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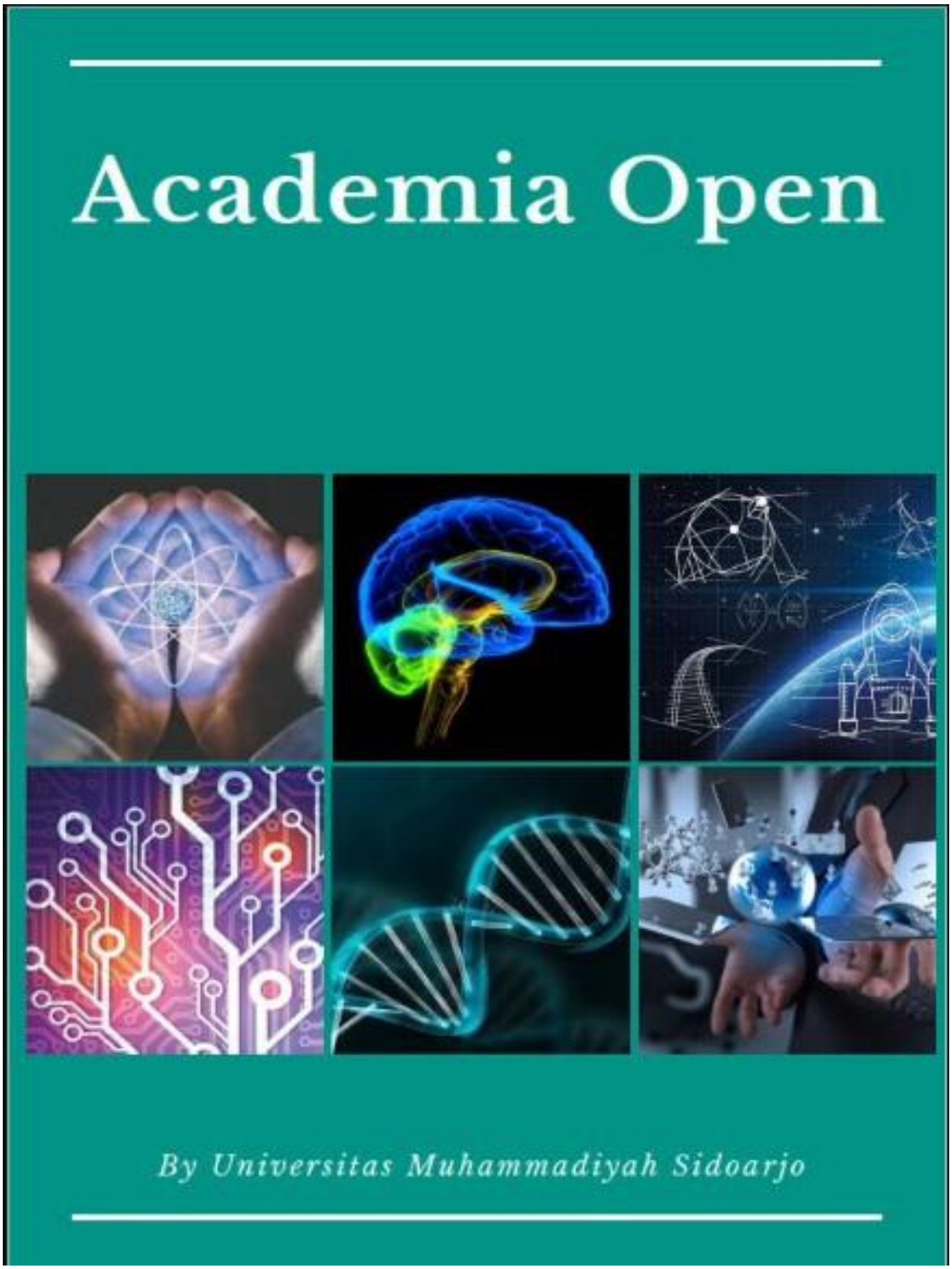

