



INTSETINAL OBSTRUCTION IN PREGNANCY –A REVIEW

General Surgery

Dr Chandra mauli Upadhyay

Asso prof, Surgery Department JLNMCH Bhagalpur Bihar.

Dr Mohammad

Mohtashim Ahmad*

2nd year PG, Dept of Surgery JLNMCH Bhagalpur Bihar. *Corresponding Author

Dr Rupam Kumari Senior Resident, Dept of Surgery JLNMCH Bhagalpur.

ABSTRACT

Acute abdomen in pregnancy represents a unique diagnostic and therapeutic challenge. Acute abdominal pain in pregnancy can occur due to obstetric factors as well for reasons that are unrelated to pregnancy. The diagnostic approach of acute abdomen during pregnancy can be tricky owing to the altered clinical presentations brought about by the anatomical and physiological changes of gestation along with the reluctance to use certain radiological investigations for fear of harming the fetus. Delay in diagnosis and treatment can lead to adverse outcomes for both the mother and fetus. Intestinal obstruction occurs rarely in pregnancy. The incidence is not increased in pregnancy as compared to non pregnant state. When a pregnant patient presents with abdominal pain we often consider obstetric causes like preterm labour, abruption or other common surgical problems but rarely suspect surgical conditions leading to intestinal obstruction. A delay in diagnosis and treatment can lead to serious problems in mother and fetus.

In this article, we attempt to review and discuss the various etiologies, the current concepts of diagnosis, and treatment, with a view to developing a strategy for timely diagnosis and management of pregnant women presenting with acute abdominal pain due to intestinal obstruction.

KEYWORDS

Ectopic pregnancy, rupture uterus, abdominal pain, appendicitis, cholecystitis, acute abdomen, pregnancy, Intestinal obstruction.

INTRODUCTION

Acute abdomen in pregnancy (AAP) represents a unique diagnostic and therapeutic challenge. The term acute abdomen refers to any serious acute intra-abdominal condition accompanied by pain, tenderness, and muscular rigidity, for which emergency surgery should be contemplated.¹ It is often indicative of a clinical course of abdominal symptoms that can range from minutes to hours to weeks and is commonly used synonymously for a condition that requires immediate surgical intervention.² The wide range of causes and varied spectrum of clinical presentations pose a formidable diagnostic and therapeutic challenge.

Acute abdominal pain in pregnancy can be due to obstetric as well as non-obstetric etiologies. The physiological changes of pregnancy increase the risk of developing an acute abdomen. As for non-obstetric causes, any gastrointestinal (GI) disorder can occur during pregnancy. About 0.5%–2% of all pregnant women require surgery for non-obstetric acute abdomen.^{3,4} The diagnostic approach of AAP can be tricky owing to the anatomical as well as the dynamic physiological changes brought about by gestation and the reluctance to use radiological diagnostic modalities such as X-ray or computed tomography (CT) scan and a low threshold to subject the patient to an emergency surgical procedure. Physical examination of the abdomen itself can be difficult in the pregnant state. Consequently, this has a bearing on clinical presentations, interpretation of physical findings, as well as a shift in the normal range of laboratory parameters. For example, even in the absence of any infection, pregnancy alone can usually produce white blood cell counts ranging from 6,000 to 30,000/ μ L, thus mimicking an acute infection. The need for a systematic approach is necessary for an accurate and timely diagnosis of potentially life-threatening conditions, which otherwise could be precarious for both the mother and fetus.

Causes.

Adhesions are the commonest cause of IO in pregnancy and account for more than half the causes found at laparotomy. The incidence and complication rates increase with gestational age, particularly in the third trimester. The risk of gestational IO increases as the uterus enlarges. Other causes include volvulus (23%), intussusception (5%), hernia (3%), carcinoma (1%), appendicitis (1%), and idiopathic “ileus” (8%).

