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## Discrepancies between preoperative diagnosis of tumors and the right uterine appendage and intraoperative data. Appendicular mucocoele, which manifests itself in the form of an appendage formation. Clinical case

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Tumor formations of the tubes, hydrosalpinxes, pyosalpinxes have a number of discrepancies in outpatient service examinations and intraoperative clinical diagnosis.

**Purpose** — to report a unique case with discrepancies between the preoperative diagnosis (pyosalpinx, hydrosalpinx) and the intraoperative and postoperative definitive findings (appendicular tumor, mucocoele).

**Clinical case.** A 50-year-old woman, a 3-year-old Mirena IUD wearer, applied for examination for pain in the right iliac region and a slight rise in temperature to 37–37.5 over the past 10 days. The examination showed the movement of the tumor on the right up to 7–4 cm, sensitive on palpation, uterine fibroids, and appendices on the left without features. Other history, physical examination, and laboratory tests were not remarkable, and there was no leukocytosis as in inflammatory processes. Ultrasound and MRI showed neoplasms of the right appendages of 7–5–4 cm, avascular and uterine fibroids — 3 subserosal nodes of 10–5 mm each. Intraoperatively Intact 2 fallopian tubes were detected, a tumor formation of the appendix 3–2–3 cm without adhesions was isolated. Laparoscopic appendectomy was performed along with conservative myomectomy and bilateral salpingectomy. Histopathology showed mucocoele without atypia, myomas nodules, and fallopian tubes without features.

**Conclusions.** In the formation of the right appendages of the uterus, a thorough preoperative diagnosis is required, which does not always give a definitive answer to the clinical diagnosis. Diagnostic laparoscopy, visual and operational clinical experience of the surgeon, cytological and histological examination of intra- and postoperative results make it possible to carry out adequate surgical treatment. Patients should be informed about doubts between outpatient and intraoperative diagnosis, possible changes in the intraoperative surgical plan. Prompt care should be provided in institutions with appropriate teams and equipment.

The research was carried out in accordance with the principles of the Helsinki Declaration. The informed consent of the patient was obtained for conducting the studies.

No conflict of interests was declared by the authors.

**Keywords:** right uterine appendages, mucocoele, appendix, pyosalpinx.

### Розбіжності між передопераційною діагностикою пухлинних утворів правих придатків матки та інтраопераційними даними. Апендикулярне мукоцеле. Клінічний випадок

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Пухлинні утворення труб, гідросальпінкси, піосальпінкси мають ряд розбіжностей при амбулаторних обстеженнях та інтраопераційній клінічній діагностиці.

**Мета** — повідомити про унікальний випадок із розбіжностями між передопераційною діагностикою піосальпінксу, гідросальпінксу, тубооваріального утворення, підтверджених за допомогою 3D-ультразвукового дослідження (УЗД) і магнітно-резонансної томографії (МРТ), інтраопераційних та післяопераційних остаточних результатів (апендикулярна пухлина, мукоцеле).

**Клінічний випадок.** Жінка віком 50 років, носій внутрішньоматкової системи «Мірена» упродовж 3 років, звернулася для обстеження з приводу болю в правій клубовій ділянці та незначного підвищення температури до 37–37,5°C протягом останніх 10 днів. За результатами обстеження виявлено рухомий пухлинний утвір справа розмірами 7–4 см, чутливий при пальпації, міома матки 8 тижнів, додатки зліва — без особливостей. Супутній анамнез, фізикальне обстеження та лабораторні аналізи — без особливостей, лейкоцитозу, як при запальних процесах, не виявлено. На УЗД та МРТ візуалізовано новоутворення багатокamerне аваскулярне правих придатків 7–5–4 см та маткову міому — 3 субсерозні вузли по 10–5 мм. Інтраопераційно виявлено дві інтактні маткові труби, пухлинний утвір апендикса 3–2–3 см без спайок і муцинозного вмісту в черевній порожнині. Лапароскопічну апендектомію проведено поряд із консервативною міомектомією і двобічною сальпінгектомією. За даними гістопатології відмічено мукоцеле без атипії, міоми, вузлики, маткові труби — без особливостей.

