

- emotional disorders in women during gestation, caused by anxiety. *Bulletin of Scientific Research*. 2017; 1: 95-98.
18. Shramko IA Women's attitude to their own life during pregnancy. *Scientific Bulletin of Kherson State University. Series "Psychological Sciences"*. Kherson: Helvetika. 2018; 4:233-240.
19. Branecka-Woźniak D, Karakiewicz B, Torbi A, Ciepiela P, Mroczek B, Stanisław M. et al. Evaluation of the occurrence of anxiety in pregnant women with regard to environmental conditions. *Fam. Med. Prim. Care Rev*. 2018; 20(4):320-326. DOI: <https://doi.org/10.5114/fmpcr.2018.79341>
20. Branecka Wozniak D. Ocena poziomu lęku u kobiet ciążarnych w kontekście wpływu uwarunkowań biologicznych, medycznych oraz środowiskowo społecznych. *Pom J Life Sci*. 2015; 61(4):433-443.
21. Nath A, Venkatesh S., Balan S., Metgud C.S., Krishna M., Murthy G.V.S. The prevalence and determinants of pregnancy-related anxiety amongst pregnant women at less than 24 weeks of pregnancy in Bangalore, Southern India // *Int. J. Womens Health*. 2019. Vol. 11. P. 241-248. DOI: <https://doi.org/10.2147/IJWH.S193306>
22. Rodriguez AN., Ambia AM., Fomina YY., Holcomb D., Wolfson T., Doty M. et al. A prospective study of antepartum anxiety screening in patients with and without a history of spontaneous preterm birth // *AJOG Glob Rep*. 2023. Vol. 3, N 4. Article ID 100284. DOI: <https://doi.org/10.1016/j.xagr.2023.100284>
23. Rukiye Turka, Tugce Sakar, Reyhan Erkaya The effect of pregnancy on happiness. *Procedia - Social and Behavioral Sciences*. 2017; 237:1247 – 1253.
24. Traylor C.S., Johnson J.D., Kimmel M.C., Manuck T.A Effect of psychological stress on adverse pregnancy outcomes and non-pharmacological approaches to reduction: an expert review // *Am. J. Obstet. Gynecol. MFM*. 2020. Vol. 2, N 4. Article ID 100229. PMID: 32995736 PMID: PMC7513755. DOI: <https://doi.org/10.1016/j.ajogmf.2020.100229>

Вперше надійшла до редакції 15.12.2024 р.
Рекомендована до друку на засіданні редакційної колегії після рецензування

УДК 616.2: 616.62-008.22

DOI <http://dx.doi.org/10.5281/zenodo.15066142>

STATE OF THE VAGINAL MICROBIOME IN PATIENTS OF REPRODUCTIVE AGE WITH VAGINAL RELAXATION SYNDROME AND PELVIC FLOOR DYSFUNCTION: OPTIONS FOR CORRECTION

Cheredarchuk A.R., Makarchuk O.M.

*Ivano-Frankivsk National Medical University, Ministry of Health of Ukraine,
o_makarchuk@ukr.net*

СТАН МІКРОБІОМУ ПІХВИ У ПАЦІЄНТОК РЕПРОДУКТИВНОГО ВІКУ З СИНДРОМОМ РОЗКЛАСЕННЯ ПІХВИ ТА ДИСФУНКЦІЄЮ ТАЗОВОГО ДНА: ВАРІАНТИ КОРЕКЦІЇ

Чередарчук А.Р., Макаrchук О.М.

*Івано-Франківський національний медичний університет МОЗ України,
o_makarchuk@ukr.net*

Summary./Резюме

The problem of pelvic floor dysfunction is mostly a concern for young women, and the most significant early symptom of prolapse is considered to be gaping vaginal opening (vaginal laxity). *The aim of this study* was to evaluate the effectiveness of the proposed techniques and therapeutic approaches to restore the normal vaginal microbiome in women with minimal symptoms of pelvic floor dysfunction — vaginal laxity after urgent delivery through the natural birth canal.

