

MINISTRY OF HEALTH OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY

Faculty International

Department of Obstetrics and Gynecology


CONFIRMED by
Vice-rector for scientific and pedagogical work
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September 1st 2023



**METHODICAL DEVELOPMENT FOR A PRACTICAL LESSON
IN ELECTIVE DISCIPLINE**

Faculty International, 6th year

Elective discipline "ULTRASOUND DIAGNOSTICS IN OBSTETRICS AND
GYNECOLOGY"

Practical lesson No2. Topic: "Ultrasound diagnosis of benign neoplasms of the
uterus"

Methodical development Practical Classes, OPP "Medicine", 6th year, medical Faculty. Custom
Discipline: «Ultrasound diagnostics in obstetrics and gynecology»

ONMedU, Department of Obstetrics and Gynecology. Practical Classes №2. Ultrasound diagnosis of benign uterine tumors

Approved:

Meeting of the Department of Obstetrics and Gynecology
Odessa National Medical University

Protocol No1 of August 28, 2023

Head of the Department (Ihor GLADCHUK)



Developers:

Candidate of Medical Sciences, Assistant

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(Yulia ONISHCHENKO)

Practical lesson No 2

Subject: «Ultrasound diagnosis of benign neoplasms of the uterus».

Objective: To understand the actuality and expediency of using ultrasound diagnostics in the examination of gynecological patients, due to the widespread introduction of ultrasound echography, as a modern highly informative and affordable research method in obstetrics and gynecology, which allows to provide a high-quality qualified level of medical care.

Minimally invasive research, the absence of contraindications and the need for special training, the possibility of repeated use, if necessary, provides an opportunity to widely apply this method in the practical activities of doctors.

Basic concepts: The place of ultrasound diagnostics in the complex of clinical research of gynecological patients with benign uterine formations. The concept of ultrasound in the classification of benign uterine formations according to FIGO. Ultrasonic topography and biometrics of uterine fibroids. Determination of the features of the echostructure of myomatous nodes. Use of Dopplerometry and visualization of blood flow of myoma nodes and uterine vessels. Ultrasound criteria for hyperplastic processes of the endometrium. An examination plan and parameters are required during ultrasound examination of the pelvic organs.

Equipment: Professional algorithms, structural and logical schemes, tables, dummies, video-photo materials of ultrasound results, results of laboratory and instrumental studies, situational tasks, patients, medical histories.

I. Organizational measures (greetings, checking those present, communicating the topic, the purpose of the lesson, the motivation of higher education students to study the topic).

The relevance is due to the widespread introduction of ultrasound echography, as a modern highly informative and affordable method of research in obstetrics and gynecology, which allows to provide a high-quality qualified level of medical care. Minimally invasive research, the absence of contraindications and the need for special training, the possibility of repeated use, if necessary, provides an opportunity to widely apply this method in the practical activities of doctors. Ultrasound diagnostics (ultrasound) in most cases of gynecological practice is the most reliable diagnostic method that allows doctors to recognize pathology in emergency conditions in a timely manner and identify pelvic

neoplasms, identify the causes of abnormal uterine bleeding and infertility in women.

2. Control of the reference level of knowledge (written work, written testing, online testing, frontal survey, etc.). Requirements for knowledge:

- communication and clinical examination skills of the patient;
- the ability to determine the main and etiological and pathogenetic and factor and benign neoplasms of the uterus;
- knowledge of ultrasonic classification of benign uterine tumors according to

FIGO;

- determining the list of necessary clinical, laboratory and instrumental studies and assessing the interpretation of their results;
- the ability to prescribe appropriate management tactics (principles of surgical interventions, conservative treatment, rehabilitation measures) for suspicious or abnormal ultrasound results. List of didactic units:
 - FIGO classification
 - M-echo/endometrial thickness and I
 - and intramural location
 - submucosal location
 - subserosal location

2.2. Questions (test tasks, tasks, clinical situations) to test basic knowledge on the topic of the lesson.

Question:

- Ultrasonic topography and biometrics of uterine fibroids, FIGO classification.
- Features of the echostructure of myomatous nodes. Typical echocharacteristics of fibroids
- Ultrasonic topography and biometrics of uterine fibroids, FIGO classification.
- Features of the echostructure of myomatous nodes. Typical echocharacteristics of myomas.
- Features of the echostructure of uterine fibroids 0-2 according to FIGO. The combination of ultrasound and general symptoms of the tumor.
- Features of the echostructure of uterine fibroids 3-4 according to FIGO. The combination of the ultrasound picture and the general symptoms of the tumor.

