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Carrying out Laparoscopic Appendectomy in Women with a Multiple Pregnancy

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ABSTRACT

Acute appendicitis is the most common surgical pathology in women with multiple pregnancies, which threatens the life of the mother and the newborns. The incidence of acute appendicitis in women with multiple pregnancies is, according to different data. In a timely manner, appendectomy is not always possible to avoid obstetric and surgical complications, which occur in 17% of cases. According to the latest data, 50% of pregnant women with acute appendicitis enter surgical hospitals 48 h after the onset of the disease, as they are initially hospitalized in gynecological hospitals with suspicion of the threat of termination of pregnancy. Thus, in most pregnant women appendectomy is performed more than a day after the onset of the disease.

Keywords: Acute appendicitis, Pregnancy, Laparoscopic appendectomy, Antibiotic therapy

INTRODUCTION

Acute appendicitis is the most common surgical pathology in women with multiple pregnancies, which threatens the life of the mother and the newborns. The incidence of acute appendicitis in women with multiple pregnancies is, according to different data, from 0.03 to 5.2% [1-3]. Mortality in acute appendicitis in pregnant women is 10 and more times higher than outside pregnancy and is 2.5-3.0% and in case of complicated appendicitis, it reaches 16.7% [2,4-7].

In a timely manner, appendectomy is not always possible to avoid obstetric and surgical complications, which occur in 17% of cases [3,8-11]. The frequency of diagnostic errors in acute appendicitis in women with multiple pregnancies ranges from 11.9-44.0%, 12-44% with hypo- and over-diagnosis being equally permissible, with a frequency ratio of 25% and 31%, respectively.

According to the latest data, 40-55% of pregnant women with acute appendicitis enter surgical hospitals 48 h after the onset of the disease, as they are initially hospitalized in gynecological hospitals with suspicion of the threat of termination of pregnancy. Thus, in most pregnant women appendectomy is performed more than a day after the onset of the disease [12-14]. Therefore, in pregnant women, especially in later terms, the destructive forms of acute appendicitis occur 5-6 times more often than in non-pregnant ones. Primarily in the III trimester, the destructive forms of acute appendicitis become complicated by perforation and widespread peritonitis; occur three times more often than in first trimester and 2 times more often than in the second trimester of pregnancy [15-13].

Emergency surgery is now impossible to imagine without laparoscopy. The rapid development of laparoscopic surgery led to a reassessment of the role of laparoscopy in pregnant women, as a result of which laparoscopic appendectomy became a reasonable alternative to open surgery at different pregnancy times [16,17]. Multiple pregnancies aren't considered a contradiction to laparoscopy and laparoscopic appendectomy. In acute appendicitis in patients with multiple pregnancies, an undeniable advantage of the laparoscopic method is the possibility of verifying the diagnosis, which often allows us to limit diagnostic laparoscopy, avoiding unjustified appendectomy.

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The greatest problem in carrying out laparoscopic surgery in this contingent of patients in conditions of pneumoperitoneum is the possible violations of blood circulation in the mother and fetus. One of the options for a compromise between laparoscopic and open interventions is the use of laparoscopically assisted surgery (LAO). The peculiarities of LAO are that the stage of mobilization of a remote or resected organ is laparoscopically, partially and completely, and its removal and reconstruction is carried out in an open way through mini-access up to 4 cm.

MATERIALS AND METHODS

Under our supervision, between 2010 and 2014 there were 48 women with multiple pregnancies diagnosed with acute appendicitis. 18 (37.5%), women underwent diagnostic laparoscopy and 30 (62.5%) with laparoscopically assisted appendectomy. The range of gestation was 6 to 36 weeks. Pregnant women had 16 (33.3%) in the first trimester, 24 (50%) in the second trimester and 8 (16.7%) in the third trimester.

In recent years, we are expanding the indications for the use of diagnostic laparoscopy in cases of suspected acute appendicitis in women with multiple pregnancies in order to shorten the duration of the dynamic observation of patients, which causes the loss of time and progression of the disease, significantly reduce the number of diagnostic errors and reduce the frequency of unreasonable appendectomy. The patients were activated without threat of termination of pregnancy 6-8 h after the operation; the average duration of the bed-day in the surgical department was 4.2 to 5 after which patients were transferred for further treatment and supervision to the obstetrics and gynecology department.