Апендикулярне мукоцеле може проявлятися у вигляді утворення правої маткової труби, яке складно діагностувати амбулаторно, навіть за допомогою МРТ.

**Висновки.** Під час обстеження правих придатків матки потрібно проводити ретельну передопераційну діагностику. Діагностична лапароскопія, візуальний і операційний клінічний досвід хірурга, цитологічне і гістологічне дослідження інтра- і післяопераційних результатів дають змогу призначити адекватне лікування. Пацієнтів слід інформувати щодо сумнівів амбулаторної діагностики і підкреслювати, що встановлення клінічного діагнозу можливе після інтраопераційної ревізії органів черевної порожнини та малого таза, що може спричинити зміни в плані лікування. Своєчасну допомогу необхідно надавати в закладах із відповідними бригадами та обладнанням. Дослідження виконано відповідно до принципів Гельсінської декларації. На проведення досліджень отримано інформовану згоду жінки. Автори заявляють про відсутність конфлікту інтересів.

**Ключові слова:** праві придатки матки, мукоцеле, апендикс, піосальпінкс.

## Introduction

Appendage neoplasms have a broad differential diagnosis, e.g., benign/malignant, gynecological, gastrointestinal, urinary, or metastatic [7]. However, when a patient goes to an obstetrician-gynecologist for examination, in most cases, uterine appendages are regarded as a gynecological pathology [14]. Metastatic tumors of gastrointestinal cancer, cysts, and abscesses of other abdominal or pelvic organs may mimic the formation of appendages, particularly in the right iliac region [7]. One of the formations is an appendicular tumor – mucinous cystadenoma and rarely by mucinous cystadenocarcinoma, which is difficult to differentiate from tumor formations of the right uterine appendages at the outpatient stage of examination [10].

Appendicular mucocele (AM) is an obstructive dilation of the lumen of the appendicular process due to hyperproduction of mucus (0.2–0.3% among all appendectomies), but can occur in the practical operative work of the operating gynecologist [19,21]. The most aggressive is mucinous cystadenocarcinoma, the dissemination of which during surgery can lead to pseudomyxoma peritonii in the form of multiple mucinous deposits [2,3,16]. A feature of AM is the difficulty of diagnosis during ultrasound and magnetic resonance imaging (MRI) examinations that visualize the tumor formation of the right uterine appendages [13,18,20].

The *purpose* of the presentation were to report a case of unique discrepancy between the preoperative preliminary diagnosis (appendages) and the intraoperative/postoperative definitive conclusion (tumor of appendicular origin). Since the appendicular and appendage masses mimic each other; Thus, in addition, we use a literature review with similar cases described. We report this case in accordance with the updated Consensus-Based Surgical Case Report (SCARE) guidelines [1].

Written informed consent has been obtained from the patient for the publication of this case report and accompanying images. The research was carried out in accordance with the principles of the Declaration of Helsinki.

## Clinical case

A 50-year-old woman from the Lviv region, Ukraine, went to a gynecological clinic in Lviv Regional Hospital of War Veterans and Repressed named after Y. Lypa. A patient who has been a Mirena intrauterine device (IUD) carrier for

3 years, for the treatment of uterine fibroids and abnormal uterine bleeding, sought examination for pain in the right iliac region and a slight increase in temperature to 37–37.5°C over the past 10 days. The patient had no gastrointestinal problems. The patient underwent regular gynecological observation as a carrier of the Mirena IUD for 3 years against the background of uterine fibroids; before Mirena was staged, there were uterine bleeding, against the background of treatment, menstruation became short and scanty. Her history was 1 cesarean section. Social, environmental, family and work history have been unremarkable in the past. She never smoked, little bit drank alcohol, no took long-term medication.

