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EVALUATION OF LONG-TERM RESULTS OF VIDEOLAPAROSCOPIC RADICAL HYSTERECTOMY WITH APPENDICES AND BILATERAL FIXATION OF THE VAGINAL STUMP IN WOMEN WITH GENITAL PROLAPSE

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Genital prolapse is a common disease with a severe course. Treatment methods are usually surgical, but the benefits of individual surgical treatments are still an open question. The purpose of the study was to analyze the results of the treatment of women with genital prolapse after 6 and 12 months who underwent videolaparoscopic radical hysterectomy with appendages and bilateral fixation of the vaginal stump. After the above-mentioned surgical treatment of women with genital prolapse, a significant decrease of 5 times was found in the number of women complaining of difficulty urinating, complaints of the feeling of a foreign body in the vagina were noted 3 times less often. Urinary incontinence was not detected in the examined women, as well as a non-specific inflammatory process in the vagina after surgical treatment was noted 9 times less often compared to the same data before the operation.

Key words: gynecology, surgery, combined operations, laparoscopic operation, operative treatment.

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ОЦІНКА ВІДДАЛЕНИХ РЕЗУЛЬТАТІВ ВІДЕОЛАПАРОСКОПІЧНОЇ ТОТАЛЬНОЇ ГІСТЕРЕКТОМІЇ З ДОДАТКАМИ ТА БІЛАТЕРАЛЬНОЮ ФІКСАЦІЄЮ КУКСИ ПІХВИ У ЖІНОК З ГЕНІТАЛЬНИМ ПРОЛАПСОМ

Генітальний пролапс є розповсюдженим захворюванням з тяжким перебігом. Методи лікування зазвичай хірургічні, однак переваги окремих хірургічних методів лікування досі залишаються відкритим питанням. Метою дослідження було проаналізувати результати лікування жінок з генітальним пролапсом через 6 та 12 місяців, яким була виконана відеолапароскопічна тотальна гістеректомія з додатками та білатеральною фіксацією кукси піхви. Після проведеного вищевказаного оперативного лікування жінок з генітальним пролапсом виявлено достовірне зменшення в 5 разів кількості жінок, що скаржились на утруднене сечовипускання, скарги на відчуття чужорідного тіла в піхві відмічались в 3 рази рідше, нетримання сечі не виявилось у обстежуваних жінок, а також неспецифічний запальний процес в піхві після оперативного лікування відмічений в 9 разів рідше порівняно з цими ж даними до операції.

Ключові слова: гінекологія, хірургія, комбіновані операції, лапароскопічна операція, оперативне лікування.

The work is a fragment of the research project "Pathogenetic role of endothelial dysfunction and genetic features in pathology during pregnancy and gynecological diseases", state registration No. 0119U005253.

Genital prolapse (GP) is a severe disease that has a highly negative impact on the quality of both the physical and psychological condition of a woman with this problem [4]. The actual prevalence of the mentioned pathology at present has many disagreements with the actual data due to the referrals of women with this disease to the doctor are minor [7].

According to the literature, the prevalence of symptomatic GP among women of various ages ranges from 3 to 6 %, while the prevalence of anatomical (i.e., confirmed during a gynecological examination, usually as an incidental finding) is up to 50 % [5]. According to other researchers, every fourth woman was diagnosed with GP of various degrees of severity during a gynecological examination. At the same time, the quality of life survey results indicated a lower incidence rate – from 2.9 % to 8.3 %. Although questionnaires cannot fully replace a medical examination, they are still essential because they more accurately reflect the symptomatic manifestations of GP [14].

Risk factors for the development of GP are associated with the weakening of connective tissue and a decrease in the collagen content in the pelvic floor's ligaments. As a result, the internal organs of the small pelvis protrude through the walls of the vagina and the pelvic floor. Such factors include parity of birth, high fetal weight at birth, high body mass index, older age of the woman, levator defects [9, 10], history of hysterectomy, unreliable peritonization and fixation of the top of the stump, and genetic predisposition [13]. The diagnosis of a GP is based on a careful collection of a woman's history and a gynecological examination.

