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The role of visceral therapy, Kegel's muscle, core stability and diet in pelvic support disorders and urinary incontinence — including sexological aspects and the role of physiotherapy and osteopathy

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ABSTRACT

Proper diet and physical activity are a form of prevention of female genital prolapse disorders. The causal substrate of pelvic floor dysfunction is multifactorial. Fifty percent of women over the age of 50 have pelvic organ prolapse, often accompanied by urinary incontinence. It is a complicated social and medical (urogynecological and sexological) problem. The authors conducted a literature review on the role of visceral therapy, Kegel and core stability exercises and diet in pelvic support disorders and urinary incontinence. The eligible articles provided insights into sexological factors, as well as the role of osteopathy and physiotherapy. These results provide new insights into the relevance of clinical practice. In addition to standard treatment methods used in gynaecology, sexology, physiotherapy and osteopathy (*e.g.*, visceral therapy), Kegel muscle and core stability exercises are becoming increasingly important. The aim of visceral therapy is to restore the mobility of the organs while reducing increased tension and improving blood and lymph circulation. This has the effect of reducing pain sensations, thereby influencing the function of the uterus and ovaries.

Key words: physiotherapy; osteopathy; visceral therapy; exercise; menopause; pelvic organ prolapse; urinary incontinence

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INTRODUCTION

An aging population has given rise to an interest in the problems of menopause and the development of so-called anti-aging and geriatric medicine. People over 65 years of age in Poland account for more than 11% of the population. The life expectancy of the population has now lengthened to a point where a 65-year-old man can easily reach the age of 79 and a woman 83 [1]. Senior citizens also require sexological care. One of the most important problems of anti-ageing medicine is disorders of the female genital organs,

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which manifest themselves through sexual dysfunction and urogynecological disorders [2, 3]. It is worth noting that interest in sex and the sexual performance of women and men largely depends on early patterns of sexual behavior, which decline in intensity with age [4, 5].

During menopause, and especially senium, a woman is predisposed to statics disorders of the genital organs, often associated with hyperestrogenism.

The general causes that lead to vaginal or uterine prolapse are uterine insufficiency; weakening of the pelvic floor; abdominal pressure disorders with prolapse due to weakening of the pelvic floor, drooping, hanging abdomen, divergence of straight muscles and possibly a small asthenic body structure [6].

Until recently, three factors were considered dominant in the aetiology of genital lowering and prolapse: perinatal damage of tissues, laxity of ligaments and the parametrium and damage to the pelvic floor muscles. Currently, the following factors are seen to have influence on the disease: obesity, the occurrence of chronic constipation and diseases associated with persistent cough, heavy physical exertion and stress [6, 7].

It is important to eliminate chronic constipation, which can exacerbate the prolapse of internal organs. A diet that is enriched with high-fibre products and the intake of raw fruit and vegetables is recommended.

A properly selected nutrition plan reduces the dysfunction of the pelvic floor [8]. It is highly recommended for family doctors, gynecologists and geriatricians to prescribe diet therapy (with the guidance of a dietitian) to women with a tendency to be constipated and obese, especially in women at risk of prolapse of the genital organs.

The aim of this study is to highlight the role of manual visceral therapy, Kegel muscle exercises, core muscle strengthening and diet in preventing pelvic support disorders and urinary incontinence, as well as their effects on sexological aspects. However, in the absence of scientific studies confirming which method is most effective in managing pelvic support disorders and urinary incontinence, randomised scientific studies by scientific centres in Poland and abroad are most warranted.

Considering the practical aspects of treating patients with pelvic support disorders and urinary incontinence, a multidisciplinary approach seems to make the most sense in treatments to improve women's health and quality of life.

PROLAPSE DISORDERS OF THE FEMALE REPRODUCTIVE ORGANS

Prolapse disorders of the female reproductive organs may concern various anatomical structures. For the exact determination of the type and amount of damage, it is possible to use the International Continence Society (ICS) test POP-Q. Pelvic muscles, ligaments and fascia help prevent pelvic organ prolapse in the anterior, middle and posterior sections [9]. The most important fascia of the pelvis is the endo-pelvis, which supports the uterus and vagina. The intra-pelvic fascia is made up of the uterosacral ligament, the parametrium and the paracolpium. The pubic-cervical fascia is located between the anterior wall of the vagina and the pubis, supporting the bladder. In contrast, the rectovaginal fascia supports the rectum. It is located between the posterior vaginal wall and the rectum [9]. The main muscles that support the contents of the pelvis are the iliococcygeus, pubococcygeus and puborectalis muscles. In healthy patients, the pelvic muscles, ligaments and fascia prevent pelvic organ prolapse and keep the rectum, vagina and urethra elevated at the level of the pubic symphysis [9, 10].