Test tasks:

1. A 44-year-old woman has complaints of aching pain in the lower abdomen, partaking urination. With ultrasound diagnosis: the uterus form is irregular deformed, increased to 7x8x7 cm. What is the preliminary diagnosis?"
 - Endometrial hyperplasia
 - Endometritis
 - Adenomyosis
 - Mioma of the uterus

- The patient complains of aching pain in the lower abdomen, painful menstruation. There is a history of 2 abortions, there was no birth. Objectively: the skin is pale, the abdomen is soft, sensitive on palpation of the lower parts. A bimanual examination revealed: the body of the uterus is enlarged, dense, mobile. Ovaries are mobile, not enlarged on both sides. What is the most reliable diagnosis?
 - Uterine fibroids
 - Ovarian cystoma.
 - Pregnancy.
 - Endometriosis.
 - Tumor of the kidney.

Correct answers: 1 – D; 2 – A; 3 – C.

- **Formation of professional skills and abilities (mastering skills, conducting curation, determining the treatment regimen, conducting laboratory research, etc.).**

— **The content of the tasks (tasks, clinical situations, etc.).**

Interactive task:

Students of the group are divided into 3 subgroups in the amount of 4-5 people each. We work in ultrasound diagnostic rooms with pregnant patients, we give tasks:

And the subgroup – assessment of the patient, history taking

Ii subgroup – advising the patient according to ultrasound screenings

Subgroup III – evaluates the correctness of the answer of the I and II subgroups and makes its own adjustments.

Clinical tasks:

Patient V., 42 years old, consulted with complaints of aching pain in the lower abdomen. From the anamnesis: the menstrual cycle is not regular, menstruation is painful, abundant in the type of AMK for 6 months. B-5, P-2, A-3. On examination: belly of a tea configuration. The vagina and cervix are not changed, pink. The uterus is dense, enlarged to 6x7x7cm, deformed, limitedly mobile, its surface is smooth. Appendages cannot be determined by the parameter free. **Task:** Formulate a preliminary diagnosis and determine further treatment tactics

Answer: Uterine fibroids, intramural variant, type 3-4za FIGO. Ultrasound examination of the pelvic organs, laboratory diagnostics – complete blood count, coagulogram.

Problem 2.

A 46-year-old patient is worried about frequent urination, aching pain in the lower abdomen, heavy menstruation over the past 6 years. Previously, she did not seek gynecological help. When examined by a urologist, no pathology was found on the part of the urinary system. Bimanual examination: the uterus is enlarged to 11x9x12 cm, irregularly shaped, dense, applications are not palpated. On ultrasound OMT, the uterus is enlarged to 13x10x12 cm due to hyperechoic formation along the anterior wall, which is located subserously.



Challenge: Establish a diagnosis and determine further treatment tactics

Answer: Uterine fibroids, subserous variant, type 5-6 according to FIGO. Operative I and forging - g and sterectandI

Test tasks:

- A patient of 39 years old has complaints of intense pain during menstruation, accompanied by abundant bleeding such as AMK. What disease is it typical of?

- Mioma of the uterus type 0-1 FIGO. B. Mioma uterus type 3-4 FIGO
 - Retention ovarian tumor.
 - Trophoblastic disease.
 - Mioma of the uterus type 5 FIGO.
- A 43-year-old patient complained of constant dull pain in the lower abdomen, more on the left, an increase in body temperature to 38 ° C. Over the past 5 years, it has been examined for uterine fibroids. With a bimanual examination: the uterus is enlarged to 8x7x8cm, dense, tuberous. To the left of the uterus is a formation, 6x8 cm in size, of elastic consistency, sharply painful on palpation. Appendages on both sides without features. On ultrasound, uterine fibroids type 7 FIGO were diagnosed, from a heterogeneous structure with hypo- and hyperechoic inclusions of a rounded shape. Possible diagnosis?
 - Uterine sarcoma.
 - Ectopic pregnancy.
 - Piosalpinx.
 - Fibromatous necrosis

Correct answers: 1 – A, 2 – D.

— **Recommendations (instructions) for the implementation of tasks (professional algorithms, orientation maps for the formation of practical skills and abilities, etc.).**

Uterine fibroids (leiomyoma, fibroids, myofibroma, leiomyofibroma, fibroleiomyoma, fibroma, fibroid) is a benign tumor consisting mainly of smooth muscle cells, but also containing different amounts of fibrous connective tissue.