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Table Of Contents

Academia Open

Vol. 11 No. 1 (2026): June
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Active Therapeutic and Diagnostic Management of Acute Appendicitis in a Pregnant Woman During the First Trimester

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Abstract

General Background: Acute appendicitis is a frequent cause of abdominal pain in women of reproductive age and presents diagnostic and therapeutic challenges during pregnancy due to anatomical and physiological changes. **Specific Background:** In the first trimester, symptoms may appear typical, yet clinical evaluation remains complex, requiring careful diagnostic and surgical decision-making to ensure maternal and fetal safety. **Knowledge Gap:** Despite established surgical approaches, the optimal management strategy for appendicitis in early pregnancy, particularly regarding minimally invasive techniques and multidisciplinary care, remains insufficiently detailed in clinical case-based evidence. **Aims:** This study aims to present a clinical case and evaluate diagnostic and therapeutic management of acute appendicitis in a pregnant woman during the first trimester. **Results:** A 28-year-old patient at 12 weeks of gestation underwent successful laparoscopic appendectomy following clinical, laboratory, and ultrasound diagnosis, with uneventful postoperative recovery and preserved pregnancy confirmed by follow-up. **Novelty:** The study highlights the integration of laparoscopic surgery with obstetric collaboration and tailored postoperative care in early pregnancy. **Implications:** Early diagnosis, interdisciplinary management, and minimally invasive intervention contribute to favorable maternal and fetal outcomes while preventing severe complications such as perforation and peritonitis.

Highlights:
- Early Surgical Intervention Prevented Progression to Severe Abdominal Complications
- Multidisciplinary Coordination Ensured Safe Perioperative Management for Mother and Fetus
- Minimally Invasive Approach Supported Rapid Recovery and Stable Gestational Continuation

Keywords: Acute Appendicitis, Pregnancy, Laparoscopic Appendectomy, First Trimester, Surgical Management.

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Introduction

Acute appendicitis is one of the most common causes of acute abdominal pain in women of reproductive age and occurs in 0.05–0.1% of pregnant women [6,11]. Diagnosis is complicated by anatomical and physiological changes characteristic of pregnancy, including displacement of internal organs and alterations in pain perception. Delayed diagnosis increases the risk of perforation and peritonitis, which negatively affects pregnancy outcomes [2,8,15].

The symptomatology characteristic of appendicitis may vary depending on the trimester of pregnancy. In the first trimester, the development of appendicitis is typically classic. The sudden onset of sharp pain in the right iliac region, radiating to the lower back or lower abdomen, is the most characteristic symptom. In some cases, appendicitis may initially present with pain in the epigastric region. Nausea, vomiting, abdominal bloating, and bowel disturbances may occur. Body temperature is often low-grade [4,9,13].

In the second and third trimesters, the symptomatology may change. Pain is localized in the right side of the abdomen, often radiating to the hypochondrium. The presence of Bartomier–Michelson and Obraztsov signs is characteristic. Additionally, there may be a mild increase in body temperature, single episodes of vomiting, or nausea [1,10,14].

The diagnosis of appendicitis during pregnancy is generally challenging. In most cases, it is difficult to detect the pathological focus during physical examination. The diagnosis is usually confirmed after performing additional diagnostic investigations [3,5,7].

When diagnosing appendicitis, urgent hospitalization of the pregnant patient is indicated. The main treatment method is surgical intervention. Up to 18 weeks of gestation and after childbirth, laparoscopy is preferred as the least invasive approach. At later gestational stages, appendectomy is typically performed via laparotomy [12].

Materials and Methods

A retrospective analysis was conducted on patients treated surgically for acute and chronic intersphincteric paraproctitis in a specialized coloproctology unit. Diagnosis was based on clinical findings and digital rectal examination, which was performed under anesthesia in diagnostically unclear cases. Laboratory evaluation included complete blood count to assess inflammatory activity.

Surgical treatment was performed under general or regional anesthesia and consisted of abscess drainage with identification and elimination of the internal opening using dye injection. Sphincter-preserving techniques and seton placement were applied when the external anal sphincter was partially involved. Excised tissues were subjected to histopathological examination. Postoperative management included antiseptic irrigation, drainage, and clinical follow-up to assess recurrence and sphincter function.