Materials and methods of the study. The study included 60 patients aged 21-35

years with minimal (asymptomatic) manifestations of pelvic floor dysfunction; the main group (30 women) included optimised rehabilitation program for pelvic floor dysfunction, and 30 patients of the comparison group used only medical approaches. The main fundamental approaches of the optimised rehabilitation and prevention program were: a set of dietary and behavioural practices, injectable local hyaluron therapy, rhomboid suturing using the perineovaginal lifting method, and treatment of bacterial vaginosis, including the use of topical preparations with an estrogen component.

Results of the study and their discussion. Inflammatory vaginal diseases with recurrent bacterial vaginosis were detected in 48.3 % of women, inflammatory cervical diseases — in 51.7 %, chronic cervicitis — in 38.3 % of women, sexually transmitted infections (STIs) — in every third patient (35.0 %), vulvovaginal candidiasis and its combination with bacterial vaginosis were noted in every fifth case (20.0 %), and in half of the observations, vaginal laxity was diagnosed (45.0 %), at rest (85.2 %) and during straining (59.3 %). The proposed program contributed to a significant regression of all symptoms, which led to a 4.5-fold decrease in the severity of vaginal discharge, a 3.5-fold decrease in the proportion of episodes of itching and heartburn, while no intergroup statistical differences were found in terms of reduced mucosal secretion, discomfort during sexual intercourse and dysuric manifestations.

Conclusions. The application of the proposed therapy demonstrates a statistically significant reduction in the manifestations of vaginal dysbiosis, sexual dysfunction and dysuric manifestations, restoration of the microbiome to the parameters of normocenosis in 80.0 %, and a 2.3-fold decrease in the proportion of recurrence of dysbotic processes.

Key words: *pelvic floor failure and prolapse, mucosal microbiome disorders, recurrent dysbiosis, bacterial vaginosis, sexual dysfunction, injectable hyaluron therapy, perineovaginal lifting.*

Проблема дисфункції тазового дна в основному стосується молодих жінок, і найбільш значущим раннім симптомом пролапсу вважається розширений vaginal opening (вагінальна недостатність). Метою цього дослідження було оцінити ефективність запропонованих технік та терапевтичних підходів для відновлення нормального вагінального мікробіому у жінок з мінімальними симптомами дисфункції тазового дна — вагінальною недостатністю після термінових пологів через природні родові шляхи.

Матеріали та методи дослідження. У дослідження було включено 60 пацієнток віком 21-35 років з мінімальними (безсимптомними) проявами дисфункції тазового дна; основна група (30 жінок) включала оптимізовану реабілітаційну програму для дисфункції тазового дна, а 30 пацієнток контрольної групи використовували лише медичні підходи. Основними фундаментальними підходами оптимізованої програми реабілітації та профілактики були: набір дієтичних та поведінкових практик, ін'єкційна місцева гіалуронова терапія, ромбоподібне шви з використанням методу перинеовагінального ліфтингу та лікування бактеріального вагінозу, включаючи використання топічних препаратів з естрогеновим компонентом.

Результати дослідження та їх обговорення. Запальні вагінальні захворювання з рецидивуючим бактеріальним вагінозом були виявлені у 48,3 % жінок, запальні шийкові захворювання — у 51,7 %, хронічний цервіцит — у 38,3 % жінок, інфекції, що передаються статевим шляхом (ІПСШ) — у кожної третьої пацієнтки (35,0 %), вульвовагінальний кандидоз та його комбінація з бактеріальним вагінозом спостерігалися в кожному п'ятому випадку (20,0 %), а у половини спостережень була діагностована вагінальна недостатність (45,0 %), у спокої (85,2 %) та під час напруження (59,3 %).