Prevention of premature termination of pregnancy, as a rule, begins in the preoperative period, we continue during the operation and in the postoperative period regardless of the gestation period. In the first trimester of pregnancy, the use of dydrogesterone or natural micronisine progesterone is indicated. In the II-III trimesters it is advisable to use tocolytics. In order to prevent postoperative inflammatory complications and intrauterine infection of the fetus, pregnant women, operated on for destructive appendicitis, were prescribed antibiotic therapy. In the first trimester, semi-synthetic penicillins and from the second trimester, semi-synthetic penicillins or cephalosporins in average therapeutic doses for 5-7 days.

When prescribing drug therapy in the post-operation period, the recommendations of the American Food and Drug Administration (FDA) on the safety of use during pregnancy, as well as the normatively-decreed documents of the Ministry of Health of Ukraine were taken into account.

All operations were performed under endotracheal anesthesia. In the first trimester of pregnancy, the technique of laparoscopy does not differ from the standard technique. Carboxyperitoneum was created up to a pressure of 10-12 mm Hg with the needle Veresa. For examination of the abdominal cavity laparoscopes with optics of 30° were used, which make it possible to effectively inspect the ileocecal region in most of the observations without introducing additional manipulators. The slope of the operating table on the left side greatly facilitates the laparoscopy.

Beginning with the second trimester of pregnancy, the Hassen open laparoscopy technique was used to prevent needle injuries. Hearing of a pregnant uterus [18], access was made depending on the size of the uterus [19]. Troakar was introduced along the middle line just above the upper edge of the uterine fundus. Carrying out a diagnostic laparoscopy in late pregnancy, they took special care, not allowing "blind" manipulation in the abdominal cavity. If the appendix was not visualized, a 5 mm trocar for the manipulator was inserted above the bosom [20].

Depending on the anatomical situation, the operation was performed using 2 or 3 trocar. In the case of double-barrel access, the appendix was grasped at the apex and removed together with the trocar onto the anterior abdominal wall, after which appendectomy was performed. One of the conditions for a successful operation is the correct location of the second trocar above the base of the appendix. With an insufficiently movable dome of the cecum, even a slight deviation of the site of trocar insertion from the optimal leads to significant technical difficulties, which usually cause the conversion or expansion of the trocar wound [21-23].

Three trocars for appendectomy were used for a short and inactive mesentery of the appendix, atypical appendectomy, gangrenous and perforated appendicitis, as well as peria-pendicular fusions that limit the mobility of the appendectomy [24]. In this case, the mesentery was crossed in the abdominal cavity, applying regimes of mono- and bi-polar coagulation. After the intersection of the mesentery, the mobilized process, as in the two-tube technique, was removed from the abdominal cavity together with the trocar. Direct appendectomy was performed in a ligature invagination way, peritonizing the stump of the appendix with a suture seam. During laparoscopy, adequate infusion therapy was performed with the use of tocolytic therapy [25,26].

Administration of 4-6 g of magnesium sulfate dissolved in 100 ml of physiological solution is carried out intravenously (iv) for 30-45 min, after which they switch to continuous iv injection at a rate of 2-4 g/h until cessation or significant contraction of contractions [27-30]. Sometimes after the termination of labor, minor contractions of the uterus continue. In this case, a vaginal examination is performed regularly. If the cervical dilatation is continued, the dose is increased or another tocolytic agent is prescribed for the prevention of premature birth [31].

RESULTS AND DISCUSSION

In 18 (37.5%) patients with multiple pregnancies, the initial diagnosis of acute appendicitis was not confirmed. The first trimester of pregnancy was in 10 (20, 8%), II - in 6 (12, 5%) and III - in 2 (4, 2%) women. In one patient with a gestation period of 36 weeks, the clinical picture simulating acute appendicitis was caused by torsion of the fallopian tube together with a cystically altered ovary. The ovarian tube was defecated. In 4 (8, 3%) patients in I and II trimesters there were ruptures of ovarian cysts. In 2 (4.2%) patients in I trimester acute pancreatitis was diagnosed and 9 (18.7%) women in I and II trimesters had no acute diseases of the abdominal cavity organs.