Results and Discussion

For illustration, the following clinical case is presented.

Patient B., 28 years old, at 12 weeks of gestation, was admitted on January 14, 2026, to City Clinical Hospital No. 3 in Tashkent with complaints of pain in the right iliac region, nausea, low-grade fever (37.8 °C), and decreased appetite.

History of Present Illness:Symptoms appeared approximately 24 hours ago. The pain initially was diffuse in the epigastric region and later localized to the right iliac region, accompanied by nausea and episodes of vomiting without blood. The patient reported low-grade fever, loss of appetite, weakness, and general malaise. Abdominal distension, mild diarrhea, tachycardia, and slight sweating were noted. On palpation, pronounced tenderness was observed in the right iliac region. Shchetkin–Blumberg, Pasternatsky, and Rovsing signs were positive.

Medical History: The pregnancy is progressing normally, with regular follow-up by an obstetrician-gynecologist. No complications have been noted during the gestational period. The patient adheres to dietary and lifestyle recommendations and maintains an active regimen within permissible limits. She denies chronic diseases, previous surgeries, and any somatic or endocrine disorders. No allergic reactions to medications, foods, or other substances have been identified.

Objectivus:The general condition is moderate. Body temperature 37.8 °C, pulse 88 bpm, blood pressure 110/70 mmHg. Abdominal Examination: The abdomen is moderately tense in the right iliac region. Palpation reveals pronounced tenderness, with positive signs of peritoneal irritation (Blumberg and Rovsing signs).

Abdominal Ultrasound Examination: Normally, the appendix is not visualized. In cases of inflammation, this segment of the intestine can be seen as a hypoechoic structure lacking peristalsis. On ultrasound examination of the right iliac region, the vermiform appendix is visualized. Appendix diameter: 8 mm. Appendix wall thickness: 4 mm. Appendiceal compressibility: absent; the appendix does not compress under probe pressure. Echogenicity of surrounding fat tissue: increased, indicating inflammation (periapendicular hyperechogenicity). Appendiceal lumen content: hypoechoic content detected, suggesting fluid or pus. Free fluid: a small amount of free fluid is visualized in the right iliac region. Echogenic inclusions: echogenic foci (fecaliths) are present within the lumen of the appendix. Lymph nodes: mesenteric lymph nodes are enlarged (Figure 1)

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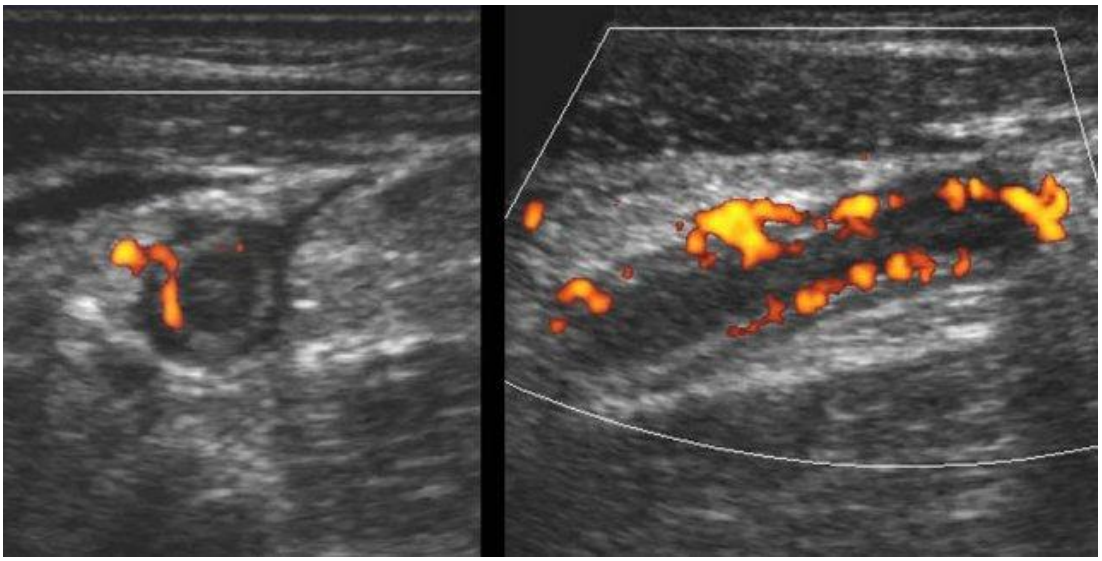
Figure 1. Ultrasound features of acute appendicitis.