Запропонована програма сприяла значній регресії всіх симптомів, що призвело до 4,5-кратного зменшення тяжкості вагінальних виділень, 3,5-кратного зменшення частки епізодів свербіжів та печії, тоді як статистично значущих міжгрупових відмінностей не було в термінах зменшення слизових виділень, дискомфорту під час статевого акту та дисуричних проявів.

Висновки. Застосування запропонованої терапії демонструє статистично значуще зменшення проявів вагінального дисбіозу, сексуальної дисфункції та дисуричних проявів, відновлення мікробіому до параметрів нормоценозу у 80,0 %, а також 2,3-кратне зменшення частки рецидивів дисбіотичних процесів.

Ключові слова: дисфункція тазового дна та пролапс, порушення мікробіому слизової оболонки, рецидивуючий дисбіоз, бактеріальний вагіноз, сексуальна дисфункція, ін'єкційна гіалуронова терапія, перинеовагінальний ліфтинг.

Relevance

The data published by The Lancet Global Health (2024) show that about 40 million women annually experience general health disorders that occur and progress after pregnancy and childbirth [1, 2]. These consequences of postpartum health disorders can last from 6 months to decades, and the most significant ones are dyspareunia (35 %), cosmetic defects of the perineum, low back pain (32 %), anal fecal and gas incontinence (19 %), urinary incontinence (8-31 %), anxiety disorders (9-24 %), postpartum depression (11-17 %), perineal pain (11 %), tophophobia (6-15 %) and secondary infertility (11 %). These data are supported by our researches and the publications of a number of Ukrainian authors [3-6].

The problem of pelvic floor dysfunction is most often a concern for young women, but it can progress with age without proper correction, with at least 40 % of patients suffering from genital prolapse by the age of 40-50 years [4, 5]. According to J. Awwad and colleagues, pelvic floor dysfunction is diagnosed in 20.4 % of women aged 20-29 years, 50.3 % — at the age of 30-39 years, 77.2 % — at the age of 40-49 years [7], with 19 % of initial forms developing before the age of 30, 17 % — after 50 years, and 65 % — between 30 and 45 years [7]. As the disease progresses, functional impairment increases and contributes to the development of more severe organic forms.

The most significant early symptom of prolapse is the gaping vaginal opening when

the thighs are spread both at rest and during exertion, the closing function of which, along with an adequate pH level, separation of the lower and upper vaginal compartments and self-cleaning of the vagina during the menstrual cycle, are considered to be natural protective mechanisms aimed at maintaining the balance of microflora [4].

Additional symptoms may include sounds during sexual intercourse due to air entering the vagina, episodes of transient urinary incontinence during straining, and manifestations of sexual dysfunction. Also, it is necessary to point out the high proportion of recurrent nonspecific vulvovaginitis, cervicitis, bacterial vaginosis in patients with pelvic floor muscle failure, where vaginal mucosal biocenosis disorders are a predictor of perineal trauma during childbirth, and, therefore, a risk factor of this pathology in the future [3, 4, 6]. Due to the absence of closing ability of the genital slit the physiological barrier to infectious pathogens is lost, which creates the prerequisites for biocenosis disruption, changes in pH and the degree of purity and elastic properties of tissues. Unfortunately, this risk factor is unjustifiably neglected, while the vicious circle of vaginal dysbiosis — pelvic floor trauma — pelvic floor failure — vaginal laxity — vaginal mucosal microbiome disorders exacerbates pathological disorders of the pelvic muscle structure, which requires careful study of the pathogenetic chain and will prevent the progression of the clinical problem and eliminate the symptoms in this cat-

egory of patients.

The results obtained from the analytical study of the literature allow us to present new data that suggest that the early symptom in the case of so-called 'asymptomatic' pelvic floor prolapse is a gaping vaginal opening. This problem occurs as a defect in the pelvic musculofascial structures after childbirth due to the loss of the fulcrum (perineal centre) and the separation of the levator ani muscle, damage to the m. bulbospongiosus, which changes the function of vaginal sphincter closure and increases the risk of developing an imbalance of the normal mucosal microbiome [4]. In addition, untreated perineal muscle tears or injured genital venous plexuses lead to a disruption of the adequate blood supply to the vaginal walls, which aggravates these manifestations. Young women rarely seek help due to the mild symptoms of the initial forms of pelvic floor failure. The lack of medical examination of such patients, the imperfect standards of diagnosis and treatment of this symptom complex, and conservative-expectant tactics often contribute to the progression of the disease with age.