Of the 30 patients who underwent laparoscopically assisted appendectomy, the first trimester of pregnancy was in 8 (26.7%), the second trimester in 16 (53.3%) and the third trimester in 6 (20%). Phlegmonous appendicitis was found in 14 (46.7%) pregnant women, gangrenous - in 6 (20%) and perforated - in 3 (10%).

The appendix was located in the right iliac region in 36 (75%) patients, of which 20 (41.7%) of women had a pregnancy period corresponding to the second and third trimesters. Atypical location was observed only in 8 (16.7%) pregnant women. Localizations of the appendix in the small pelvis - in 12 (25%) patients, in the subhepatic space - in 4 (8.3%), retrocetically - in 1 (2%) did not complicate the laparoscopic operation. In the first case, we observed in the right ileal fossa moderate subcutaneous emphysema within 2 days, spontaneously resolved without the use of any measures. Subcutaneous emphysema was caused by gas injection through the Veresk needle. There were no intraoperative complications. In the postoperative period, an inflammatory infiltrate in the anterior abdominal wall appeared in one patient. To prevent purulent-inflammatory complications, avoid contact of the appendix with the tissues of the anterior abdominal wall. No intra-abdominal complications were noted [32].

In 6 patients with gangrenous appendicitis complicated by unrestricted serous and serous-fibrinous peritonitis and in 3 patients with perforated appendicitis, the operation became more complicated. The exudate was carefully aspirated; the places of its accumulation (right lateral canal and small pelvis) were washed with physiological solution with dioxidine to clean wash water [33]. We consider the indication in such situations of mandatory drainage of the abdominal cavity with the introduction of 4 aseptic per day. Drainage in all cases was removed after 2-3 days. Video laparoscopy makes it possible to adequately place the drainage in the abdominal cavity under the vision control, providing conditions for complete drainage.

Laparoscopically assisted appendectomy using 2 trocars managed to perform 12 (40%), 3 trocars - 18 (37.5%) to pregnant women. Conversions to the open operation were not conducted. In 3 (10%) patients there was a transition from a two-barreled technique of laparoscopically assisted appendectomy to a three-barrel. Post-operative complications were not observed [34].

The advantage of laparoscopically assisted appendectomy in comparison with laparoscopic appendectomy is a shorter exposure to the pregnant uterus of strained carboxyperitoneum and a decrease in its negative impact on the fetus [35]. The procedure of the operation involves the creation of carboxyperitoneum only at the stage of diagnostic laparoscopy and, if necessary, for the final sanitization of the abdominal cavity. For laparoscopic appendectomy, carboxyperitoneum is necessary throughout the operation. The average duration of laparoscopically assisted appendectomy in pregnant women was 46.4 min, the average duration of carboxyperitoneum was 21.8 min. The duration of carboxyperitoneum with laparoscopically assisted appendectomy using 2 trocars is less than using 3 trocar [36,37].

After discharge from the hospital 2 women at their request pregnancy was artificially interrupted in the early period. Cesarean section was performed according to obstetric indications of 6 (20%) to women and was not associated with a delayed appendectomy or laparoscopy. In 22 (73.3%) women, the births took place without any peculiarities. All babies were healthy.

Our experience of performing laparoscopic operations with acute appendicitis in pregnant women suggests that surgeons performing interventions should have extensive experience in urgent surgery, flawlessly own laparoscopic diagnostics and the technique of endoscopic and traditional surgeries. The use of the laparoscopic method in the surgery of acute appendicitis in pregnant women contributes to improving the quality of diagnosis and treatment of fewer postoperative complications, reducing the number of bed-days. The further introduction of these methods in urgent surgery is undoubtedly promising and deserves attention [38].

CONCLUSION

1. Acute appendicitis is the most common surgical pathology in women with multiple pregnancies, which threatens the life of the mother and the fetuses.
2. Laparoscopically assisted appendectomy in women with multiple pregnancies provides low invasiveness, reliability and high economic efficiency.
3. The advantage of laparoscopically assisted appendectomy in comparison with laparoscopic appendectomy is a shorter exposure to a pregnant uterus of strained carboxiperitoneum and a decrease in its negative impact on the fetus.

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