Motherisk Update

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Appendicitis during pregnancy

ABSTRACT

QUESTION A 26-year-old patient in our clinic, who was 18 weeks pregnant at the time, experienced acute abdominal pain and was diagnosed with appendicitis. The inflamed appendix was successfully removed. Is her pregnancy at risk?

ANSWER Appendicitis is not rare during pregnancy and is associated with increased reproductive risk. Women who have undergone appendectomy during pregnancy are at higher risk of fetal loss, especially in early pregnancy and with appendiceal perforation, and of premature contractions and labour. Despite the difficulty of diagnosing appendicitis during pregnancy, appendectomy should not be delayed.

RÉSUMÉ

QUESTION Une des patientes de notre clinique âgée de 26 ans a souffert de douleurs abdominales aiguës et on a diagnostiqué chez elle une appendicite alors qu'elle était enceinte de 18 semaines. L'appendice enflammé a été enlevé avec succès. Sa grossesse est-elle mise en péril?

RÉPONSE L'appendicite n'est pas rare durant la grossesse et elle est associée à un risque accru sur le plan de la reproduction. Les femmes qui ont subi une appendicectomie durant la grossesse sont plus susceptibles de perdre le fœtus, surtout si elle s'est produite tôt dans la grossesse et s'est accompagnée d'une perforation appendiculaire, ainsi que de contractions et de travail prématurés. En dépit de la difficulté de diagnostiquer une appendicite durant la grossesse, l'appendicectomie ne devrait pas être retardée.

Appendicitis is the most common nonobstetric emergency requiring surgery during pregnancy.[1,2] Diagnosis of appendicitis is complicated by the physiologic and anatomic changes that occur during pregnancy.[2] This can result in delayed diagnosis, increased risk of morbidity for mother and fetus, and fetal loss.[3]

Incidence of appendicitis during pregnancy ranges from 0.05% to 0.13%[1-6]; it usually occurs in the second[3,4,7,8] or third trimesters.[4] Appendicitis occurs at the same rate in pregnant and nonpregnant women,[3,4,9] but pregnant women have a higher rate of perforation.[2] One study found an inverse relationship between pregnancy and appendicitis, especially in the third trimester, suggesting that pregnancy has a protective effect.[7]

Diagnosis

Difficulty in diagnosing appendicitis during pregnancy arises from the fact that its symptoms are similar to those of pregnancy[1,4,10]: anorexia, nausea, and vomiting. Leukocytosis and a diminished tendency to develop hypotension and tachycardia, which are physiologic in pregnancy, add complexity to the diagnosis.[2,9] Displacement of the appendix by the uterus[11] and increased separation of the visceral

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and parietal peritoneum, which decreases the ability to localize tenderness on examination,[2] further complicates diagnosis.

History and physical examination remain useful.[2,9] Right lower quadrant pain,[1,2,4] right upper quadrant pain,[2] diffuse periumbilical pain migrating to the right lower quadrant,[1,3] and nausea and vomiting[1,2] are common symptoms. The most common signs of appendicitis are abdominal tenderness, most often in the right lower quadrant,[1,3] and rebound tenderness and guarding,[2] which are thought to be less common late in pregnancy due to the laxity of abdominal wall muscles.[1,10] One study found that less than one third of patients had the classic obturator, psoas, and Rovsing signs.[3] Fever has not proved to be a reliable sign of appendicitis,[1,2,4] and laboratory findings, including leukocytosis and C-reactive protein, have been found unreliable for diagnosis.[1,3]

Ultrasonography, as yet not fully evaluated, was found helpful during the first trimester, but less useful as pregnancy progressed due to displacement of the appendix.[10] It was helpful in excluding other pathology,[12] but not useful for diagnosing appendicitis in most cases in another study.[2] Laparoscopy has been described as useful,[13] particularly when diagnosis is uncertain.[9,10] One retrospective case review found helical computed tomography to be 100% sensitive in diagnosing appendicitis in seven pregnant patients.[14]

Laparoscopic appendectomy

Prompt surgery, along with perioperative antibiotics, is recommended to prevent perforation and to improve the overall outcome for mother and fetus.[4,10] Under appropriate conditions, laparoscopic appendectomy can be as safe as open appendectomy.[13] Laparoscopic surgery has the advantage of allowing reduced narcotic use and hence less fetal depression, better intraoperative visualization and exposure, less postoperative pain, early return of bowel function, early ambulation, and shorter postoperative stays.[5,13,15] Some concerns with laparoscopy have centred on the increased intra-abdominal pressure and the use of carbon dioxide pneumoperitoneum.[5,13,15]

Concern was also raised when one study reported that laparoscopic surgery resulted in four fetal deaths (out of seven surgeries).[16] Despite concerns, good outcomes have increasingly been reported.[13,15] Rates of fetal loss, rates of other complications, and length of procedure were similar for laparoscopic surgery and open appendectomy.[13,15]

No statistical difference was found between open and laparoscopic appendectomy when compared for gestational duration, Apgar scores, and birth weights.[15] One source demonstrated the feasibility of laparoscopic surgery during all trimesters[13]; others have described it as safe during the first two trimesters[10] and generally contraindicated during the third trimester.[10,15] The second trimester has been reported the safest for performing laparoscopy.[15]

Other complications

Preterm labour is a complication of appendicitis during pregnancy.[4] One study reported the rate of preterm contractions and preterm labour in third-trimester patients as 83% and 13%, respectively.[4] Reported rates of postoperative preterm labour are between 13% and 16% in third-trimester patients[3,4] and 25% in second-trimester patients.[3] While one study reported no increased risk of preterm delivery secondary to surgery,[8] another reported an increased risk of delivery during the postoperative week when the appendectomy was performed after 23 weeks' gestation.[6] Another study noted an increase in fetal loss during the week following appendectomies performed before 24 weeks' gestation.[6]

According to one study, appendectomy during pregnancy was associated with a decrease in mean

birth weight and an increase in the number of live-born infants dying within the first week.[6] This study found no increase in stillborn infants or in congenitally malformed infants.[6]

Perforated appendix

While delay in diagnosis is usually thought to result in a perforated appendix,[3,5] some studies found no association between duration of symptoms and incidence of perforation and no correlation between time to surgery and incidence of perforation.[2,8] Complications of appendicitis, including perforation, increase by trimester,[2,9] and a ruptured appendix results in increased fetal morbidity and mortality. The rate of fetal loss in uncomplicated appendicitis ranges from 0 to 1.5% and in ruptured appendicitis from 20% to 35%.[5,10] Perforation can also result in an increased incidence of wound infection[4] and an increased risk of generalized peritonitis because the omentum cannot isolate the infection.[2,12]

Preterm labour is common in cases of ruptured appendix during the third trimester.[2,9] Maternal mortality is extremely unusual; it increases up to 4% with advanced gestation and perforation.[10]

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