During the physical examination, the movement of the tumor on the right up to 7–4 cm was detected, sensitive on palpation, uterine fibroids, and processes on the left without features. The cervix was clean, the Papp test was normal. Ultrasound and MRI showed neoplasms of the right appendages 7–5–4 cm, avascular and uterine fibroids – 3 subserosal nodes of 10–5 mm each.

Ultrasound of the pelvic organs showed a volumetric formation of the right appendages of the uterus 67–25–31 mm, without vascular invasion during Dopplerometry, an IUD in the uterine cavity and 3 subserosal nodes 10–13 mm along the anterior wall of the uterus. The tumor formation during dynamic observation and nodes have not changed over the past 2 years. MRI showed a cystic lesion of the right appendages (72×40×35 mm) with thin septa, no signal intensity, but 3 small myometrial lesions (10–15 mm) with low signals on T2. Ureters without features.

The patient's condition was regarded as a tubo-ovarian mass on the right, or pyosalpinx according to ultrasound and MRI data, the rest of the physical examinations were without features. Antibiotic therapy was recommended to treat right-hand pyosalpinx for 10 days: Ceftriaxone 1.0 twice daily, Metronidazole 100 intravenously twice daily, Levofloxacin 500 once daily, Diclofenac 100 supp rectal – 10 days. At the time of hospitalization, her vital signs were normal. Tumor markers showed normal HE 4 and CA 125, her hemogram and metabolic panel were within normal limits and did not match the diagnosis of pyosalpinx. On the last day of antibiotic therapy, a pipelle biopsy of the endometrium was performed against the background of the endometrium 2.4 mm by ultrasound. After a benign

histological conclusion, a pipelle of an endometrial biopsy and a control ultrasound, the woman insisted on surgery unchanged.

The patient was discussed in the surgical department regarding the tactics of surgical treatment and it was decided to perform a laparoscopic bilateral salpingectomy on both sides and a conservative myomectomy, since at the age of 50 the patient insisted on preserving the uterus and ovaries, as well as not removing Mirena. Since there was a history of cesarean section, postoperative adhesions were expected, the operating team was formed a gynecologist and a general surgeon.

### Surgical technique and findings

The patient was hospitalized for diagnostic laparoscopy, bilateral salpingectomy, conservative myomectomy. After revision of the abdominal cavity and pelvic organs, the appendicular tumor formation was isolated from the ovaries, obturated, without mucus leakage. No mucinous fluid was found in the abdomen. The liver, spleen, kidneys on palpation are normal, there are no peritoneal nodules.

First, bilateral salpingectomy and conservative myomectomy of 3 subserosal nodules were performed by a gynecologist. At the appendixectomy stage, the operator was an experienced surgeon (Fig. 1, 2, 3). Intraoperative cytology of the impressions of the contents of the appendix did not show an oncological process. The postoperative period passed without complications, on the 2<sup>nd</sup> day she was discharged on the postoperative day without complaints.

Histopathological report showed a mucinous neoplasm of the appendix (6×2.5×3 cm) – a cystic formation lined with mucin-producing intestinal epithelium with the formation of numerous papillae and formed by fibrous tissue with lymphocytic infiltrates, uterine nodes and tubes – without features. He was diagnosed with mucocele of the appendix – mucinous cystadenoma.

### Discussion

AM belongs to the category of rare types of tumors of the gastrointestinal tract, more common among postmenopausal women [4,22]. However, in recent years, there have been more and more publications on the detection of appendix tumors in women of reproductive age [5,11].