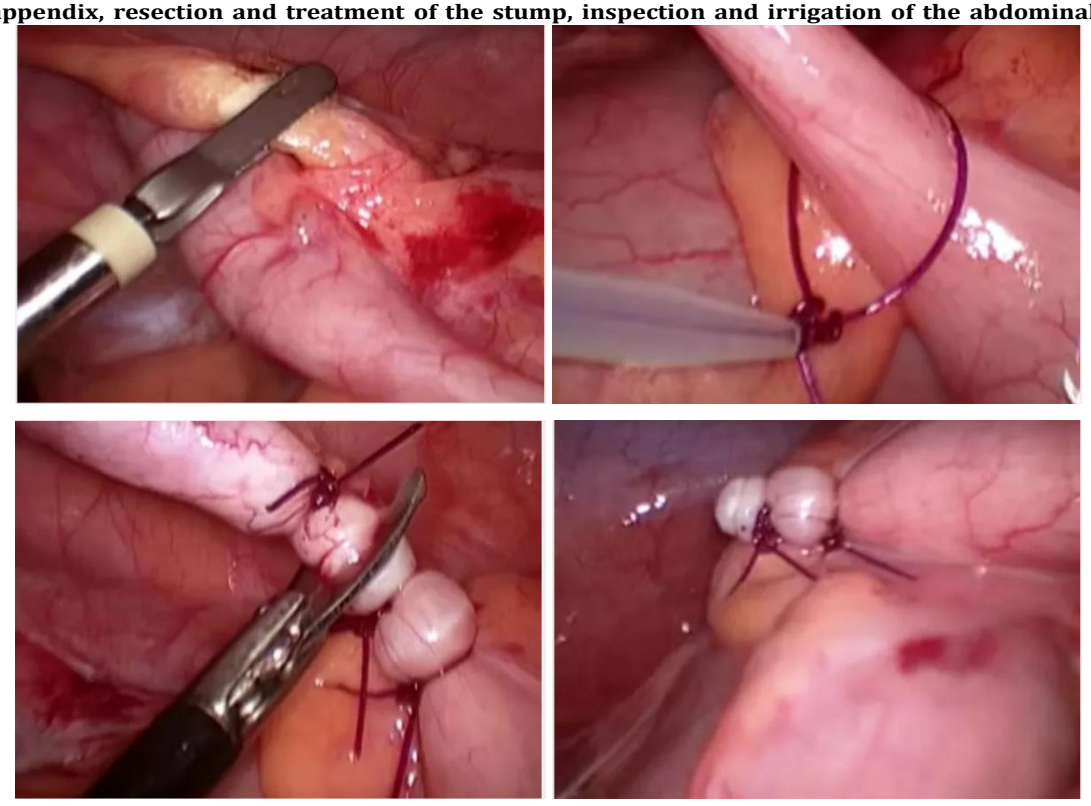
*Laboratory Findings:*White blood cells – 12.1 × 10⁹/L, neutrophils – 82%, erythrocyte sedimentation rate – 30 mm/h, hemoglobin – 103 g/L, hematocrit – 30%, platelets – 260 × 10⁹/L. Urinalysis – no pathological changes detected.

*Preliminary Diagnosis:*Acute appendicitis? Pregnancy, 12 weeks.

Considering the first-trimester pregnancy and the recommendations of the obstetrician-gynecologist, a decision was made to perform a laparoscopic appendectomy under general anesthesia.