The issues of rehabilitation measures are insufficiently covered in the scientific literature and are presented only in the form of brief recommendations, which undoubtedly require further evaluation, specification and improvement. At present, there is no management and no clearly developed forms of a staged and compliant approach to the rehabilitation of this category of patients that could be successfully applied in practical medicine, and that is why this work touched upon the search for ways to solve the identified problems, and these arguments became a prerequisite for the development and conduct of this scientific study.

The aim of this study was to evaluate the effectiveness of the proposed techniques and therapeutic approaches to restore the normal vaginal microbiome in women with minimal symptoms of pelvic floor dysfunction — vaginal laxity after urgent delivery through the natural birth canal.

Materials and methods of the study

The study included 60 patients aged 21-35 years with minimal (asymptomatic) manifestations of pelvic floor dysfunction — gaping vaginal opening which was detected by a thorough examination and questioning during the first preventive examination after childbirth. Two groups were formed: the main group (30 women), where an optimised rehabilitation program for pelvic floor dysfunction was offered; and a comparison group (30 patients), where only medical approaches were used. The duration of management was 12 months after the completion of the proposed correction program.

The main fundamental approaches of the optimised rehabilitation and prevention program were as follows:

- a set of dietary and behavioural practices, nutrition aimed at reducing body weight in overweight patients, prevention of constipation (fiber-enriched foods), avoidance of physical activity associated with lifting weights, and giving up bad habits (nicotine, alcohol);
- additionally, the method of injectable hyaluron therapy was proposed — injection of a bulking solution of hyaluronic acid of high viscosity (28 mg/ml) of non-animal origin (developed specifically for submucosal injections) into the tissues of the posterior vaginal wall to enhance the resistance effect (infiltrative, three injections once in the form of a 'fan' at an angle of 150° after preliminary local application anaesthesia) [8-12]. According to the literature, intratissue injection of hyaluronic acid molecules is a kind of trigger for local metabolic correction, while being evenly distributed in the tissues and naturally filling in the 'defective' areas, it promotes prolonged action by triggering cascade mechanisms and activating connective tissue repair mechanisms at the injection site [13-18].

As an additional procedure, 10 pa-

tients in the main group underwent rhomboid suturing using the perineovaginal lifting method with monofilament absorbable threads, which create a fibrous reaction at the site of their insertion, contributing to the formation of the so-called 'secondary traction vector', which persists even after the suture is absorbed [8, 16 — 18].

According to the literature, the proposed methods can improve the correction of the closure function of the genital slit, act as a 'depot' of the drug in the areas of administration, providing a resistance effect, and not only reduce the vaginal lumen, but also reduce the manifestations of anal incontinence, eliminate the initial manifestations of prolapse, perineal deformity, improve sexual function, remove discomfort during sexual intercourse, reduce the number of dysbiotic manifestations, prevent disease progression and improve the quality of sexual life [8, 16 — 18].

The medication component of the program included treatment of bacterial vaginosis (intraconazole orally, topical combined antimicrobial drug containing metronidazole, miconazole nitrate and lidocaine intravaginally; and synbiotics orally in combination with intravaginal administration of a drug containing *Lactobacillus acidophilus* (H₂O₂-producing strains) and estriol).