Visceral therapy

Visceral therapy aims to improve or recover the mobility of the internal organs, influencing musculo-fascial release, regulating the pressure between the diaphragms of the body, and thus alleviating the symptoms of dysfunction of the female reproductive organs [11–14]. When the sacrotuberous ligament (which is part of the Delbet's lamina, which stabilizes the female reproductive organs) is irritated or pulled, this results in restricted mobility in the sacrum and hip. This situation also affects the inferior visceral nerve (T10-L2), through which the sensory innervation of the uterus is transmitted [15, 16]. The pelvic-urethral diaphragm should be characterized by its ability to move because if intra-abdominal pressure increases, this will put pressure on the internal organs, which in turn will interfere with their mobility [15, 16].

Still believes that the cause of this dysfunction is impaired circulation of body fluids. Impaired drainage of the pelvic venous vessels causes pelvic congestion resulting in inflammation. Therefore, the aim of treatment is to improve pelvic circulation [15, 16]. Visceral therapy aims to restore movement and tissue articulation. Movement (micromotion) is considered a physiological phenomenon, a feature of a healthy organism. Pulsation and vibration are activities of living organisms. Membranes and the fluids within them transmit this movement to the surrounding structures, which is called tensegrity [17]. When treating the dysfunction of a structure, its anatomy must be kept in mind [6]. Osteopathic dysfunctions can cause abnormal pelvic pressure distribution, which can result in stasis and inflammation, as well as visceral and vasomotor disorders. Abnormal mobility, motility and organ localisation can lead to visceral pathology [15, 16]. The mobility of the internal organs is affected by their expansiveness in relation to each other.

These dysfunctions may result from an imbalance of tension between the female genitalia and the surround-

ing tissues and structures of the musculoskeletal and visceral systems. The structure and function of the body are interdependent. This area still requires research to clarify the human body's response. The location of the symptoms and their cause may not be in the same area of the body. The use of visceral therapy influences bowel function and has the effect of reducing constipation [18, 19]. Urinary incontinence may be a consequence of abnormal pressure between the respiratory diaphragm and the urogenital diaphragm. Correct tension within the body's diaphragm (in this case the pelvic urogenital region) allows for the interplay of inhalation and exhalation movements and allows the sliding movement of the organs between themselves and the fascia [15, 16].

It was shown that the use of visceral therapy and pelvic floor muscle training did not have a positive effect on improving urinary incontinence in women [20].

The intensity of tension on the thoracolumbar fascia can influence intra-abdominal pressure values and lumbar spinal function [15, 16].

Dysfunction of the reproductive system requires therapy to restore postural balance and normal values of pressure between the body's diaphragms. It is also important to balance the tension of the muscles affecting the pelvis, the thoracolumbar fascia and the function of the hip joint and the pubic symphysis [20, 21]. If the respiratory diaphragm is moved upwards, the expiratory reserve volume and the lung backflow volume reduce [22, 23]. Performing visceral manipulation in combination with a physiotherapy programme improves mobility in the lumbar spine [24].

Visceral techniques are also used in non-specific cervical spine pain. Performing these techniques on the spleen and liver significantly reduced cervical pain and improved EMG recording [25].

Performing visceral therapy significantly improved the functional status of patients with non-specific back pain [26, 27]. This therapy can also support the treatment of infertility [28]. Often, the effects of visceral manual therapy are attributed to somato-autonomic reflexes [29].

When considering the impact of manual visceral therapy through the fascia that lines the viscera, one could look for an impact through deep manual pressure, especially when it is slow or steady.

Through manual pressure, the interstitial and Ruffini mechanoreceptors are stimulated, resulting in increased vagus activity, which changes not only local fluid dynamics and tissue metabolism, but also results in global muscle relaxation, as well as a calmer mind and less emotional agitation [30].