Diagnosis

The diagnosis of IO in pregnancy is difficult. Signs of acute abdomen

may not be as prominent in the pregnant abdomen when compared to the nonpregnant one due to the stretched anterior abdominal wall being less sensitive to parietal peritoneal irritation. The symptoms include nausea, vomiting (82%), abdominal pain (98%), and absolute constipation (30%). Abdominal distension may be difficult to assess, especially late in pregnancy. Bowel sounds may be hyperperistaltic to start with and progressively become hypoperistaltic, which is an ominous sign denoting the onset of strangulation. Investigations Plain abdominal radiographs have been reported to be positive in 82%–100% of pregnant women with intestinal obstruction and, therefore, may provide necessary information when there is a high clinical suspicion. CT and MRI are also being increasingly used to diagnose small bowel obstruction in pregnancy. In suspected intestinal obstruction, CT, rather than MRI, has recently emerged as the diagnostic modality of choice. In contrast to MRI, CT involves ionizing radiation, whereas MRI requires gadolinium contrast, with an uncertain safety profile in pregnancy. However, CT is justified as the risks of radiation are outweighed by the maternal-fetal risks of missing the diagnosis.

Table 2 Etiology of acute abdominal pain in pregnancy

Pregnancy-related causes (obstetric)	Non-pregnancy-related causes (non-obstetric)	Exacerbated by pregnancy	Extra-abdominal etiology
Early pregnancy Miscarriage ⁵ Ectopic pregnancy ⁶ Molar pregnancy ⁷ Ovarian cyst (torsion, hemorrhage, rupture) ⁸ Degeneration of uterine fibroids ⁹ Round ligament pain ¹⁰	Surgical Appendicitis Cholecystitis Biliary colic Acute pancreatitis	GERD Gallbladder disease Acute cystitis Acute pyelonephritis Muculoskeletal pain	Cardiac pain NSAP Pleuritic pain Psychological drug abuse or withdrawal Herpes zoster infection
Late pregnancy Placental abruption ¹¹ ARLP ¹² Abdominal pregnancy ¹³ HELLP syndrome ¹⁴ Rupture uterus ¹⁵ Fibroid degeneration ¹⁶ Fallopian tube torsion ¹⁷ Uterine torsion ¹⁸ Rupture rectus muscle ¹⁹ Polyhydramnios ²⁰ Symphysis distans ²¹ Intrapartum bleed ²²	Peptic ulcer Urolithiasis Intestinal obstruction IBD Rupture aneurysm Trauma Medical Gastroenteritis Porphyria Sickle cell crisis Deep vein thrombosis		

Note: ⁵Denotes life-threatening cause.

Abbreviations: ARLP, acute fatty liver of pregnancy; GERD, gastroesophageal reflux disease; HELLP, hemolysis, elevated liver enzymes, and low platelet count; IBD, inflammatory bowel disease; NSAP, nonspecific abdominal pain.



FIGURE 1: CT scan of patient showing dilated small bowel loops and part of the fetus.

Management

Management of Intestinal obstruction in pregnancy is similar to nonpregnancy. Clinical suspicion is vital and joint management between surgeons and obstetricians is crucial. The basis of treatment is timely surgery, minimising delays in decision.

The initial treatment consists of nasogastric aspiration with aggressive IV fluids to correct electrolyte disturbances. CT with contrast gives the most diagnostic information on the level and cause of obstruction. Failure of conservative treatment and demonstration of complete obstruction on CT are indications for early surgery as persistence will contribute to an increase in mortality and morbidity. Perinatal death from hypoxia secondary to maternal hypovolaemia, sepsis, and peritonitis has been reported. Maternal nutritional deficiencies can occur if the patient is kept nil per oris (NPO) for a protracted period.

Surgery should be performed via a midline incision to allow adequate exposure and complete exploration of abdomen with minimal manipulation of uterus. The entire bowel must be examined for other areas of obstruction and viability. Segmental resection with or without anastomosis may be necessary in the presence of gangrenous bowel. If fetal distress is present or if there is inadequate exposure at laparotomy, delivery by caesarean section should precede the relief of obstruction. There was also a potential dilemma that the primary abdominal incision closure would not be possible, therefore exposing the fetus to risks of ensuing sepsis and peritonitis, necessitating an early caesarean section.

Fortunately, after retrograde decompression of the small bowel, closure was possible.