The treatment method for this disease is usually surgical, and the goal is to restore the anatomical integrity of the pelvic structures. Operative treatment is carried out transvaginally, laparoscopically, or through open access, using own tissues or mesh prostheses. The choice of treatment method is based on the degree of prolapse, the prolapsed part, concomitant extragenital diseases, anesthetic risks, and the patient's decision [11, 12]. However, the advantages of specific surgical treatment methods remain an open question, prompting this article's writing.

The purpose of the study was to analyze the results of the treatment of women with genital prolapse after 6 and 12 months who underwent videolaparoscopic radical hysterectomy with appendages and bilateral fixation of the vaginal stump.

Materials and methods. We performed a prospective study (from 2021 to 2024) of 30 women of menopausal age on the basis of the gynecological department of the Communal Enterprise "2nd City Clinical Hospital" of the Poltava City Council. All women underwent videolaparoscopic radical hysterectomy with appendages and bilateral fixation of the vaginal stump due to various degrees of GP, which was established during gynecological examination (examination in mirrors and bimanual examination).

Before operative treatment, all women were interviewed about the presence of complaints. Information was obtained about obstetric, gynecological, somatic, and allergic anamnesis, and an objective and gynecological examination was conducted. All women underwent a bacterioscopic analysis of vaginal secretions, a bacteriological examination of the cervical canal, a cytological examination of the cervix, a pathohistological examination of the endometrium, and a pelvic ultrasound (PU).

The degree of GP was established according to the Guideline based on evidence-based medicine No. 00552 "Genital prolapse" [1]. To do this, the woman first emptied her bladder and rectum. Next, a provocative Valsalva test was performed in the position of the woman lying down. During the first examination, the low position of the perineum was usually noted, and the prominence of the protrusion and its anatomical boundaries were assessed. The degree of uterine prolapse, in addition to visual assessment, was determined after straining the woman or instrumental pulling the uterus down by the cervix.

The results of the surgical treatment were evaluated 6 and 12 months after the surgery: a repeat survey, bacterioscopic examination of vaginal secretions, and a gynecological examination were performed.

After the interview, regarding the study's purpose, all women signed an informed voluntary consent before examinations and operative treatment.

Statistical data processing was done using descriptive statistics on a personal laptop: an HP (Hewlett-Packard) EliteBook 850 G6, with Microsoft Windows 11 as the operating system and the Statistica 6 program. Quantitative data are presented as means and their standard errors of the mean, while qualitative data are presented as frequencies and percentages. The difference was calculated using parametric and non-parametric methods and was considered reliable at the $p<0.05$.

Results of the study and their discussion. Women with GP included in the study were aged from 47 to 76 years, 59.9±1.6 years on average. The mean age of menarche in the studied women was 13.1±1.3 years. Menstruation was painful in 15 (50 %) women. Given that all women were of menopausal age at the time of the study, we detailed the duration of menopause. Menopause for more than 5 years was noted by 11 (36.7 %) of the studied women with GP, 14 (46.6 %) women indicated the duration of the menopausal period for more than 10 years, menopause that lasted for more than 20 years was noted by 5 (16.7 %) women.

During the collection of anamnesis, the following complaints of patients were noted: 20 (66.6 %) women with GP reported heaviness in the lower abdomen, 10 (33.3 %) women with GP complained of difficulty urinating, 2 (6.66) complained of urinary incontinence %) women with GP, for diarrhea – 5 (16.7 %) women with GP, feeling of a foreign body in the vagina noted by 3 (10 %) women with GP.

When evaluating the reproductive history, we found that the average number of deliveries per patient was 2.75±0.1 (of which 0.8±0.01 were by cesarean section). The mean number of spontaneous abortions per patient was 2.0±0.2, artificial abortions – 0.5±0.01.

We evaluated the degree of GP in the women included in the study. The severity degree of GP among the examined women was distributed as follows: degree I of GP severity was established in 4 (13.3 %) women, degree II – in 9 (30 %) women, degree III – in 12 (40 %) women, degree IV – in 5 (16.7 %) women, respectively.