In physiotherapy practice, manual pelvic techniques are a very important therapeutic element, the aims of which are to improve the innervation and blood supply to the organs of the lower pelvis [31].

KEGEL EXERCISES

In 1948, Kegel exercises designed to strengthen the pelvic floor muscles were first described by Arnold Kegel. A perineometer, or vaginal pressure gauge, was constructed that recorded the strength of contraction of the pelvic floor muscles, and this was used to guide correct exercise. Dr. Kegel's research showed that these exercises are effective in training the bladder and rectum and are highly recommended in stress urinary incontinence [32, 33], while also improving the quality of patients' sex lives [34–36]. The urethral sphincter and support systems in women have been shown to prevent urinary incontinence and prolapse of the genital organs [37, 38].

A pelvic floor disorder can be treated with surgery, pharmacology and with Kegel exercises, which are the most popular therapy. However, research is required to determine which treatment is most effective. Kegel exercises are defined by a certain set of instructions, with the number of contractions and duration regulated individually. There is currently no established Kegel exercise protocol, but the following basic rules apply: 1. identifying the appropriate muscles to stop or slow urination; 2. muscle contraction; 3. number of repetitions. The most common mistake is the tightening of the adductor muscles of the hip, abdomen and buttocks instead of the pelvic floor muscles [10]. It is very important to make patients aware of which muscles they should tighten during training.

An important element of Kegel exercises is the alternation of fast and slow contractions [10, 33]. Performing rapid contractions with the pelvic floor muscles teaches them to adapt to increased abdominal pressure when coughing or laughing, for example. Combining biofeedback and electrotherapy treatments with Kegel muscle exercises improves the effects of the treatment. Using a perineometer, Kegelmaster and vaginal cones, resistance exercises for these muscles are achieved [10, 33].

Kegel exercises require a systematic approach for them to be effective. Treatment with these exercises has been shown to be effective if it is consistently practiced for three months [39]. Cavkytar et al. [40] believe that eight weeks of exercise is the minimum time to strengthen pelvic muscles. Zanetti et al. [41] proved that approximately 30% of women cannot properly tighten their pelvic floor muscles. With age, muscles lose elasticity, resulting in a decrease in muscle strength. Performing Kegel exercises can delay the decline in muscle strength [42]. It has been observed that the effects of pelvic floor muscle training (PFMT) are short-lived [43]. Given the lack of research on the topic, it is difficult to answer unequivocally how long patients should wait to return to the exercise. Performing exercises with the involvement of the muscles of the pelvic floor is very important, but a holistic view of the woman's body is key,

and core stability training (pelvic floor muscles are part of core stability) should be introduced in conjunction with this approach [44].

CORE STABILITY

Core stability has been a topic of research for over 30 years. Considering the human body in terms of its structure, the term 'core' would refer to its central point. There is a therapeutic approach to the body when it comes to core support through the stabilization of the torso muscles. Inadequate stabilization causes a weakening of motor control, which in turn affects the disturbance of movement patterns and ptosis of the internal organs [45]. Core stability is defined as a double bottomed cylinder which plays an important role in stabilizing the torso and includes muscles that are local and global stabilizers. Local stabilisers are the deepest and are characterized by low strength, lack of or minimal changes in length (therefore they do not have a defined range of motion) and a protective function for a given part of the body due to their continuous muscle tension. They also contract first (faster than global stabilizers), meaning that they are not responsible for the transfer of motor control to global stabilizers. Their contraction does not depend on the direction of movement to which the human body is subjected, and they do not have the corresponding antagonistic muscles [8].

According to Panjabi [46], the definition of torso muscle stabilization is the integration of two important elements: the passive part, which is the spine with its active components, including the back and torso muscles and their innervation. The combination of the above-mentioned components allows a person to maintain a safe intervertebral range of motion during everyday activities.

Kibler looks at core stability from a different perspective: it is the ability to control the position and movement of the pelvis through the torso, which ensures optimal movement efficiency and the transfer and control of force and movement to the extremities of the body during integrated sports activities.

