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Case Report

Modern Approach to the Treatment of Complete Internal Genital Prolapse with Acute Dysfunction of the Pelvic Organs (Case Report)

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Abstract

According to recent clinical studies, the prevalence of internal genital prolapse (GP) varies significantly and is within 20-40% in women over 60 years of age. The most significant risk factors for GP are older age of the woman, vaginal delivery of a large fetus, parity, instrumental vaginal delivery, heavy physical labor and obesity.

An algorithm of actions is given in a rare case of complicated complete prolapse of the internal genitals with acute dysfunction of the pelvic organs, severe edema and impaired trophic function of the vaginal mucosa with the help of a modern effective antiseptic, followed by vaginal hysterectomy.

Patient L., 68 years old was hospitalized with the presence of a tumor-like formation protruding beyond the vulvar ring for 2 years, pain in the lower abdomen, urinary retention, defecation, and body temperature up to 38ºC. Under intravenous anesthesia, a reposition of the incarcerated pelvic hernia was performed, a catheter was installed in the bladder; she was clinically and laboratory examined, an ultrasound was performed, and examined by specialized specialists.

For 2 weeks, local therapy was performed with irrigation of the vagina with a modern broad-spectrum antiseptic - octenidine dihydrochloride (Octenisept), and in connection with acute pyelonephritis, she received antibacterial therapy with uroseptics. Against the background of the treatment, edema and trophic changes of the vaginal mucosa disappeared, vaginal biocenosis and body temperature normalized, which we primarily associated with the use of Octenisept and pyelonephritis therapy. This created conditions for surgical correction of complete GP according to our method using modern energies (monopolar radio-wave scalpel and argon-plasma coagulation of tissues). A total vaginal hysterectomy with uterine appendages was performed. The postoperative period was without complications. Postoperative tissue repair was per primam.

The case of complete internal GP with pelvic hernia incarceration and pelvic organ dysfunction was successfully have been treated thanks to the correctly selected two-stage therapy with initial hernia reduction, local Octenisept therapy with subsequent performed vaginal hysterectomy.

Key Words: complete internal genital prolapse; octenidine, pelvic hernia; vaginal hysterectomy;colpoperineorrhaphy

Introduction:

The International Urogynecological Association (IUGA) and the International Society for Urinary Incontinence (ICS) define female pelvic organ prolapse as a deviation from normal sensation, structure, or function experienced by a woman regarding the position of her pelvic organs [1]. In the United States, the prevalence of symptomatic pelvic organ prolapse is projected to increase by 46% to 4.9 million women by 2050. Thus, pelvic organ prolapse is a significant public health problem that will continue to increase as the population ages in developed countries [2, 3].

The main risk factors for internal GP are: older age, pregnancy and vaginal delivery, high parity and obesity, as well as early age at first delivery, delivery using obstetric forceps, prolonged second stage of

labor, heavy physical labor, chronic constipation, and delivery of a large fetus [4, 5, 6, 7].

Impaired microcirculation of the pelvic floor tissues, loss of capillary communication between the anterior wall of the uterus and the bladder, impaired venous outflow and pelvic architectonics, insufficient blood supply to the perineum, hypoestrogenism, dystrophy or atrophy of the vaginal epithelium are all factors that contribute to the development of internal GP [8 -11]. Levator ani muscle (LAM) avulsion, associated with weakness of the pelvic floor muscles, increases the risk of GP and the risk of failure to retain a vaginal ring pessary [12].

The wide range of symptoms commonly associated with internal GP includes: a feeling of vaginal fullness, chronic pelvic and low back pain, painful intercourse (dyspareunia), difficulty urinating and constipation or, conversely, urinary and fecal incontinence [13]. Most women experience internal GP symptoms when the anterior margin reaches 0.5 cm distal to the vulvar ring [14]. Sometimes, the low-lying cervix can become irritated by repeated exteriorization and cause abnormal vaginal bleeding [3]. Obstructive defecation symptoms, i.e., straining during defecation, incomplete bowel emptying, are associated with posterior prolapse, particularly rectocele and rectal intussusception. Rectocele may also contribute to fecal incontinence, although this condition is clearly multifactorial [3].