It is necessary to focus on the proposal to use topical preparations of female sex hormones — estrogens, whose mechanisms of action on the structures of the urogenital tract have been proven and widely published in the literature [19-21], aimed at improving blood circulation, trophism and contractile activity of the pelvic floor muscles, represented by a cascade of multifaceted effects: proliferation of the vaginal epithelium, increased glycogen synthesis, restoration of the lactobacillus population and acidity of the vaginal environment; improvement of the quality of collagen structures and the binding apparatus, influence on the contractile activity of the detrusor, stimulation of the secretion of immunoglobulins of the paraurethral glands and prevention of the development of ascending urinary tract infection

[19-21].

A set of questionnaires, instrumental techniques (ultrasound), cough test, Valsalva test, pad test, 'stop test' were used in the study. Comprehensive microbiological examination included Gram-stained smear microscopy, culture, molecular biological examination of DNA of genital infections by PCR diagnostics, which allowed to assess the range of pathogens. Statistical processing of the results was carried out using a personal computer and Microsoft Excel spreadsheet software and Statistica version 8.0; non-parametric statistics methods were used — Chi-square (χ^2) criterion at the level of statistical significance $p < 0.05$.

Results of the study and their discussion

Inflammatory vaginal diseases, including recurrent bacterial vaginosis, were detected in 48.3 % of women, inflammatory cervical diseases — in 51.7 %, including chronic cervicitis — in 38.3 % of women, and sexually transmitted infections (STIs) — in one in three patients (35.0 %), vulvovaginal candidiasis and its combination with bacterial vaginosis were noted in one in five cases — 20.0 % (Table 1). It should be emphasised that almost half of the observations included vaginal laxity — 27 women (45.0 %), 23 (85.2 %) at rest, and 16 women (59.3 %) during straining.

It should be noted that the analytical study of complaints, including those related to biocenosis disorders, was made possible only as a result of a thorough interview and gynecological examination of patients. Hidden complaints include complaints of abnormal vaginal secretions, heartburn and itching in the vulvar area, which should be associated with dysbiotic conditions of the microbiome. A positive amine test, pH assessment of vaginal discharge and microscopic examination confirmed the diagnoses of vaginitis and bacterial vaginosis. Thus, patients of both groups formed a group with a high index of urogenital infection, dominance of nonspecific vaginitis and a decrease in the proportion of normal microflo-

Characteristics of the study groups, $n = 60$, abs.num., %.

Indicators	Main group, $n = 30$	Comparison group, $n = 30$
Age, years	29.4 ± 1.2	30.2 ± 1.6
BMI $> 25.0 \text{ kg/m}^2$	9 — 30.0	10 — 33.3
Perineal trauma during childbirth	19 — 63.3	18 — 60.0
Vaginal relaxation syndrome	9 — 30.0	8 — 26.7
Gaping vaginal opening	13 — 43.3	14 — 46.7
Increased vaginal secretion	14 — 46.7	13 — 43.3
Recurrent vaginal dysbiosis	15 — 50.0	14 — 46.7
STIs	10 — 33.3	11 — 36.7
Nonspecific vaginitis	8 — 26.7	7 — 23.3
Diseases of the cervix	15 — 50.0	16 — 53.3
Chronic cervicitis	11 — 36.7	12 — 40.0
Fecal incontinence	4 — 13.3	5 — 16.7
Vulvovaginal candidiasis and combination with bacterial vaginosis	6 — 20.0	6 — 20.0
Episodes of urinary incontinence	6 — 20.0	7 — 23.3
Sexual dysfunction	9 — 30.0	8 — 26.7

ra, as well as a significant proportion of relapse — 23 (38.3 %).

The proposed program of therapeutic interventions and rehabilitation therapy contributed to a significant regression of all symptoms (Figure 1), which led to a 4.5-fold decrease in the severity of vaginal discharge, a 3.5-fold decrease in the proportion of episodes of itching and heartburn, while no inter-group statistical differences were found in terms of reduced mucosal secretion, discomfort during sexual intercourse and dysuric manifestations.