Role of laparoscopy in pregnancy

over the years, various studies have shown an increasing trend toward acceptance of laparoscopy during pregnancy as a feasible, safe, and effective therapeutic option. A report by Gurbuz and Peetz was one among initial reports demonstrating the safety of laparoscopic technique for acute non-obstetric abdominal pain during pregnancy, without additional risk to the fetus.

Although earlier it was suggested that laparoscopic surgeries should be done preferably during the second trimester, recent evidence suggests laparoscopic surgery can be done during any trimester, with very low rates of maternal and fetal morbidity.

For gaining access to the abdominal cavity, the open access is considered to be safer than the closed technique to avoid inadvertent injury to the uterus and displaced viscera.

The preferred insufflation pressure is 8–12 mmHg as it reduces the possibility of uterine hypoperfusion and maternal pulmonary events. Therefore, laparoscopic appendectomy and cholecystectomy can be recommended during pregnancy if the need for surgery arises. The updated guidelines for the role of laparoscopy in pregnant women have been published by The Society of American Gastrointestinal and Endoscopic Surgeons. Laparoscopy has limited role in Intestinal obstruction operation during pregnancy.

DISCUSSION

Intestinal obstruction in pregnancy is a rare condition. Reported

incidence varies between 1 in 1500 to 66,431 pregnancies. Although it is uncommon, intestinal obstruction in pregnancy carries significant maternal mortality of 6–20% and fetal mortality of 20–26%.

Often, this is due to delay in diagnosis and treatment. Furthermore, there is a reluctance to utilise radiation-based investigations. Adhesions remain the single most common cause for intestinal obstruction. Adhesions usually occur due to previous abdominal surgeries including previous cesarean section. Usually, there are three time periods associated with the increased frequency of developing an intestinal obstruction in pregnancy, that is, 16th–20th week, the 36th week, and immediate puerperium.

Adhesive obstruction occurs more commonly in advanced pregnancy. Reported rates are 6%, 28%, 45%, and 21% during the first, second, third trimesters, and puerperium, respectively. The other causes include volvulus (25%), intussusceptions (5%), hernia (3%), carcinoma (1%), and idiopathic “ileus” (8%). Volvulus occurs more commonly during pregnancy (23%–25%) than in the nonpregnant state (3%–5%).

Intestinal obstruction is generally classified as dynamic type and adynamic type. In dynamic type peristalsis works against a mechanical obstruction (e.g. adhesions/stricture) and in adynamic type there is no mechanical obstruction and peristalsis is absent or inadequate (e.g. paralytic ileus). Dynamic intestinal obstruction is classified into small bowel obstruction-high /low and large bowel obstruction. The nature of presentation will be influenced by whether the obstruction is complete or incomplete. The cardinal clinical features of acute obstruction are abdominal pain, distension, vomiting, and absolute constipation.

CONCLUSION

Intestinal obstruction in pregnancy is rare. A high degree of suspicion is crucial, especially in patients with previous abdominal surgery. The high morbidity and mortality rates meant that radiological investigations and surgery should not be delayed. An additional learning point is that in an obstetric patient without any surgical history who presents with abdominal pain, one should always consider rarer surgical causes.