Symptoms of obstructive urination may occur with anterior, apical, and posterior vaginal prolapse due to urethral kinking or external urethral compression [3]. Internal GP can also lead to a well-recognized complication, such as hydronephrosis, which can be defined as dilatation of the renal pelvis and calyces due to impaired urine outflow [15]. One systematic review estimated the prevalence of hydronephrosis in women with internal GP to be between 3.5% and 30.6% [16].

All of these symptoms significantly impair a woman's quality of life, including making it difficult to perform household tasks that require physical exertion, affecting the psychological perception of one's body, and causing sexual dysfunction [17, 18, 19]. Women report negative external changes to their bodies, feelings of loss of social significance, irritability, depression, anxiety, and sadness [13, 19, 20, 21].

The POP-Q classification of GP is recommended by major international urogynecological health organizations, including the American Urogynecological Society, the Society of Gynecological Surgeons, and the International Society for Urinary Incontinence [14]. Using six defined measurements of anterior, posterior, and apical support, measured relative to the hymen, this system provides an objective standardized method for grading GP from 0 to IV. Stage IV is complete prolapse of the uterus and adjacent pelvic organs, considered a pelvic hernia. The most distal part of the prolapse protrudes more than 1 cm from the hymen, accompanied, in most cases, by cystocele and rectocele [22].

Compared with transvaginal ultrasound imaging, translabial/transperineal access allows assessment of the functional anatomy of the pelvic floor during manipulations such as the Valsalva maneuver. One of the main applications of translabial ultrasound imaging is the quantitative assessment of GP. Imaging complements the clinical examination to determine the nature and severity of the condition [23].

There is no single approach to the treatment of pelvic organ prolapse. The most optimal treatment for pelvic organ prolapse is selected taking into account the degree of prolapse, the presence of complications, the patient's age and other factors. There are several methods of treating prolapse: mechanical, conservative, surgical [6]. The use of a pessary has a positive effect on the quality of life, sexual function and body appearance, and also contributes to a significant reduction in the symptoms of pelvic organ prolapse, in addition, it is an effective treatment strategy for women who have refused surgical intervention or have contraindications [8]. However, despite their effectiveness, vaginal pessaries demonstrate the appearance of such complications as vaginal discharge, bleeding, chafing and unpleasant odor. Therefore, surgical treatment is indicated for patients with stage III and IV pelvic organ prolapse [24].

If indicated, surgery can be performed transvaginally, laparoscopically, or open, using either the patient's own tissue or mesh endoprostheses [20, 25, 26]. Regarding the use of synthetic mesh materials during vaginal surgery, it should be noted that they can complicate the postoperative period due to frequent inflammation, rejection of the artificial material, and subsequent recurrence of GP in 8–10% of patients, and also cause stress urinary incontinence after surgery [4, 5, 7, 14].

For many decades, vaginal hysterectomy was a routine procedure in many gynecological departments. However, with the introduction of endoscopy and robotic surgery in recent years, vaginal hysterectomy, especially with autologous reconstructive surgery, has lost much of its priority. A significant reduction in abdominal hysterectomy is certainly desirable, but a reduction in vaginal hysterectomy is not justified in most cases.

A clinical case of complete internal GP complicated by pelvic hernia incarceration with the development of inflammatory-trophic changes in the cervix and vaginal walls is presented, with followed by two-stage therapy of the pelvic hernia, local therapy with Octenisept, and performing vaginal hysterectomy with uterine appendages using our modified ten-step method of pelvic floor reconstruction with autologous tissues (M. Stark et al. - 2022) [27].

Case Presentation

Patient L., 68 years old, was hospitalized to the gynecological department of the Vyshgorod Central District Hospital (hereinafter VCDH) with complaints of a tumor-like formation protruding beyond the vulvar ring, the presence of which she has noted for 2 years. She has noted a deterioration in her general condition with problems with urination and defecation in the last 3 days, as well as aching pain in the lower back, lower abdomen and periodic increase in body temperature to 38ºC.

According to the anamnesis - 3 pregnancies, two of which ended in medical abortions, one - in physiological childbirth with a large fetus (m-4100.0 g) without complications. Menopause - 20 years. Somatic anamnesis is not burdened.

