and ligaments that close off the pelvic exit and support the bladder, urethra, uterus, vagina, and anus.

**Pelvic organ prolapse**

Prolapse of one or more pelvic organs (e.g., bladder, uterus, rectum) into or through the vagina due to weakening or damage to the supporting structures of the pelvic floor.

**Pessary**
A medical device (usually a silicone or rubbery ring or cup) that is inserted into the vagina and supports the uterus, vagina, bladder, or rectum to prevent or alleviate prolapse.

**R**

**Rectocele**
Rectum prolapse through the posterior wall of the vagina due to weakened or stretched supporting tissues.

**Residual urine**

The amount of urine that remains in the bladder after urinating. A larger amount may indicate bladder emptying disorders.

**S**

**Stress urinary incontinence**

Urine leakage during increased abdominal pressure (when sneezing, coughing, laughing, lifting heavy burdens) due to weakened supporting structures around the urethra.

**U**

**Urinary hesitancy**

Delay in starting to urinate despite feeling urgency, which may indicate an obstruction in urine output or poor bladder function.

**Urinary incontinence**

Any uncontrolled urine leakage that poses a social or hygiene problem. We distinguish between stress, urge, mixed and other forms of incontinence.

**Urgency**
A sudden, strong urge to urinate that is difficult to delay, often associated with urine leakage (urge incontinence).

**Urge urinary incontinence**

Uncontrolled urine leakage directly associated with a sudden, strong urge to urinate (with urgency).

**Urodynamic tests**

A group of diagnostic tests that assess the function of the lower urinary tract (measuring pressure, volume, urine flow, etc.) and help in identifying the cause of incontinence or other urinary disorders.

**Uterine prolapse**

Uterine slippage down the vagina or through the vaginal opening.

**V**

**Vaginal vault prolapse**

A type of prolapse (can occur after hysterectomy) where the vaginal vault can slip to or even through the vaginal opening.

**W**

**Weak urine stream**

Weak or weakened urine stream that can indicate the obstruction in the lower urinary system or weakened bladder muscles.