In terms of clinical manifestations, AM is often nonspecific. This rare pathology may never be seen by obstetricians and gynecologists, in particular

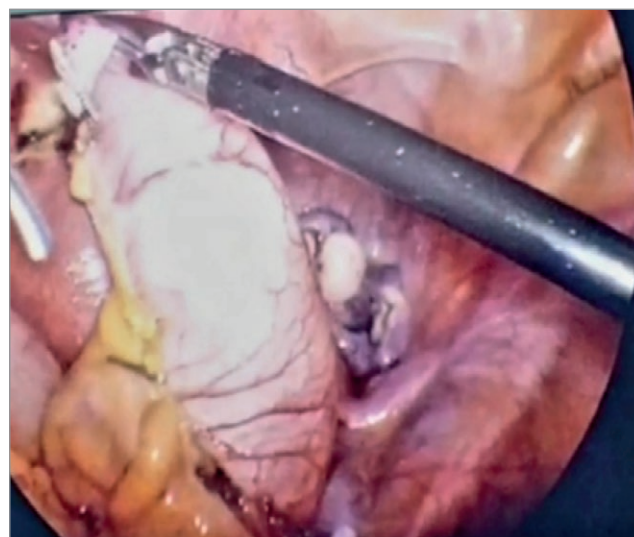


Fig. 1. Appendix intraoperatively laparoscope

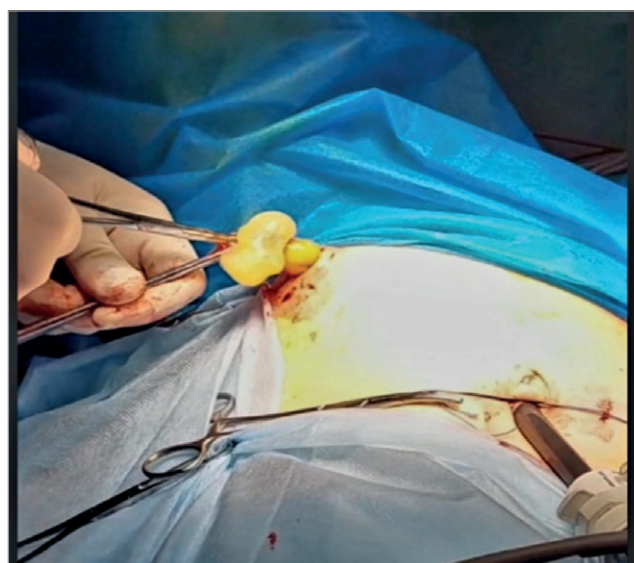


Fig. 2. Stage of appendix removal during laparoscopy



Fig. 3. Appendicular mucocele



those of the outpatient service, in practice. The situation is similar with ultrasound and MRI doctors.

In the preoperative period, only <30% of general surgeons can diagnose appendicular mucinous cystadenomas before surgery using transvaginal/transabdominal ultrasound, MRI, computed tomography (CT), and positron emission tomography (PET) [15,19]. Our patient's tumor markers were normal, and pelvic ultrasound and MRI indicated an ovarian tumor, which later turned out to be a mucinous cystadenoma of the appendix. This situation is rare, although others have reported similar possible uncertainty [4,9,17]. Even with the involvement of a full range of outpatient examinations in the diagnosis of this pathology, diagnostic laparoscopy justifies adequacy in making a diagnosis.

Thus, AM should be considered in the differential diagnosis of women with neoplasms on ultrasound in order to choose the best surgical approach [6,8,12,18]. The gynecologist can use diagnostic laparoscopy if there is a general surgeon in the medical institution, if a mass of appendicular origin is detected. Thorough preoperative discussing such cases can help minimize

the possibility of intraoperative surprises for both patients and physicians.

### Conclusions

Tumor formations in the right iliac region are not purely gynecological pathologies; there may also be the formation of an appendix – mucocele. Diagnostic laparoscopy, visual and operational clinical experience of the surgeon, cytological and histological examination of intra- and postoperative results make it possible to carry out adequate surgical treatment. Patients should be informed about doubts between outpatient and intraoperative diagnosis, possible changes in the intraoperative surgical plan.

The experience and clinical awareness of the operating gynecologist are the keys to the correct assessment of any doubtful situation, critical thinking in case of discrepancy between clinical signs and laboratory indicators, will contribute to the choice of an appropriate surgical team, pragmatic laparoscopic access, and prepared intraoperative equipment.

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