Uterine fibroids can be solitary or numerous and develop in the body or, less commonly, the cervix, round ligaments at the beginning of development, all fibroids are intramural, and, depending on the direction of growth (centripetally or centrifugal), become submucous or subserous.

Subserous fibroids can have a leg and parasitize on other organs, receiving blood supply from them.

Submucous fibroids have more fibrous tissue, submucous – more muscle. Sarcomatous alterations are more frequent in submucous fibroids.

The main symptomatic about the onset of fibroids include

- Uterine bleeding
- Pain, feeling of pressure in the pelvis
- Enlarged abdomen (rapid growth > 6 weeks throughout the year)
- Pain and fever (red degeneration of fibroids during pregnancy, torsion, infarction of subserous fibroids on the leg, infection or sarcomatous degeneration of submucous fibroids — infertility, spontaneous abortions and other complications of pregnancy.

Ultrasonic topography and biometrics of uterine fibroids.

Ultrasound allows you to estimate the number of nodes of the tumor, its diameter and structure. Fibroids can be visualized in different ways in ultrasound. Most of them are defined as multiple, with clear contours, homogeneous hypoechoic structure of nodal formations, subserous, submucous or interstitial. Old fibroids become hyperechoic, some of them acquire mixed echogenicity as a result of central necrosis. Bright gi-perechoic structures as a result of calcification can be determined.

Rapidly growing fibroids, for example during pregnancy, simulates hypoechoic cysts. Study in different planes is necessary to differentiate fibroids and tuboovarial formation. Some fibroids grow on the stem. Uterine fibroids can displace the back wall of the bladder.

The sonologist defines the myoma as a rounded object with a heterogeneous structure and clear boundaries that make the sensor signal weaker.

Echogenicity and structural features of fibroids are directly dependent on the place of occurrence of the tumor and on the type of tissue that forms it. For example: leiomyomas will look on the screen of the ultrasound apparatus as homogeneous, hypoechoic formations (due to smooth muscle fibers of low differentiation); Doctors note fibroids as more "light" formations of high density. In the first phase of the menstrual cycle, the size of the tumor is much smaller than in the second. This is due to the fact that edema is possible due to the presence of the female hormone – progesterone. In other words, if you conduct research twice a month, the size of fibroids may be different.

FIGO CLASSIFICATION

Previously, leiomyomas were classified according to their localization:

- subserous (top layer),
- intramural (muscle layer of the uterus),
- submucous (submucosal — inner layer of the uterus).

Also allocated by the location of the nodes:

- The typical location of nodes in 95% in the body of the uterus is intramural (the tumor is located in the thickness of the uterine wall), submucous (fibroid growth occurs towards the uterine cavity, causing deformation of the uterus) and subserous (fibroid growth occurs towards the abdominal cavity).
- Atypical location of nodes in 5% – in the cervix – cervical form, intraligamentary (interconnective location of nodes).

Among the most common classifications also distinguished

Classification of uterine leiomyoma by nodule localization
 (Beznoshchenko,2001) intermuscular (intramural) -subperitoneal
 (subserous)

-submucosal (submucous)

Atypical forms by localization :

- posterior,
- pre-cervical,
-
- retroperitoneal,
-
- supraperitoneal,
- paracervical,
-

Interconnectivity

Node growth

can be:

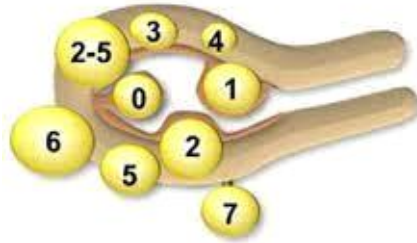
- centripetal (inside),
- expansive (separation of tissues),
- eccentric (outward),
- intraligamentary (in the leaves of a wide bundle)

This division was used before the classification of the International Federation of Obstetricians and Gynecologists (FIGO) was adopted worldwide in 2011. So today, according to the international classification, there are 8 types of fibroids:

- 1-2nd — enter the uterine cavity;

•3-7th — these are intramural-subserous (depending on the size, the tumor may be located in several layers of uterine tissue at once); •8th — fibroids on the leg.

So, in the results of ultrasound, the doctor indicates what type of fibroids according to FIGO he found. This information is usually enough to make a decision on treatment tactics.



Patients with uterine fibroids undergo transabdominal sonography to determine the location, structure and features of vascularization of myoma nodes.

Degenerative changes in fibroids include red, hyaline, cystic, fatty, mucoid and myxoid (mucous) degeneration, heart attack (and ischemic necrosis), calcification. Sarcomatous degeneration - 0.7 % of fibroids, more often with their submucous localization.