The general condition of the patient at the time of hospitalization was moderate, which was associated with severe pain in the perineum, acute urinary retention, difficulties with walking and an increase in body temperature to 38.0ºC. Blood pressure (BP) - 140/80 mm Hg, pulse (Ps) - 98 beats / min. Visible mucous membranes are clean, pale pink. The abdomen is soft, painless. Pasternacki's symptom is weakly positive on both sides.

When examining the external genitalia, a complete GP is visualized with a pinched prolapsed pelvic hernia, which was located outside the vulvar ring in the form of a tumor-like formation measuring 15x15 cm. The mucous membrane of the vagina, prolapse pelvic hernia, with signs of inflammation, edema, and inflammatory-trophic changes (Figure.1).

Figure 1: Complete internal GP. Impingement of a prolapsed pelvic hernia with impaired function of the pelvic organs and trophic changes in the vaginal mucosa.

In the gynecological department, under intravenous anesthesia, a reduction of the incarcerated pelvic hernia was performed, a catheter was inserted into the bladder; she was clinically and laboratory examined, an ultrasound examination was performed, and she was examined by dedicated experts: a urologist, an anesthesiologist, and a therapist. A full clinical and laboratory examination, ultrasound (US) examination of the abdominal cavity and pelvic organs were prescribed.

After examination by a urologist, clinical and laboratory examination, ultrasound, in addition to a prolapsed pelvic hernia, a diagnosis of bilateral hydronephrosis, chronic pyelonephritis in the acute stage was established.

Results of clinical and laboratory studies taken during hospitalization:

- complete blood count: hemoglobin - 111 g/L, erythrocytes - 3.8 × 10^{12}/L, platelets 344 × 10^{9}/L, leukocytes - 19.8 × 10^{9}/L, erythrocyte sedimentation rate - 55 mm/h.
- general urine analysis: color - light yellow, transparency - slightly cloudy, specific gravity - 1020, protein - 0.33 g/L. Microscopic examination of urine: erythrocytes - 15-20 in the field of view, leukocytes - cover the entire field of view.
- analysis of vaginal flora secretions: leukocytes cover the entire field of view.
- bacteriological examination of vaginal flora: *Escherichia coli* and *Enterobacter spp.* 10x10^{6}CFU/L
- bacteriological examination of urine: *Staphylococcus aureus* – 10x10^{7}CFU/L
- coagulogram parameters: prothrombin time -14.9 sec., APTT - 29.6 sec., fibrinogen - 5.4 g/L.
- the level of pro-inflammatory cytokines from trophic and wound surfaces of the vagina and cervix was determined – IL-6 and IL-8 by ELISA method – respectively: 397 pg/mL and 1920 pg/mL.

According to the transvaginal US (unfortunately, US image wasn't save) the following was found: the body of the uterus is pear-shaped, measuring 47x40x55 mm. The structure of the myometrium is changed: in the area of the uterine fundus, a subserous leiomyomatous node measuring 32x22 mm (FIGO type 6) without blood flow is visualized. The endometrium corresponds to the menopausal period. The cervix is 40x39 mm in size, hypertrophied, the structure is unchanged, the cervical canal is closed. The ovaries are visualized, the dimensions are normal, the structure is afollicular. The vaults are free.

US diagnosis: echo-signs of uterine leiomyoma (FIGO type 6). Involutive changes of the internal genital organs.

Results of the PAP test by liquid cytology method: the presence of atypical squamous epithelial cells was not detected, which allowed to exclude high-grade squamous intraepithelial lesion (ASC-H).

The clinical diagnosis: complete internal GP with acute dysfunction of the pelvic organs. Pelvic hernia with cysto- and rectocele. Trophic changes of the vaginal epithelium of inflammatory genesis. Chronic pyelonephritis in the acute stage.

Given the acute inflammatory process on the background of complete GP with pelvic hernia entrapment and dysfunction of the pelvic organs, significant edema, elevated body temperature of the patient, and exacerbation of chronic pyelonephritis, it was decided to conduct conservative treatment with the appointment of antibacterial, anti-inflammatory local therapy and to ensure conditions for further planned surgical correction of GP.