Among the accompanying gynecological pathology of the pelvic organs (which was confirmed during the PU) in patients with GP were small-sized uterine leiomyoma with different localization of nodes – in 27 (90 %) women, unilateral/bilateral ovarian cysts – in 14 (46.6 %) of women. It should be emphasized that 5 (16.7 %) women had histopathologically confirmed endometrial hyperplasia without atypia.

Among the study women with GP, somatic pathology was found in 20 (66.7 %), while 10 (33.3 %) women had no history of extragenital diseases. The distribution of extragenital pathology is presented in Table 1.

During the bacterioscopic examination of vaginal discharge before surgery, a non-specific inflammatory reaction was detected in 18 (60 %) women with GP, which was manifested in an excessive

increase in white blood cells to 1/3 in FOV and an increased number of epithelia. Women with GP who were found to have inflammation based on the results of a bacterioscopic examination of vaginal discharge underwent local sanitation before the intended surgical intervention.

Table 1

Somatic pathology among studied women with genital prolapse, abs. fr. (%)

Nosological unit	The absolute number of patients who had a certain nosology	% value of patients who had a certain nosology
Diseases of the cardiovascular system		
Hypertension	1	3.33 %
Coronary heart disease	2	6.66 %
Heart rhythm disorders	1	3.33 %
Cardiomyopathy	1	3.33 %
Diseases of the respiratory system		
Chronic obstructive pulmonary disease	1	3.33 %
Bronchial asthma	1	3.33 %
Chronic bronchitis	1	3.33 %
Diseases of the digestive system		
Constipation	4	13.3 %
Chronic cholecystitis	6	20 %
Hernias of various localization	14	46.6 %

Women with GP underwent videolaparoscopic radical hysterectomy with appendages and bilateral fixation of the vaginal stump.

Under endotracheal anesthesia, a 10 mm trocar was introduced into the abdominal cavity through a puncture in the upper near-umbilical region, and a carboxy peritoneum of 12 mm Hg was applied according to the Hasson technique. A laparoscope tube was inserted. The patient was transferred to the Trendelenburg position. An audit was carried out: the presence or absence of adhesions in the pelvis, the size of the uterus, and the presence or absence of uterine leiomyoma or adnexal neoplasms were determined. Two 5 mm trocars with a manipulator were installed in both iliac areas. If necessary, viscerolysis was performed with a monopolar hook. With the help of electrocoagulation, the round, broad, funnel-pelvic, and cardinal ligaments of the uterus were cut. The ureters were visualized, diverted laterally.