Core strength, in turn, refers to muscle strength, but in its functional aspect [46]. Akuthota and Nadler [45] define core strength as muscular control located in the lumbar spine that is needed to maintain its functional stability. In contrast, Brukner and Khan believe that torso stabilization refers to the control of the muscles in the lumbar, pelvic and hip regions that provides functional stabilization.

Functional stabilization, according to the above-mentioned authors, means the work of the muscular corset that provides stability to the body and the spine during the movement and immobility of the limbs. The torso is the basis of the kinematic chain that governs the movement of the limbs: all movements are generated from the core and transferred to the limbs [47]. Brukner and Khan argue that force is contained in stabilization and is a component of so-called dynamic stabilization. Dynamic stabilization, on the other hand, is the ability to combine the features of strength and endurance on all planes of movement and while performing activities despite changes in the center of gravity [47]. Hibbs defines core stability as the ability of the torso to control the position and movement of the pelvis, ensuring effective movement, control of force and movement, and the transfer of force and movement to the extremities of the body during integrated sports activities [46]. Brukner and Khan compare the core to a box with the abdominal muscles in front, the paraspinal and gluteal muscles in the back, while the diaphragm is the "roof" of the box and its "bottom" the pelvic floor muscles. On the sides, there is the musculature of the hip abductors and rotators [47]. In the three-dimensional representation of the core as a construction, there is a "double-walled cylinder" [44]. This two-layered team of muscles distinguishes the three muscle groups responsible for local and global stabilization, as well as for global mobility.

The first group compared by Comerford to the inner core concerns the local deep muscles cooperating with each other and providing stabilization of the lumbar spine by wrapping around this section like a corset and stabilizing the sacroiliac joint. This layer consists of the diaphragm, transverse abdominal muscles, multifidus muscles, anterior hip muscle and pelvic floor muscles. The multifidus muscle (musculus multifidus) deserves more attention due to its multifunctionality. This muscle runs along the spine and attaches to the pelvis, spine, and head. Considering the torso as a cylinder, this muscle schematically occupies the rear part of the cylinder and is most strongly developed in the lumbar spine. Thanks to this muscle, there may be pelvic anterior tilt and elevation in the lumbosacral joint [48]. The transverse abdominal muscle (musculus transversus abdominis) is the muscle that lies beneath the internal oblique and external oblique muscles. This muscle narrows the chest, brings the ribs closer to the pelvis (when exhaling) and, like a corset, wraps itself around the abdominal cavity. Its contraction stabilizes the joints, ligaments, intervertebral discs and nerves.

On the other hand, the pelvic floor muscles, in particular the levator ani and coccyx muscles, together form the so-called pelvic diaphragm and "close" the cylinder from the bottom [48].

The second group of muscles, classified by Comerford as the outer core shell, are muscles responsible for global stabilization and global mobility. The outer layer of the cylinder, which "globally stabilises" it, is made up of the oblique muscles of the abdomen: external and internal, anterior hip muscle, trapezius muscle of the loin — its oblique fibers,

the more superficial part of the multifidus and the spinal muscles. These muscles control body posture [44].

The third group, according to Comerford, are the muscles responsible for global motor skills, and they are the rectus abdominis muscle, iliocostal muscles, the rectus muscle of the thigh and the posterior compartment of the thigh.

These muscles are very strong and resistant to load. They are phasic muscles whose activation depends on the direction of movement. Comerford also includes both shoulder and pelvic girdle in the core because, as he justifies, the scapula is a joint of the upper limbs and the torso, and the pelvis is the point that connects the lower limbs with the torso [44].

A very important anatomical structure related to core stability function and the work of the abdominal press is the thoracolumbar fascia. Hodges and Richardson describe the level of the lumbar spine as hereditary unstable. They believe that the stability of this section depends on the muscles working and present in this area [49].

The protective reaction from the tension of the muscles of the inner layer of the cylinder is transferred to the outside, which means that the muscles of the inner layer contract first and then the outer layer. This regularity was demonstrated by Richardson, Jull and Hodges. According to these authors, the transverse abdominal muscle, the pelvic floor muscles and the diaphragm contract 30 ms faster than the muscles of the upper limbs and 110ms faster than the muscles of the lower limbs. This advanced timing is very important because the quick activation of the muscular protection of the lumbar section protects the torso musculoskeletal apparatus against destabilization, overstrain and injury. Core stability exercises (especially for the transverse abdominal muscles and multifidus muscles) are considered an effective way of reducing pain in the lumbar spine [50, 51].

