

## DIAGNOSIS AND TREATMENT OF ACUTE APPENDICITIS IN PREGNANT WOMEN: A LITERATURE REVIEW

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**Abstract:** Appendicitis is the main cause of non-obstetric urgency and emergency during pregnancy. However, its diagnosis differs from that given to non-pregnant patients, due to the clinical particularities of pregnancy. Furthermore, regarding management, there is a consensus that the surgical approach must be chosen. Thus, the present study aims to evaluate the best approach for the diagnosis and treatment of acute appendicitis in pregnant women. The methodology of this summary consists of an integrative review of the current medical literature on the diagnosis and treatment of acute appendicitis in pregnant women. Through the analysis of the selected studies, there was a clear consensus regarding the use of imaging tests for the final diagnosis, however, avoiding radioactive methods. With regard to treatment, despite reservations, laparoscopy was superior to open surgery. Therefore, attention must be paid to the peculiarities of the diagnosis and treatment of acute appendicitis in order to avoid maternal-fetal complications.

**Keywords:** Pregnancy. Appendicitis.

## INTRODUCTION

Appendicitis is the most common cause of urgent and non-obstetric emergency operations performed during pregnancy<sup>1</sup>. Confirmation of the early diagnosis and initial treatment of this disease in pregnant women is extremely important, since the development of postoperative maternal complications is associated with the duration of symptoms greater than or equal to 48 hours<sup>2</sup>. Delay increases the rates of appendicular perforation, maternal and fetal mortality and morbidity<sup>3</sup>.

Even so, the diagnosis of appendicitis in pregnant women is a challenge, due to several factors, such as, for example, the similarity of symptoms of nausea, vomiting and abdominal pain with symptoms related

to pregnancy<sup>2</sup>. On physical examination, the change in location of the appendix due to pregnancy, depending on the gestational age, may mask or change the findings<sup>4</sup>. Laboratory parameters of leukocyte count and CRP, which aid in the diagnosis, may already be increased in healthy pregnant women. Although computed tomography (CT) is considered a highly accurate test for the diagnosis of appendicitis<sup>2</sup>, this technique exposes the fetus to ionizing radiation and, therefore, is rarely used<sup>5</sup>, requiring consideration of alternative imaging tests, such as ultrasonography (USG) or magnetic resonance imaging (MRI)<sup>2</sup>.

The standard treatment of appendicitis is appendectomy, by videolaparoscopic technique or open technique. Laparoscopy is indicated as an option mainly in the first 20 weeks of pregnancy. Antibiotic therapy and thromboprophylaxis are also part of the management of appendicitis in pregnant women<sup>5</sup>. That said, the present study aims to evaluate the best approach for the diagnosis and treatment of acute appendicitis in pregnant women.

## METHODOLOGY

This abstract is a bibliographical research through an integrative review of the current medical literature about the diagnosis and treatment of acute appendicitis in pregnant women. The chosen search terms were “appendicitis” and “pregnancy”, and the following inclusion criteria were adopted: the articles had to have been published in the last 5 years and they had to be clinical studies, systematic reviews or meta-analyses. PubMed, Medline and Scielo platforms were consulted, finding 42 articles, of which only 21 were selected for reading, given that the others did not meet the inclusion criteria.

## THEORETICAL FOUNDATION

Ramazan Kozan reports in his study that the

first challenge for physicians when diagnosing acute appendicitis (AA) in pregnant women is the wide spectrum of differential diagnosis, so that natural nonspecific symptoms of pregnancy, such as nausea, vomiting, lower abdominal or inguinal pain, constitute the symptoms of an acute abdomen<sup>4</sup>. In addition, it states that the natural anatomical changes of this period contribute to mask the clinical picture and reduce the diagnostic sensitivity of the physical examination<sup>4</sup>, partially diverging from Tezcan Akin, who, despite agreeing with the lower propensity of pregnant women to have a presentation of appendicitis, states that the most common symptom of the disease, pain in the right lower quadrant, occurs close to McBurney's point in most of these patients, regardless of the stage of pregnancy<sup>2</sup>,

Regarding complementary exams, some laboratory parameters can be used, such as PCR and leukocyte count for the diagnosis of acute appendicitis. However, the values can normally change during pregnancy<sup>2</sup>. For this reason, imaging tests are the most reliable for diagnosing appendicitis, and must be used in order to avoid false positives and, consequently, unnecessary surgeries, since these increase the risks of fetal loss and preterm delivery<sup>3</sup>.

USG is usually the first imaging test to be requested in both non-pregnant and pregnant women, despite the sensitivity being up to 77%<sup>3</sup>. Due to the low sensitivity, the use of MRI is recommended in patients whose initial USG was negative, as in addition to not having side effects, it has a sensitivity of 91.8% and a specificity of 97.7%<sup>4</sup>. The high diagnostic accuracy of MRI for AA, with an accuracy of 99%, but still follows the idea of its use as a first line for suspected cases in these patients, not only when USG fails or is negative<sup>3</sup>. Although CT is used as a second option, to the detriment of MRI, in non-pregnant women, in the group of pregnant

women this exam must be avoided due to the risks of ionizing radiation<sup>2</sup>.

Once the diagnosis is made, the best therapeutic approach must be selected. Appendectomy is the standard treatment for AA during pregnancy, because, due to its possible tragic outcomes, conservative treatment is not widely accepted<sup>4</sup>. Regarding the surgical method, laparoscopic appendectomy is, in general, the best approach in all trimesters of pregnancy, although from the 20th week or before the uterine fundus exceeds the umbilical level, open surgery is also indicated<sup>6</sup>. After all, it is known that laparoscopy in pregnancy includes less uterine manipulation, less need for narcotics to control pain, lower incidence of wound complications and thromboembolic events, shorter hospital stay and immediate return to daily activities<sup>1</sup>, despite some research showing higher fetal loss rates<sup>4</sup>

## FINAL CONSIDERATIONS

In view of this, it is concluded that acute appendicitis in pregnant women has a very challenging diagnosis, and USG associated with MRI must be requested, since the latter has greater diagnostic sensitivity and specificity. Regarding surgical techniques, laparoscopy is more effective, reducing the risks of peri- and postoperative complications. Such conducts and knowledge decrease morbidity and mortality related to this emergency.

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