Conservative local treatment with Octenisept (100 g contains 0.1 g of octenidine dihydrochloride and 2 g of 2-phenoxyethanol) was prescribed [28, 31, 32] - irrigation of the vagina and cervix twice a day, probiotic - Ecobiol (1 capsule orally 2 times a day) for 10 days [35]. Considering that according to the bacteriological examination of the urine, *Staphylococcus aureus* was detected - $10x10^7$CFU/L, sensitive to ceftazidime (third-generation cephalosporin), 1.0 g x 2 times a day for 7 days was prescribed [36, 37].

For local treatment, we preferred the use of Octenisept, given our clinical experience of the high effectiveness of this antiseptic in the case of nonspecific and specific vaginitis in gynecological practice (especially with resistant forms of E. coli and Enterobacteriaceae - as in our case), compared to other antiseptics, which is also confirmed by the data of previous clinical studies conducted by other authors [28-31]. Furthermore, Octenidine is known for its broad spectrum antimicrobial activity against multidrug-resistant Gram-positive bacteria (such as *Staphylococcus aureus*, including mupirocin-resistant Staphylococcus aureus (MRSA), extended-spectrum beta-lactamase (ESBL), vancomycin-resistant Enterococcus (VRE)) and Gram-negative pathogens (e.g. *Pseudomonas aeruginosa*, *Acinetobacter baumanii*, *Klebsiella pneumoniae*), as well as against various (multi)resistant fungal species (e.g. *Candida albicans*, *Candida auris*, *Nakaseomyces glabratus*), even in the presence of unwanted proteins (e.g. blood, mucous secretions, wound exudate) and within a very short exposure time [29-34], which could not be ruled out in our specific case.

After reposition of the incarcerated pelvic hernia and two weeks of conservative treatment of complicated GP, the patient's general condition normalized: no complaints, normal body temperature, normal urination and defecation were restored. In addition, the swelling of the vagina and cervix disappeared, the vaginal mucosa was epithelialized, signs of local inflammation disappeared, and renal function normalized (no signs of pyelonephritis). We associated the rapid local changes in the vaginal mucosa with the pronounced effective antiseptic and wound-healing effect of Octenisept.

Positive clinical changes of therapy were also confirmed by laboratory indicators. Laboratory test data after conservative treatment:

- general blood test: hemoglobin-122 g/L, erythrocytes-4.2×10^{12}/L, platelets 486×10^9/L, leukocytes – 5.7×10^9/L, erythrocyte sedimentation rate – 15 mm/h.

- general urine test: color – light yellow, transparency – transparent, specific gravity – 1015, protein – absent, glucose – absent.

- microscopic examination of urine: erythrocytes – 0-1 in the field of view, leukocytes – 2-3 in the field of view.

- analysis of vaginal flora secretions: leukocytes 2-3 in the field of view, lactobacteria are present; the II purity of the vaginal flora was determined.

- the level of pro-inflammatory cytokines from vaginal secretions was determined - the level of IL-6 and IL-8 by ELISA - respectively: 14 pg/mL and 77 pg/mL.

That is, according to laboratory indicators after treatment, there were no inflammatory-trophic changes in the analysis of vaginal discharge, determined levels of IL-6 and IL-8, and inflammatory changes in the kidneys according to urine analysis [38].

After the therapy and complete stabilization of the patient's condition due to complete GP, the issue of planned surgical intervention with vaginal hysterectomy in 10 steps [27] was resolved according to our modification using modern energies: monopolar radio wave scalpel (RW scalpel), argon plasma coagulation (APC) of tissues (Fig. 2). Written consent to the specified scope of surgical treatment was obtained from the patient.