Surgical Protocol (Diagnostic laparoscopy on 07.11.2024): After standard preparation of the surgical field, general anesthesia was induced. Trocar placement was performed: one umbilical trocar for the camera and two accessory trocars in the right iliac region and above the pubis. During the procedure, organ displacement and uterine enlargement were noted, requiring careful mobilization of the vermiform appendix. The appendix appeared hyperemic, without signs of perforation. Appendectomy was performed using the standard laparoscopic technique, with endoscopic clamping and dissection of the mesoappendix (Figure 2).

Figure 2. Grasping of the appendix, coagulation and division of the mesoappendix, placement of ligatures at the base of the appendix, resection and treatment of the stump, inspection and irrigation of the abdominal cavity



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The iliac region was irrigated with physiological saline, and hemostasis was achieved. No postoperative drainage was placed. The trocars were removed, and the incisions were closed in layers using absorbable sutures.

The postoperative period was uneventful. Antibacterial therapy safe for pregnancy was administered (amoxicillin 500 mg orally every 12 hours for 5 days). Infusion support, symptomatic treatment, and monitoring of temperature, bowel function, and fetal status were provided. To prevent complications, spasmolytics (drotaverine) and tocolytics (terbutaline) were used as indicated by the obstetrician-gynecologist. These medications help relax the myometrium and prevent the risk of miscarriage or preterm labor.

Obstetrician-gynecologist consultation was conducted before the surgery, in the early postoperative period, and prior to discharge. On the second postoperative day, the patient was mobilized, bowel peristalsis was restored, body temperature normalized, and her general condition was satisfactory. She was discharged on the fifth postoperative day. Follow-up fetal ultrasound one week later demonstrated normal fetal heart activity and continuation of the pregnancy.

Microscopic Examination Results. Histological examination of the resected appendix confirmed acute catarrhal appendicitis.

The presented clinical case demonstrates the importance of maintaining a high level of vigilance for acute abdominal pain in pregnant women, especially during the first trimester. It highlights the necessity of an interdisciplinary approach (surgeon + obstetrician-gynecologist) to ensure safe surgical intervention and the preservation of pregnancy.

Thus, acute appendicitis in pregnant women is often masked by nonspecific abdominal pain, and physiological organ displacement along with altered pain perception complicate the localization of pain and the diagnostic process.

Laparoscopic appendectomy is a safe and effective method during the first trimester of pregnancy, allowing for minimal tissue trauma, reduced impact on the fetus, and a lower risk of postoperative complications compared to open surgery. Technical difficulties during the procedure, caused by uterine enlargement and displacement of anatomical landmarks, require increased surgical precision and experience. Early consultation with an obstetrician-gynecologist allows assessment of fetal risks and adjustment of postoperative monitoring and management. Laboratory findings (leukocytosis, neutrophilia, elevated ESR) reflect a pronounced inflammatory process and serve as additional confirmation of the diagnosis. Timely surgical intervention prevents the development of complications (perforation, peritonitis, sepsis), which is critically important for the preservation of pregnancy.

Conclusion

Appendicitis in acute during pregnancy is still a major dilemma for diagnosis and treatment secondary to anatomic and physiological alterations, sometimes occurring, particularly in the first trimester of pregnancy. The case presented illustrates early diagnosis through clinical examination, laboratory techniques and ultrasound as indispensable tools for prompt surgery to avoid fatal outcomes both for mother and her foetus.

Laparoscopic appendectomy in pregnant women during the first trimester is a simple and good treatment modality if respect adequately paid, indicating gestational properties, with close collaboration with an obstetrician-gynaecologist. This technique spares important blood supplying vessels during surgery, it lowers the incidence of postoperative complications and has no negative effect upon pregnancy outcomes.

Multidisciplinary approach, early hospitalization, individualized preoperative preparation are important in the preservation of pregnancy and successful clinical outcomes. Early surgical intervention for acute appendicitis in pregnancy prevents perforation, peritonitis and fetal loss and justifies active diagnostic and therapeutic approach.

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Vol. 11 No. 1 (2026): June
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