It should be noted that the optimised program led not only to a decrease in these manifestations in the main group, but also allowed us to state the fact of a significant (4.3 times and 5.7 times, respectively) decrease in the proportion of recurrent dysbiosis and chronic cervicitis in the main group related to the

comparison group, contributed to a statistically significant decrease in the manifestations of vaginal microbiome dysbiosis and levelling of clinical symptoms of sexual dysfunction and dysuric manifestations in the main group, although without statistical inter-group differences in individual components.

At the same time, it was possible to achieve normalisation of the microflora in 24 people (80.0 %) in the main group against 15 (50.0 %) ($\chi^2 = 4.69$; $p < 0.05$), as well as a 2.3-fold reduction in the proportion of relapses ($\chi^2 = 4.51$; $p < 0.05$) (Figure 2).

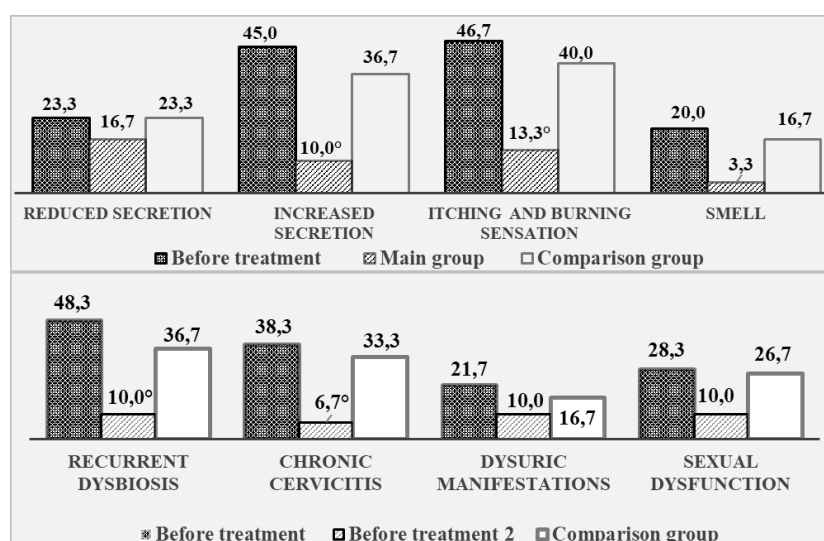


Fig. 1. Dynamics of complaints and clinical conditions in patients of the study groups, $n = 60$, %.

Notes. ° — difference is significant related to the comparison group, $p < 0.05$.

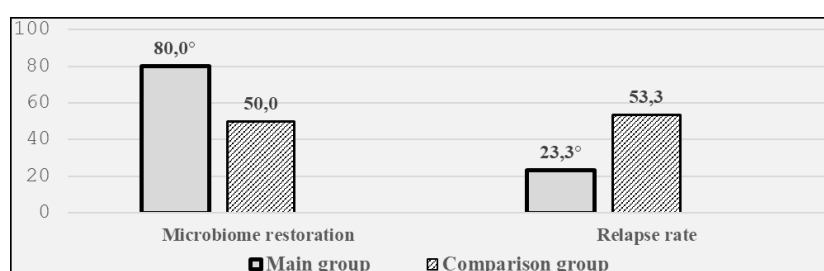


Fig. 2. Vaginal microbiome restoration and relapse rate in patients of the study groups, $n = 60$, %.

Notes. ° — difference is significant related to the comparison group, $p < 0.05$.

Thus, the data obtained made it possible to present sufficient clinical efficacy of the proposed treatment and rehabilitation program for the correction of the vaginal microbiome and the closure function of the genital slit as the initial manifestation of pelvic floor dysfunction.

Conclusions

The data of clinical analytical processing of medical documentation and comprehensive microbiological examination of the proposed therapy and follow-up for 12 months demonstrate a statistically significant reduction in the manifestations of dysbiotic disorders of the vaginal mucosa, clinical symptoms of sexual dysfunction and dysuric manifestations, restoration of the vaginal microbiocenosis to the parameters of normocenosis in 80.0 %, a 2.3-fold decrease in the proportion of recurrence of dysbiosis, which creates the prerequisites for expanding treatment and rehabilitation measures aimed at correcting the initial manifestations of pelvic floor dysfunction.