An association between the presence of stress urinary incontinence and non-specific low back pain has been shown. In addition, it has been shown that the presence of one condition may determine the occurrence of the other in a patient [7, 52–57]. A number of techniques, exercises and physiotherapy methods have been developed that are effective in improving low back pain [58, 59, 60–64]. The cause of non-specific low back pain is not yet well understood, but despite this, it can be considered related to reduced activity of the transversus abdominis muscle, diaphragm and pelvic floor muscles [65, 66]. The pelvic floor muscles have an important function in the stability of the trunk and lumbar spine and in maintaining bladder tone, and this leads to the conclusion that pelvic floor muscle dysfunction is associated with stress urinary incontinence and non-specific low back pain [7, 67]. It can also be concluded that pelvic floor muscle therapy can be effective in patients with chronic non-specific low back pain [7].

The muscles that are responsible for stabilising the spine also have a significant role in maintaining continence [68]. Applied manual techniques affecting mobility in the spine can be used to treat stress incontinence and nonspecific low back pain [69, 70].

As core stability is a double-bottomed cylinder with pressure differences above and below the diaphragm muscle, the pressure balance between the different diaphragms in the body needs to be restored and attention needs to be paid to the state of muscle tension in the pelvic region and the thoracolumbar fascia [71].

When starting core stability exercises, which also include pelvic floor muscle exercises, it is important to carry out a postural analysis, which is characterized by symmetry of body weight distribution.

The anterior type of posture generates a tendency for the internal organs to prolapse through an inspiratory diaphragm. It is also characterized by excessive trunk tension, resulting in an abnormal pressure gradient in which the pelvis tilts forward. The posterior type of posture is characterized by an expiratory thoracic position and posterior pelvic tilt and increased tension at the level of the sacroiliac joints [72].

The holistic theoretical model proposed by Hofman and Gabel [73] contains six subsystems (stability passive, stability neural, stability active, mobility passive, mobility neural mobility active) and can provide a universal system for the analysis of movement as well as an understanding of musculoskeletal disorders.

It should also be noted that dysfunction of the lumbar-pelvic complex resulting from instability can produce distant responses such as incontinence — pelvic or lumbar spine pain can affect the tone of the pelvic floor muscles [74].

The lack of articles confirming the effects of training the stabilizing muscles of the lumbar spine on reducing incontinence as well as its effects on sexological aspects certainly calls for research.

UROGYNECOLOGICAL PROBLEMS AND FEMALE GENITAL ORGAN PROLAPSE

Disorders of the statics of the female genital organs and related urogynecological problems are a specific disability resulting in the limitation of physical and sexual activity.

The menopausal sexual dysfunctions associated with this disability include hypo- or anorgasmia, dyspareunia and climacturia (leakage of urine during intercourse), hypolibidemia or alibidemia associated with the aforementioned sense of self-attractiveness [75–79]. These problems are accompanied by vaginal dryness and secondary inflammation of the genitourinary system.

Data from literature and clinical observations indicate that in the case of the analyzed urogynecological disorders,

over 50% of women exhibit hypo- or alibidemia, which leads them to feel less attractive, so they avoid sexual contact, which often causes problems in their relationships. This condition is caused by discomfort during intercourse caused by atrophic changes secondary to menopausal hypoestrogenism and irritation of the skin and genital mucosa by urine (climacturia). The tendency towards recurrent inflammation and infections of the genitourinary organs in such patients should be emphasised [80].

However, clinical observations indicate that while the patients themselves complain of urogynecological problems in a medical gynecological interview, they themselves usually do not report sexological problems related to static disorders — they usually have to be asked about it in an empathetic way — then they significantly report the impact of the disorders on the sexual sphere described above. The authors would like to emphasize that there is always a need to extend the gynecological medical interview with sexological aspects, which should be carried out with respect for intimacy and great empathy.

URINARY INCONTINENCE

A problem directly related to genital prolapse is Stress Urinary Incontinence (SUI). This is defined as the uncontrolled excretion of urine through the urethra in a quantity that causes health or social problems.