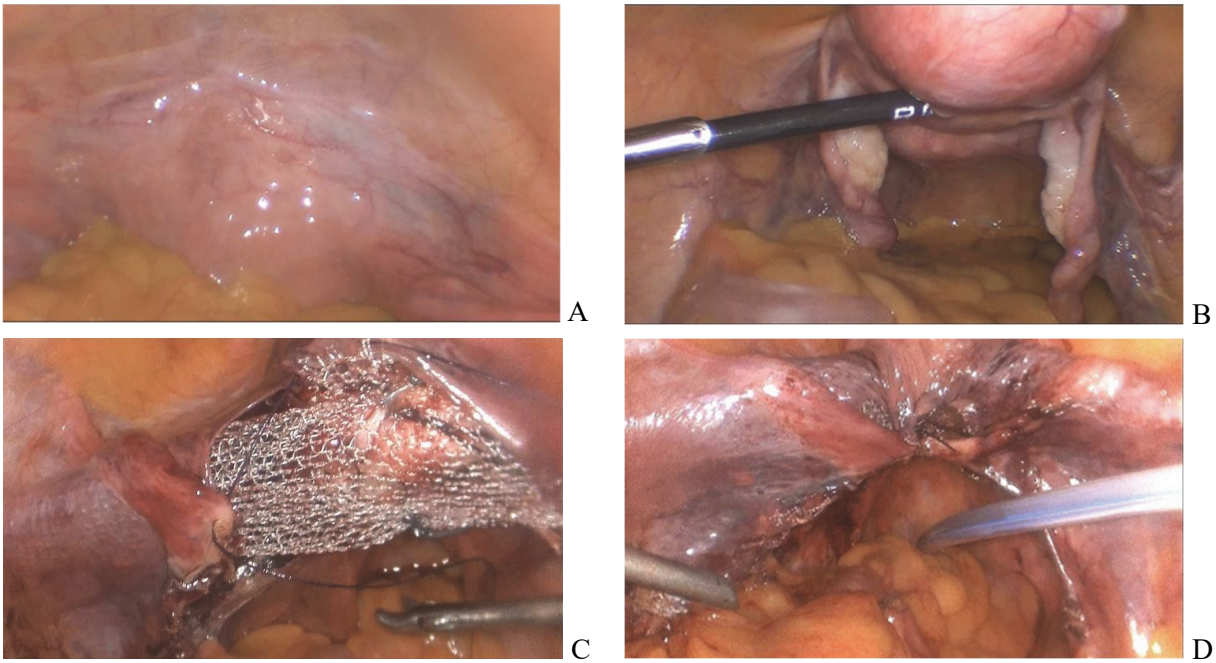

Fig. 1. Step-by-step videolaparoscopic radical hysterectomy with appendages and bilateral fixation of the vaginal stump (A, B, C, D). A – the absence of the uterus in the abdominal cavity. B – the uterus on the manipulator is placed as far forward as possible. C – the fixation of the mesh to the vaginal stump. D – the view of the peritonized and fixed mesh.

The uterus and cervix were cut off with a monopolar hook on a Clermont-Ferrand uterine manipulator and removed through the vagina. Intracorporeal sutures were placed on the stump of the vagina. An additional stage was bilateral fixation: a polypropylene mesh was inserted into the abdominal cavity, the middle of which was fixed to the stump. The ends of the mesh were brought out extraperitoneally and fixed to the aponeurosis of the external oblique muscle of the abdomen on the left and right sides. They

were tested for hemostasis and other pathological changes. Stitches and aseptic bandages were applied layer by layer.

The duration of the surgical intervention was 75±2 minutes on average. Blood loss with this method of surgical treatment averaged 75±0.5 ml. The average number of days spent in the hospital was 3.5±0.5 days.

The main steps of this surgical intervention are shown in Fig. 1.

After the specified surgical treatment of women with GP after 6 and 12 months, we found that the number of women complaining of difficulty urinating decreased by 5 times (33.3 % vs. 6.66 %, $p<0.05$). The described women had lower abdominal heaviness 4 times less often (66.6 % vs. 16.7 %, $p<0.05$). Any woman did not note urinary incontinence after surgical treatment. The feeling of a foreign body in the vagina was noted by 1 (3.33 %) woman, which was 3 times less compared to the same complaints in the preoperative period (10 % vs. 3.33 %, $p <0.05$).

After 6 and 12 months, no recurrence of GP was detected in any woman.

When evaluating the results of bacterioscopic examination of vaginal discharge after 6 and 12 months, positive results were also found. Only in 2 (6.66 %) cases was noted a local nonspecific inflammatory reaction in the vagina, which was 9 times less than in women before surgical treatment (60 % vs. 6.66 %, $p<0.05$).

Videolaparoscopic radical hysterectomy with appendages and bilateral fixation of the vaginal stump is one of the minimally invasive methods of treating GP. After analyzing the above data, we found that the predictors for performing this type of surgery in our study were not only the presence of patients' complaints directly related to GP (such as urinary incontinence, constipation, the feeling of a foreign body in the vagina, etc.) but also the age of patients (all women were in menopause), concomitant gynecological pathology (uterine leiomyoma, unilateral/bilateral ovarian formations), which coincides with the data of other authors on indications for minimally invasive surgical treatment of GP [3, 8]. Attention should also be paid to the presence of the anamnesis of women with GP who were studied for extragenital pathology, such as hernias of various localizations. According to the literature, these may indicate collagen insufficiency and lead to the development of GP [2, 6], which subsequently requires surgical treatment.

The literature also describes conservative methods of treating GP (e.g., using a pessary or local or systemic estrogens). However, these methods can be recommended for women with GP whose changes are insignificant and for whom surgical treatment is contraindicated [1].