References

1. Vogel JP, Jung J, Lavin T. Neglected medium-term and long-term consequences of labour and childbirth: a systematic analysis of the burden, recommended practices, and a way forward. *Lancet Glob Health*. 2024 Feb; 12 (2): e317-e330. doi: 10.1016/S2214-109X (23)00454-0.
2. Chayka KV, Lavreniuk YuV. Problem of Genital Prolapses and their Correction by Nonsurgical Methods (review article). *Wiadomości Lekarskie*. 2021; 74 (3-I): 554-7.
3. Voitok TH. Clinical aspects of pelvic floor failure. Collection of scientific works of the staff of the Shupyk NMAPE. Kiev, 2020; 116.
4. Hladchuk IZ. Modern aspects of genital prolapse. *Women's health*. 2017; 4: 45-9.
5. Vasylyuk S, Ieredariuk A, Rimariuk M, Bondarjev R, Prolynenko O, Mykytjuk A Faktory rizika fekalni incontinece a tehotenstvi. *Ceska Gynkol* 2024; 89 (2): 102–6. doi: 10.48095/ccccg2024102.
6. Cheredarchuk AR, Makarchuk OM. Urogenital symptoms and vaginal mucosal microbiota disorders are the initial symptoms of pelvic floor failure in women of early reproductive age. Topical issues of paediatrics, obstetrics and gynecology. 2024; 2: 21-7.
7. Awwad J, Sayegh R, Yeretizian J, Deeb ME. Prevalence, risk factors, and predictors of pelvic organ prolapse: a community-based study. *Menopause*. 2012; 19 (11): 1235-41.
8. Aulia I, Valeria M. Current Perspectives in Vaginal Laxity Measurement: A Scoping Review. *Arch Plast Surg*. 2023 Aug 31; 50 (5): 452-62. doi: 10.1055/a-2113-3202.
9. Dmochowski RR, Appell RA. Injectable agents in the treatment of stress urinary incontinence in women: where are we now? *Urology*. 2000 Dec 4; 56 (6 Suppl 1): 32-40. doi: 10.1016/s0090-4295 (00)01019-0
10. Fagien S, Bertucci V, von Grote E, Mashburn JH. Rheologic and Physicochemical Properties Used to Differentiate Injectable Hyaluronic Acid Filler Products. *Plast Reconstr Surg*. 2019 Apr; 143 (4): 707e-720e. doi: 10.1097/PRS.0000000000005429.
11. Lose G, Mouritsen L, Nielsen JB. A new bulking agent (Polyacrylamide hydrogel) for treating stress urinary incontinence in woman. *BJU Inter*. 2006; 98 (1): 100-4.
12. Kim JE, Sykes JM. Hyaluronic acid fillers: history and overview. *Facial Plast Surg*. 2011 Dec; 27 (6): 523-8. doi: 10.1055/s-0031-1298785.
13. Kirchin V, Page T, Keegan PE, Atiemo KO, Cody JD, McClinton S, Aluko P. Urethral injection therapy for urinary incontinence in women. *Cochrane Database Syst Rev*. 2017 Jul 25; 7 (7): CD003881. doi: 10.1002/14651858.CD003881.pub4.
14. Wongprasert P, Dreiss CA, Murray G. Evaluating hyaluronic acid dermal fillers: A critique of current characterization methods. *Dermatol Ther*. 2022 Jun; 35 (6): e15453. doi: 10.1111/dth.15453
15. Newman DK, Wein AJ. Injection therapy for stress incontinence. *Managing and treating urinary incontinence* 2nd ed. 2008; 539.
16. Le C, Murgia RD, Noell C, Weiss M, Weiss R. Female genitourinary treatments in aesthetics. *Clin Dermatol*. 2022 May-Jun; 40 (3): 259-264. doi: 10.1016/j.clindermatol.2021.11.009.
17. Aguilar P, Hersant B, SidAhmed-Mezi M, Bosc R, Vidal L, Meningaud JP. Novel technique of vulvo-vaginal rejuvenation by lipofilling and injection of combined platelet-rich-plasma and hyaluronic acid: a case-report. *Springerplus*. 2016 Jul 26; 5 (1): 1184. doi: 10.1186/s40064-016-2840-y.
18. Park TH, Whang KW. Vaginal Rejuvenation with Gore-Mycromesh. *Aesthetic Plast Surg*. 2015 Aug; 39 (4): 491-4. doi: 10.1007/s00266-015-0502-z.
19. Cody JD, Jacobs ML, Richardson K. Oestrogen therapy for urinary incontinence in postmenopausal women / J.D. Cody, [et al.] /