Ultrasound to determine myoma formations is performed using a transvaginal and transabdominal sensor. As studies that help differentiate fibroids from adenomyosis, evaluate with blood circulation tan, the structure of the node

from the application of color Doppler mapping in the construction of a three-dimensional picture makes it possible to obtain an image of a vascular tree.

Requirements for the results of work, including design.

- Consult the patient and determine the general anamnestic parameters necessary for the ultrasound.
- Explain the need for ultrasound examination of the pelvic organs.
- Analyze the results of ultrasound examination based on the results of scans.
- Determine the further tactics of patient management and the need to prescribe further examination.

— **Control materials for the final stage of the lesson: tasks, tasks, tests, etc.**

Situational tasks:

Patient M. , 39 years, I turned to a gynecologist with complaints of prolonged abundant menstruations for 3 cycles. From history: the menstrual cycle is regular, 28-29 days, the duration of menstruation for the last 3 months was 7-10 days. Pregnancies 4: childbirth 2, abortions 2. The last visit to the gynecologist 3 years ago, diagnosed uterine myoma. On examination: skin cover about you pale pink color. Pulse 78 beats per minute, rhythmic, satisfactory properties. BP 130/75 mm Hg. Art. In a general blood test, hemoglobin 86 g/l. Abdomen is soft, painless on palpation. In a bimanual study: the body of the uterus is increased 6x5x6 cm, spherical in shape, dense, painless, mobile. Appendages on both sides are not painful, not enlarged.

Task:

- What is the most likely cause of menstrual dysfunction?
- What research method is most diagnostically informative?

Answer:

- Uterine fibroids
- Ultrasound examination of the condition of the uterus and endometrium.

Test tasks KROK-2 (2021):

1. A 32-year-old woman turned to an obstetrician-gynecologist with complaints of heavy painful menstruation, infertility for 6 years. According to the results of the bimanual study – the uterus is enlarged in size 8x6x6 cm, deformed according to the external contour, the ovaries are not enlarged, mobile on both sides. Ultrasound examination of the pelvic organs of ultrasound signs of hyperechoic formation on the back wall of the uterus closer to the left rib, which deforms the external contour: A. Polyp of the uterus.

- Ovarian cyst.
- Left-sided hydrosalpinx.
- Uterine fibroids. *

4. Summing up (criteria for evaluating learning outcomes).

Current control: oral questioning, testing, evaluation of practical skills, solving situational clinical problems, evaluation of activity in the classroom, etc. ***The structure of the current assessment in the practical lesson:***

- Evaluation of theoretical knowledge on the topic of the lesson:

- methods: survey, solving a situational clinical problem;
- The maximum score is 5, the minimum score is 3, the unsatisfactory score is 2.
- Assessment of practical skills and manipulations on the topic of the lesson:
 - methods: assessment of the correctness of practical skills;
 - The maximum score is 5, the minimum score is 3, the unsatisfactory score is 2.
- Evaluation of work with the patient on the topic of the lesson:
 - methods: assessment of: a) communication skills of communication with the patient, b) the correctness of the appointment and evaluation of laboratory and instrumental studies, c) compliance with the algorithm for conducting a differential diagnosis d) justification of the clinical diagnosis, e) drawing up a treatment plan;
 - The maximum score is 5, the minimum score is 3, the unsatisfactory score is 2.

Criteria for the current assessment in a practical lesson:

Score	Evaluation criteria
«5»	The studentt is fluent in the material, takes an active part in the discussion and solution of a situational clinical problem, confidently demonstrates knowledge of ultrasound screening diagnostics in obstetrics and the correct appointment of laboratory and instrumental studies, expresses his opinion on the topic of the lesson, demonstrates clinical thinking.
«4»	The studentt is well versed in the material, participates in the discussion and solution of a situational clinical problem, demonstrates knowledge of ultrasound screening diagnostics and the correct appointment of laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, demonstrates clinical thinking.
«3»	The studentt does not have enough knowledge of the material, uncertainly participates in the discussion and solution of a situational clinical problem, demonstrates knowledge of ultrasound screening diagnostics and the correct appointment of laboratory and

	instrumental studies with significant errors.
«2»	The studentt does not own the material, does not participate in the discussion and solution of a situational clinical problem, does not demonstrate knowledge of ultrasound screening diagnostics and the correct appointment of laboratory and instrumental studies.

List of recommended literature.