Conclusions

1. Videolaparoscopic radical hysterectomy with appendages and bilateral fixation of the vaginal stump in women with genital prolapse improves the quality of life of such women after 6 and 12 months (complaints about difficulty urinating decreased by 5 times, heaviness in the lower abdomen was 4 times less often, urinary incontinence was not noted by any woman after surgical treatment, complaints about the feeling of a foreign body in the vagina were reported 3 times less often).

2. A non-specific inflammatory process in the vagina after surgical treatment is noted 9 times less often compared to the same data before surgery.

3. The performed surgical intervention does not lead to significant blood losses and does not take much time.

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ANNUAL STATISTICAL ANALYSIS OF CARDIOVASCULAR MORTALITY IN SEISMICALLY UNSTABLE REGIONS OF AZERBAIJAN

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With the purpose to examine the influence of geophysical and seismic parameters in unstable regions of Azerbaijan on mortality rates from cardiovascular pathologies the medical records of 4,043 patients were analyzed. The number of deaths, their causes, distribution by gender and age were assessed, and a relationship was established with the magnitude of earthquakes, the depth of the epicenter and seismological activity. Earthquakes with a magnitude of 1.1–2.0 and a depth of less than 10 km, significantly impacted mortality rates. Individuals with cardiovascular pathologies have a 1.63 times higher risk of death due to an earthquake compared to those without such pathologies. Persons with cardiovascular diseases have 2.67 times the odds of dying compared to those without such pathologies. Cardiovascular pathologies account for 5.79 % of the variation in overall mortality among all causes. These results indicate that cardiovascular pathologies significantly increase the risk of death.

Key words: cardiovascular pathology, mortality, earthquake, seismic parameters.

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РІЧНИЙ СТАТИСТИЧНИЙ АНАЛІЗ СМЕРТНОСТІ ВІД СЕРЦЕВО-СУДИННИХ ЗАХВОРЮВАНЬ У СЕЙСМІЧНО НЕСТАБІЛЬНИХ РЕГІОНАХ АЗЕРБАЙДЖАНА

З метою вивчення впливу геофізичних та сейсмічних параметрів у нестабільних регіонах Азербайджану на показники смертності від серцево-судинних патологій було проаналізовано медичні картки 4043 пацієнтів. Оцінено кількість смертей, їх причини, розподіл за статтю та віком, встановлено зв'язок з магнітудою землетрусів, глибиною епіцентру та сейсмічною активністю. Землетруси магнітудою 1,1–2,0 та глибиною менше 10 км суттєво вплинули на показники смертності. У осіб із серцево-судинними патологіями ризик смерті від землетрусу в 1,63 рази вищий, ніж у осіб без таких патологій. У осіб із серцево-судинними захворюваннями шанси померти у 2,67 рази вищі, ніж у осіб без таких патологій. Серцево-судинні патології становлять 5,79 % варіації загальної смертності серед усіх причин. Ці результати свідчать, що серцево-судинні патології значно збільшують ризик смерті.

Ключові слова: серцево-судинна патологія, смертність, землетрус, сейсмічні параметри.

Republic of Azerbaijan is situated within the central section of the Mediterranean mobile belt, characterized by significant geological activity due to the dynamics between the Arabian and Eurasian lithospheric plates [3]. This belt exhibits high seismic activity, active magmatism, mud volcanism, extensive landslide processes, and notable vertical and horizontal tectonic movements. Considering the fact that the cardiovascular system is one of the first to react to extreme changes in environmental conditions, triggering adaptive processes in the form of changes in vascular wall tone, blood rheological properties, etc., it is undoubtedly of interest to study the relationship between these factors [5, 9, 10].

Currently, the scientific community is focused on evaluating the biological impact of intense environmental stressors on the human body [7]. Accordingly, conducting research within the Republic of Azerbaijan to predict ecologically and medically adverse seismic conditions and prevent cardiovascular diseases is a primary objective of studies in various regions of country [3].

According to a number of studies, myocardial infarctions on days of geomagnetic disturbances are characterized by a more severe course and can more often have a fatal outcome [4, 6, 8]. However, a methodology for predicting seismological lability states based on scientific data on the impact of environmental features of the region of residence on the risk of complications of cardiovascular diseases has not yet been developed [1, 7].