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Acute Appendicitis in the Third Trimester of a Pregnancy finished with Spontaneous Vaginal Delivery

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ABSTRACT

Acute appendicitis is the most common surgical problem occurring during pregnancy. Its incidence is more common in the second trimester and is confirmed in 1/1000 pregnancies. Clinical manifestations of acute appendicitis in pregnant patients are generally very similar to non- pregnant patients. We present, here, the case of a 29-year-old pregnant patient at 35+4 weeks of gestation with the signs of acute appendicitis. The patient underwent a successful open appendectomy of her perforated appendix, without performing a cesarean section (CS) at the same time. 5 weeks postoperatively, at term, labor was induced with vaginal prostaglandins and the patient delivered a healthy female baby without any complications. Immediate diagnosis of acute appendicitis during pregnancy is recommended and management with the suitable surgical intervention should not be delayed for >24 h as it increases the risk of perforation with its subsequent critical complications. The treatment of acute appendicitis is always surgical, with an appendectomy and perioperative broad-spectrum antibiotics. Except in cases of high maternal and fetal mortality, a CS should not be done simultaneously with the appendectomy in cases of a perforated appendix with diffuse peritonitis, due to the very high risk of dehiscence of the uterus.

Keywords: Appendectomy, cesarean section, diffuse peritonitis, pregnancy, third trimester

BACKGROUND

Acute appendicitis is the most common surgical problem occurring during pregnancy. Its incidence is more common in the second trimester and is confirmed in 1/1000 pregnancies [1,2]. Clinical manifestations of acute appendicitis in pregnant patients are generally very similar to non-pregnant patients (right lower quadrant pain, nausea, vomiting, anorexia, rebound tenderness, and fever). However, accurate diagnosis of acute appendicitis in pregnant patients is more difficult because of the special physiologic and anatomic changes that occur during pregnancy, such as physiologic leukocytosis and enlargement of the uterus [3]. Diagnosis is even more difficult in the third trimester of pregnancy as the abdominal pain may be milder and atypically localized more lateral and higher in the upper right side of the abdomen and as the enlarged uterus causes displacement and lateral rotation of the appendix [2,4]. To confirm the diagnosis, abdominal ultrasound (US) scan or magnetic resonance imaging (MRI) can be done, but multiple unprompted investigations can delay surgical intervention and will increase the risk of appendix perforation which is associated with higher maternal and fetal morbidity [1].

The treatment for acute appendicitis in pregnancy is always surgical [1]. The chosen surgical technique depends mostly on the gestational week and the general state of the patient, with maternal welfare in mind. Explorative laparoscopy is usually recommended during the first and second trimesters. In the third trimester, conversion to an open laparotomy is recommended once the diagnosis of appendicitis is confirmed laparoscopically [5,6].

The management of acute appendicitis during the third trimester of pregnancy should favor completing the normal pregnancy to term, providing that the patient is stable and there are no signs of preterm labor or risk of fetal loss. Cesarean section (CS) should not be performed during the third trimester of pregnancy in patients with perforated appendix and diffuse peritonitis since the intraperitoneal spread of infectious material to the uterus is a high risk of uterine incisional dehiscence [7].

CASE REPORT

A 29-year-old woman presented to the University Clinic of Obstetrics and Gynecology in her first pregnancy at the 35+4 weeks of gestation. The patient conceived after one in vitro fertilization treatment. She complained of an onset of abdominal pain which started on the previous day. The pain started around her umbilicus and migrated to her upper right side. On examination, the patient showed the signs of rebound tenderness. Blood analysis showed increased inflammatory parameters (increased C-reactive protein and

increased white cell count with neutrophilia). An obstetric US scan was done showing a normal eutrophic fetus. Cardiotocography (CTG) was also normal.