Main:

1. Obstetrics and Gynecology: in 2 books. - Book 2. Gynecology: textbook (university III-IV r.a.) / ed. V.I. Gryshchenko, M.O. Shcherbyna - 3rd ed., vypr., 2020. – 376 s

- Clinical Obstetrics and Gynecology: 4th Edition/ Brian A. Magovan, Philip Owen, Andrew Thomson. – 2021. – 454 p.
- Avramenko N. V., Barkovsky D. E. Anomalies in the development of the genital organs in girls and methods of their correction. Bulletin of the problems of biology and medicine. 2018; 1(142): 16-20
- Oxford Texbook of Obstetrics and Gynecology / Sabaratram Arulkumaran, Wiliam Ledger, Lynette Denny, Stergios Doumouchtsis – Oxford University Press, 2020, 928 p. **Additional:**

- Situational tasks in gynecology: a textbook. / I.Z.Gladchuk, A.G.Volyanska, G.B.Shcherbyna and others.; ed. prof. I.Z.Gladchuk. – Vinnytsia: LLC "Nilan-LTD", 2018.-164 p.
- Clinical tasks in obstetrics and gynecology for students of IV-VI courses (part I). Methodical development for practical classes in obstetrics and gynecology for students of IV-VI courses of the School of Medicine / O.O. Korchynska, N.Y. Bysaga / ed. rof. Malyara V.A. – Uzhhorod: "Lira", - - 2019.-119s.
- Clinical tasks in obstetrics and gynecology for students of IV-VI courses (part P). Methodical development for practical classes in obstetrics and gynecology for students of IV-VI courses of the School of Medicine / O.O. Korchynska, N.Y. Bysaga / ed. prof. Malyara V.A. – Uzhhorod: "Lira", - - 2019.-119s.
- De La Cruz M. S. Uterine fibroids: diagnosis and treatment / M. S. De La Cruz, E. M. Buchanan // Am. Fam. Physician. – 2017. – Vol. 95 (2). – P.

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- Uterine fibroids / E. A. Stewart, S. K. LaughlinTommaso, W. H. Catherino [et al.] // Nat. Rev. Dis. Primers.– 2016. – Vol. 2. – 16043. – Access mode : <https://doi.org/10.1038/nrdp.2016.43> HYPERLINK
["https://doi.org/10.1038/nrdp.2016.43"](https://doi.org/10.1038/nrdp.2016.43).
 - Al-Hendy A. Uterine fibroids: burden and unmet medical need / A. AlHendy, E. R. Myers, E. Stewart /Semin. Reprod. Med. – 2017. – Vol. 35 (6). – P. 473–480. – Access mode : <https://doi.org/10.1055/s-0037-1607264>.
 - Identification of incident uterine fibroids using electronic medical record data / O. Yu, S. D. Reed, R. Schulze-Rath [et al.] // EGEMS (Wash DC). – 2019. – Vol. 7 (1). – P. 5. – Access mode : <https://doi.org/10.5334/egems.264> HYPERLINK
["https://doi.org/10.5334/egems.264"](https://doi.org/10.5334/egems.264). Bulletin of Medical and Biological Research
 Bulletin of Medical and Biological Research ISSN 2706-6282(print) ISSN 2706-6290(online) Original research Original research 1(7),2021
 - Lauterbur P. Image formation by induced local interactions: Examples employing nuclear magnetic resonance / P. Lauterbur // Nature. – 1973. – Vol. 242. – P. 190–191. – Access mode : <https://doi.org/10.1038/242190a0>.
 - "Clinical protocols", approved by the order of the Ministry of Health of Ukraine on obstetrics and gynecology.

Online sources for preparation:

- Practical recommendations of the International Society of Ultrasound in Obstetrics and Gynecology (ISUOG). Internet: www.isuog.org/ISUOGGuidelines HYPERLINK
["http://www.isuog.org/ISUOGGuidelines"](http://www.isuog.org/ISUOGGuidelines)
- Ultrasound protocols. Internet-resource: Ukrainian portal of ultrasound diagnostics. Internet-resource: <http://ultrasound.net.ua/> HYPERLINK ["http://ultrasound.net.ua/"](http://ultrasound.net.ua/)
- Ultrasound-guided high-intensity transcutaneous focused ultrasound for symptomatic uterine fibroids: Interventional procedures guidance. <https://www.nice.org.uk/guidance/ipg657> HYPERLINK ["https://www.nice.org.uk/guidance/ipg657"](https://www.nice.org.uk/guidance/ipg657) HYPERLINK ["https://www.nice.org.uk/guidance/ipg657"](https://www.nice.org.uk/guidance/ipg657).

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