- / Cochrane Database Syst. Rev. 2012; 10: 1405.
20. Pessina MA, Hoyt Jr RF, Goldstein I, Traish AM. Differential effects of estradiol, progesterone, and testosterone on vaginal structural integrity. Endocrinol. 2006; 147 (1): 61-9.
21. Robinson D, Cardozo L, Milsom I. Oestrogens and overactive bladder. Neurourol. Urodyn. 2014; 33 (7): 1086-91.

*Вперше надійшла до редакції 18.12.2024 р.
Рекомендована до друку на засіданні редакційної колегії після рецензування*

УДК 618.11-006.2-089-07: 618.11-007.61-091.8
DOI <http://dx.doi.org/10.5281/zenodo.15066154>

МОРФОФУНКЦІОНАЛЬНА ХАРАКТЕРИСТИКА ФОЛІКУЛЯРНОГО АПАРАТУ ТА СТРОМИ ЯЄЧНИКІВ З ПРООПЕРОВАНИМИ ФУНКЦІОНАЛЬНИМИ КІСТАМИ

Носенко О. М.

Одеський національний медичний університет, м. Одеса, Україна

MORPHOFUNCTIONAL CHARACTERISTICS OF THE FOLLICULAR APPARATUS AND STROMA OF OVARY WITH OPERATED FUNCTIONAL CYSTS

Nosenko O.M.

Odessa National Medical University, Odessa, Ukraine

Summary/Resume

The aim of the study was to study the morphofunctional state of the follicular apparatus and stroma of ovaries with functional ovarian cysts (FOC) in women of reproductive age. For this purpose, a histopathological assessment of the histostructural and morphofunctional features of the ovaries obtained during laparoscopic interventions from 22 people with corpus luteum cysts (CLC) and 23 patients with follicular cysts (FC), as well as 20 ovarian biopsies of the control group from somatically healthy women, without signs of endometriosis, endocrine disorders, with regular ovulatory cycles, in whom diagnostic laparoscopy and ovarian biopsy for idiopathic infertility were performed. It has been established that in patients of reproductive age with operated on FOC, the ovarian follicular apparatus is preserved in varying volumes, which makes it possible to preserve and restore reproductive function by performing organ-preserving operations, especially in cases with the presence of a cystic formation in a single ovary. FOC develop in ovaries, which, compared with controls, are characterized by inhibition of regressive transformation of follicles. Inhibition of regression of atretic bodies and transformational FC (trFC) is accompanied by polycystic transformation of such ovaries with an increase in the number of cystic, fibrous, fibrocystic atretic bodies and accumulation of trFC with the absence of granulosa lining, without division of the wall into layers and the appearance of trFC of a rounded shape. Disturbed ovulation processes in FOC are accompanied by a decrease in the presence of white bodies in the studied ovaries. FOC develop against the background of hyperandrogenic tumor-like processes in the ovaries, such as stromal thecomatosis and theca tissue hyperplasia, which requires appropriate postoperative rehabilitation of patients operated on for FOC and conducting treatment and prevention courses. There is a probable direct correlation between the severity of sclerosis in the cortical layer of the