As the patient showed typical signs of appendicitis during pregnancy, an abdominal surgeon was consulted and an emergency surgery was indicated. The patient was transferred to the operating room for an appendectomy. Using the Hasson open technique, a small supraumbilical incision was made, and the peritoneum was penetrated and pus came out of the incision site. As visualization was difficult and satisfactory lavage could not be accomplished, conversion to an open appendectomy was indicated. A midline laparotomy was done to enter the abdominal cavity. A diffuse purulent peritonitis was found caused by a gangrenous appendix. A typical appendectomy was done with extensive irrigation of the abdominal cavity. During the procedure, CS was not indicated despite the near term gestational week, due to the diffuse purulent peritonitis. After the operation, the patient was commenced on wide-spectrum antibiotics and intravenous hydration. On the 4th post-operative day, peristalsis resumed and blood inflammatory parameters normalized. CTG and US scans were performed postoperatively and were normal. On the 10th post-operative day, the patient was discharged in a general good condition. She was followed up regularly in the hospital on a weekly basis.

5 weeks later, at 40+2 weeks of gestation, the patient was hospitalized at the obstetrics ward for labor induction due to her recent laparotomy. Labor was induced with vaginal prostaglandins and the patient delivered a healthy female baby, without any complications.

DISCUSSION

Immediate diagnosis of acute appendicitis during pregnancy is recommended and management with the suitable surgical intervention should not be delayed for >24 h since it increases the risk of perforation with its subsequent critical complications [5]. Perforation of an infected appendix can cause intraperitoneal spread of purulent and fecal material. This can cause further exacerbating of the patient's condition, causes sepsis, and poses a major risk of fetal loss and patient morbidity [3].

Imaging studies such as US, MRI, and computed tomography are useful tools to confirm the diagnosis and reduce delays in surgical interventions, while at the same time reduce the incidence of negative appendectomies [8,9].

The treatment of acute appendicitis is always surgical, with an appendectomy. Perioperative wide-spectrum antibiotics should always cover Gram-positive, Gram-negative, and anaerobic bacteria. Antibiotic therapy alone can be effective only in patients with uncomplicated chronic appendicitis but not in pregnant women. Prophylaxis with tocolytic agents should not be given to the patients during surgery unless there are signs of preterm labor [2].

Laparoscopic appendectomy is most often recommended during the first two trimesters. During the third trimester, if a diagnosis of appendicitis is concluded intraoperatively, then the procedure is converted to an open appendectomy [2]. If the diagnosis of unperforated appendicitis is suspected, then a transversal incision is more effective. If the diagnosis is less certain, then an umbilical midline vertical incision is recommended since it provides better visualization and allows a more effective diagnosis of other mimicking conditions [1,7].

CS is rarely indicated at the same time of appendectomy. Emptying the uterus will not affect recovery from the surgery [1,10]. Only if the patient is in a life-threatening condition, emptying the uterus can be considered to allow better maternal resuscitation and faster recovery. Regardless of the gestational week, maternal well-being should always be a priority and put ahead of the fetus [1]. In case of diffuse peritonitis, opening the uterus will raise the risk of intrauterine infection and dehiscence. The risk of dehiscence of the uterus at the time of appendectomy with diffuse peritonitis is very high. Appendectomy and CS can be done simultaneously only in cases where there is an obstetric indication for a CS and when the patient is over 37 weeks of gestation [4].

CONCLUSION

The therapeutic approach of appendicitis in pregnant patients should always be surgical. Antibiotic therapy alone is contraindicated in pregnancy. The management of acute appendicitis during the third trimester of pregnancy should favor completing the normal pregnancy to term when the patient is stable and there are no signs of preterm labor or risk of fetal loss.

A CS should not be performed at the same time with an appendectomy of a perforated appendix with diffuse peritonitis since the risk of dehiscence of the uterus is very high unless there is a strong clinical indication of a CS for a life-threating maternal or fetal condition.

Perioperatively, two broad-spectrum antibiotics should always be administered with adequate intravenous rehydration. Tocolysis should not be used prophylactically but only in the presence of signs of preterm labor.

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