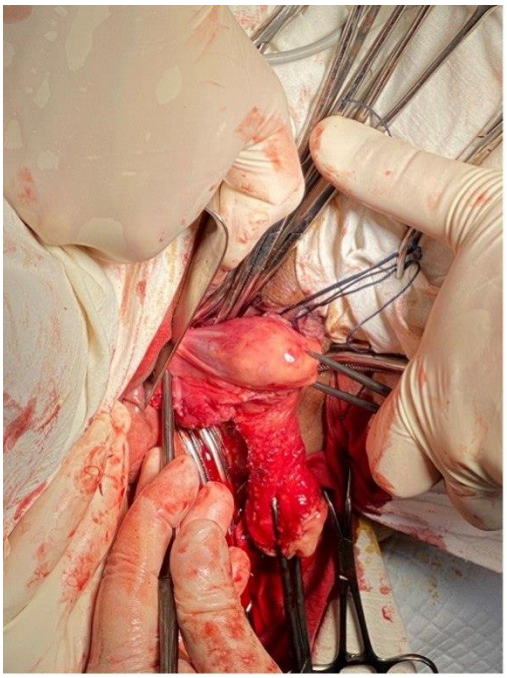

Figure 2: The final stage of total vaginal hysterectomy (step 7) with subsequent ligation of the appendage stumps and uterine ligaments with reconstruction of the pelvic floor and APC tissues.

A vaginal hysterectomy with uterine appendages was performed, which was accompanied by increased tissue bleeding, given the recent inflammatory process with thickening of all anatomical structures of the small pelvis and, first of all, the ligamentous apparatus of the uterus and the walls of the bladder and vagina. Total blood loss was about 200.0 mL. Duration of the operation 1 hour 15 minutes.

The postoperative period was without complications. Postoperative tissue repair was per primam. Discharged under the supervision of a family doctor with recommendations for a healthy lifestyle and hygiene measures. The general appearance of the perineum on the 10th day after the surgical intervention using the proposed method is presented in Fig. 3.

Figure 3: Appearance of the perineum on the 10th day after vaginal hysterectomy with uterine appendages.

Discussion

We have successfully treated a case of complete internal GP with pinching and dysfunction of the pelvic organs. Such neglected clinical cases are rare, so we present our algorithm of actions, which may be useful to gynecologists. More often there are cases of complete internal GP with decubital ulcers, nonspecific and specific vaginitis and the development of inflammatory-trophic changes in the mucous membrane of the vagina and cervix [25]. Local antimicrobial and anti-inflammatory therapy of such cases is of paramount importance with the possibility of further surgical treatment of complete internal GP [41,42].

For local treatment, we preferred the use of Octenisept, given our clinical experience of the high effectiveness of this antiseptic in the case of nonspecific and specific vaginitis in gynecological practice (especially with resistant forms of E. coli, Staphylococcus aureus and Enterobacteriaceae - as in our case), compared to other antiseptics, which is also confirmed by the data of previous clinical studies conducted by other authors [28-31].

Control of the effectiveness of local therapy of vaginitis is valid according to microbiological studies of vaginal secretions and the level of vaginal cytokines (IL-6 and IL-8). In our study, the post-treatment levels of vaginal IL-6 (14 pg/mL) and IL-8 (77 pg/mL) correspond to a marked reduction in local inflammation. These findings are consistent with previous reports demonstrating that effective treatment of bacterial vaginosis results in significant decreases in cervical and vaginal IL-6 and IL-8 concentrations [42, 43]. Yudin **MH** et al. showed that inflammatory cytokines were significantly lower after successful local therapy [39]. Mtshali **A**. et al. confirmed short-term reductions in mucosal IL-8 during the recovery of the vaginal microbiome after metronidazole treatment [40]. In addition, octenidine-based antiseptics (such as Octenisept) have demonstrated the ability to reduce IL-6 and IL-8 in ex-vivo and in-vitro models, supporting their potential anti-inflammatory action [41].

Thus, our two-stage therapy of complete internal GP was effective, which is confirmed by the absence of complications in the patient in the postoperative period.

It is necessary to continue clinical studies on a larger number of patients with internal GP an inflammatory-trophic changes in the vagina and cervix, as well as against the background of specificand nonspecific vaginitis regarding the effectiveness of Octenisept for the prevention of purulent-inflammatory complications in the postoperative period in this group of patients.

Conclusions

The case of complete internal GP with pelvic hernia entrapment and pelvic organ dysfunction was successfully treated thanks to the correctly selected two-stage treatment of the patient with initial hernia reduction, local use the Octenisept, antibacterial, anti-inflammatory therapy acute pyelonephritis with subsequent performed vaginal hysterectomy by 10 steps in our modification.

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