This disease can be caused by many factors. One of them is changes in the urinary system related to pregnancy and delivery that may last for an extended period and require treatment. They are more common in multiparous women, although they are increasingly found in primipara women.

In addition to having many children, the factors that contribute to the development of urinary incontinence include rapid course of labor and surgical deliveries, operations in the pelvic region, genetic conditions related to connective tissue, systemic diseases (e.g., diabetes or chronic constipation), coughing and respiratory diseases, improper diet, smoking, depression and some pharmacological agents (e.g., b- and a- blockers) [81].

Urinary incontinence is a condition in which involuntary urination, objectively determined, is a hygienic problem and impedes the patient's functioning in society.

The International Continence Society (ICS) distinguishes the following types of urinary incontinence:

1. Genuine stress incontinence — GSI. Uncontrolled leakage of urine occurs when intravesical pressure exceeds the maximum urethral pressure and there is no unstable detrusor contraction. The uncontrolled leakage of urine occurs when the abdominal press is activated, e.g., when coughing, lifting or laughing. Urinating small amounts of urine is not accompanied by a feeling of urgency [82, 83].
2. Urge incontinence is a consequence of uncontrolled detrusor contraction, without the involvement of intra-abdominal pressure. The two former distinguished causes of the disease — instability and excessive excitability of the detrusor of the bladder — have been replaced with the term overactive bladder (OAB). According to the newest terminology, an overactive bladder is called a symptom disease because, regardless of the etiology, the symptoms allow a clinical diagnosis to be made [82, 83]. The clinical picture is dominated by the urge to urinate, which may be accompanied by urgent urinary incontinence, excessive frequency of micturition and nocturia. Thus, urgency incontinence is one of the four basic clinical symptoms of an overactive bladder.
3. Overflow incontinence is the involuntary urination of urine due to a dilated bladder. Impaired detrusor contractility leads to the overfilling of the bladder and, consequently, to overflow incontinence. Involuntary loss of urine can also be the result of an obstruction in the outflow of urine [82, 83]. The above-mentioned types of urinary incontinence occur separately or simultaneously as a mixed form of urinary incontinence. Stress urinary incontinence is most often associated with urge incontinence.

Due to the frequency of its occurrence, urinary incontinence is considered a social problem and is one of the most pressing health problems of the 21st century.

This ailment is considered a disability that impairs life and normal functioning in society. The problem of "leaking" urine is affecting an increasing group, not only pregnant and obstetric women, but above all menopausal women.

However, as shown by clinical observations and data from the literature, urinary incontinence, contrary to the generally prevailing opinion, also applies to young women, which indicates the need to educate young women in the prevention, rapid detection and treatment of urinary incontinence.

Maintaining proper statics of the genital organs is significantly influenced by maintaining a healthy body weight, high physical activity and healthy daily habits (regular emptying of the bladder and rectum).

Prevention of disorders of the statics of the genital organs and secondary urinary incontinence is mainly related to preventative measures before postpartum damage: proper choice of the method of labour, avoiding the prolongation of the second stage of labour, timely and appropriate incision of the perineum and its subsequent restoration. It is also very important from the preventative point of view to avoid physical exertion in the postpartum period. Because of its negative impact on everyday life, the search for the most effective method of urinary incontinence treatment continues. The current path of treatment

includes conservative treatment, consisting of exercises to strengthen the pelvic floor muscles (the so-called Kegel gymnastics — tightening the perineal muscles several times a day) in combination with the local application of oestrogen therapy. Conservative methods are the first stage of treatment. Additional forms of treatment include physiotherapy, including kinesiotherapy — pelvic floor muscle training, electrostimulation, biofeedback, magnetic stimulation and behavioural therapy.

The type of therapy used will depend on the type of incontinence. Doing the exercises is effective, but they require self-discipline from the patient. It is important to remember that a holistic approach to the patient, including medical, physiotherapeutic and psychological care, produces the best treatment results [84].

In pharmacological treatment, anticholinergic products that block muscarinic receptors are used: oxybutynin, tolterodine, trospium, solifenacin and darifenacin or duloxetine, which is unavailable in Poland, as well as reducing urine secretion (desmopressin).

In some patients, bladder denervation therapy can be used by employing botulinum toxins. Positive effects have also been seen using additional ad hoc devices, such as Kolpexin, intraurethral inserts and urethral clamps that inhibit the "leakage" of urine. One should not forget about the possibility of using absorbent pads which, unlike other feminine hygiene products, neutralise the smell of urine, improving the patient's quality of life [82, 83].

SURGICAL TREATMENT — SPECIAL NOTES ACCORDING TO THE RECOMMENDATIONS OF THE POLISH GYNECOLOGICAL SOCIETY

Due to proven clinical effectiveness, the operations of choice in the treatment of stress urinary incontinence are Burch colposuspension and sling procedures (surgical techniques using retrouterine access and through the obturator foramen) with the use of synthetic materials based on propylene polymers (tapes, meshes) and other surgical materials intended for this purpose. Xenogeneic implants are alternative surgical biomaterials with wide prospects for use in surgical procedures related to the treatment of UI. Proper trophism of the vagina and the fascial structures of the pelvis minor, as well as the correct surgical technique are all necessary to achieve therapeutic success. In the case of atrophic changes in the vagina, local estrogen treatment is obligatory both before and after surgery, especially when synthetic surgical materials are used.

The application of additional synthetic sutures to tighten the urethral "hammock" may increase the rate of therapeutic success. At present, it is not yet possible to clearly say (too short of an observation period) whether the use of obturator foramen will completely supersede the techniques based on a retrouterine sling. Procedures performed through the obturator foramen significantly reduce the risk of intraoperative complications (perforation of the bladder, urethra, intestines, large vessel injuries and postural hematomas). Short-term observations confirm the high clinical effectiveness of the surgical techniques used in the treatment of UI through the obturator foramen access.

In the case of disorders of the statics of the female sex organs and coexisting stress urinary incontinence, it is necessary to correct the anatomical defect.

Stress urinary incontinence can be treated surgically using, for example, Tension-free Vaginal Tape (TVT). The aim of this operation is to restore or strengthen the pubic-urethral ligaments by inserting in their place a polypropylene mesh (TVT tapes — Ethicon Inc. Johnson Johnson, USA, IVS tapes — TYCO Healthcare, UK). A sling can be inserted through the obturator foramen or, classically, with an intrauterine approach. The decision to choose a treatment method depends on many conditions and criteria, including the patient's age, general condition, physical activity, possibly previous urogynecological surgeries, and the patient's decision to continue their sex life. Ultimately, the choice of treatment method depends on the state of the anatomy of the structures holding the sex organs in an undisturbed position and the assessment of the condition in which these structures are located.

In pharmacological treatment, anticholinergic preparations blocking muscarinic receptors are used: oxybutynin, tolterodine, trospium, solifenacin and darifenacin or duloxetine, which is unavailable in Poland, as well as reducing urine secretion (desmopressin). In some patients, bladder denervation therapy can be used, with botulinum toxin employed for this purpose. Supportive effects are also provided by additional ad hoc devices, such as Kolpexin, intraurethral inserts and urethral clamps that inhibit "leakage" of urine [85].

The use of absorbent pads is also a possibility. By neutralizing the smell of urine, they improve the patient's quality of life. In order to help prevent disorders of genital statics and urinary incontinence, physical exertion is also to be avoided, especially related to lifting heavy objects and standing upright.

CONCLUSIONS

The maintenance of proper statics of the genital organs is significantly influenced by maintaining a healthy body weight, high physical activity, healthy daily habits (regular emptying of the bladder and rectum). Proper body posture is also important — proper force distribution, avoiding excessive pressure "up and down", visceral therapy, pelvic floor (Kegel) muscle and core stability exercises and hormone replacement therapy during menopause.

Both from the prophylactic point of view and that of the therapy of patients with static disorders associated with urogynecological disorders, an important aspect of this problem is female sexuality and problems in partnerships.

The topics covered require research to clarify the impacts of manual visceral therapy, Kegel muscle exercises, core stability exercises and diet on pelvic support disorders and urinary incontinence (including sexological aspects) and the role of physiotherapy and osteopathy in treating them. Clinical practice and research would need to include a broad clinical diagnosis of visceral examination and clinical examination of the musculoskeletal system in a population of women with pelvic support disorders and urinary incontinence.

Conflicts of interest

All authors declare no conflict of interest.

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