REFERENCES

- H. T. Sharp, “The acute abdomen during pregnancy,” *Clinical Obstetrics and Gynecology*, vol. 45, no. 2, pp. 405–413, 2002.
- A. J. Hayanga, K. Bass-Wilkins, and G. B. Bulkeley, “Current management of small-bowel obstruction,” *Advances in Surgery*, vol. 39, pp. 1–33, 2005.
- P. W. Perdue, H. W. Johnson Jr., and P. W. Stafford, “Intestinal obstruction complicating pregnancy,” *American Journal of Surgery*, vol. 164, no. 4, pp. 384–388, 1992.
- V. Sivanesaratnam, “The acute abdomen and the obstetrician,” *Bailliere’s Best Practice and Research in Clinical Obstetrics and Gynaecology*, vol. 14, no. 1, pp. 89–102, 2000.
- W. W. Beck, “Intestinal obstruction in pregnancy,” *Obstetrics and Gynecology*, vol. 43, no. 3, pp. 374–378, 1974.
- Stedman’s Medical Dictionary, 2. (2018). Stedman’s Medical Dictionary, 27th Edition Deluxe. [online] Alibris. Available from: <https://www.ali-bris.com/Stedmans-Medical-Dictionary-27th-Edition-Deluxe-Stedmans/book/30000738>. Accessed July 7, 2018.
- Martin RF, Rossi RL. The acute abdomen. *Surg Clin North Am.* 1997; 77(6):1227–1243.
- Malangoni MA. Gastrointestinal surgery and pregnancy. *Gastroenterol Clin North Am.* 2003;32(1):181–200.
- Augustin G, Majerovic M. Non-obstetrical acute abdomen during pregnancy. *Eur J Obstet Gynecol Reprod Biol.* 2007;131(1):4–12.
- Pritchard JA, Baldwin RM, Dickey JC. Blood volume changes in pregnancy and the puerperium. II: red blood cell loss and changes in apparent blood volume during and following vaginal delivery, cesarean section, and cesarean section plus total hysterectomy. *Am J Obstet Gynecol.* 1962; 84:1271.
- Campbell-Brown M, Hytten F. Nutrition. In: Chamberlain G, Broughton Pipkin F, editors. *Clinical physiology in obstetrics*. Oxford: Blackwell Science; 1998:165–191.
- Tan EK, Tan EL. Alterations in physiology and anatomy during pregnancy. *Best Pract Res Clin Obstet Gynaecol.* 2013;27(6):791–802.
- Soma-Pillay P, Nelson-Piercy C, Tolppanen H, Mebazaa A. Physiological changes in pregnancy. *Cardiovasc J Afr.* 2016;27(2):89–94.
- Conklin KA. Maternal physiology adaptations during gestation, labour, and the puerperium. *Semin Anesth.* 1991;X(4):221–234.
- Broussard CN, Richter JE. Nausea and vomiting of pregnancy. *Gastroenterol Clin North Am.* 1998;27(1):123–151.
- Lawson M, Kern F, Everson GT. Gastrointestinal transit time in human pregnancy: prolongation in the second and third trimesters followed by postpartum normalization. *Gastroenterology.* 1985;89(5):996–999.
- Hancock H. Disease of the appendix caeci cured by operation. *Boston Med Surg J.* 1848;39(17):331–334.
- Choi JJ, Mustafa R, Lynn ET, Divino CM. Appendectomy during pregnancy: follow-up of progeny. *J Am Coll Surg.* 2011;213(5):627–632.
- Andersson RE, Lambe M. Incidence of appendicitis during pregnancy. *Int J Epidemiol.* 2001;30(6):1281–1285.
- Angelini DJ. Obstetric triage revisited: update on non-obstetric surgical conditions in pregnancy. *J Midwifery Womens Health.* 2003;48(2): 111–118.
- Mourad J, Elliott JP, Erickson L, Lisboa L. Appendicitis in pregnancy: new information that contradicts long-held clinical beliefs. *Am J Obstet Gynecol.* 2000;182(5):1027–1029.
- Baer JL, Reis RA, Arens RA. Appendicitis in pregnancy: with changes in position and axis of the normal appendix in pregnancy. *J Am Med Assoc.* 1932;98(16):1359–1364.
- Hodjati H, Kazerooni T. Location of the appendix in the gravid patient: a re-evaluation of the established concept. *Int J Gynaecol Obstet.* 2003; 81(3):245–247.

24. Alders N. A sign for differentiating uterine from extrauterine complications of pregnancy and puerperium. *Br Med J.* 1951;2(4741):1194–1195.
25. Wallace CA, Petrov MS, Soybel DI, Ferzoco SJ, Ashley SW, Tavakkolizadeh A. Influence of imaging on the negative appendectomy rate in pregnancy. *J Gastrointest Surg.* 2008;12(1):46–50.
26. Williams R, Shaw J. Ultrasound scanning in the diagnosis of acute appendicitis in pregnancy. *Emerg Med J.* 2007;24(5):359–360.
27. Rosen MP, Ding A, Blake MA, et al. ACR Appropriateness Criteria® right lower quadrant pain – suspected appendicitis. *J Am Coll Radiol.* 2011;8(11):749–755.
28. Doberneck RC. Appendectomy during pregnancy. *Am Surg.* 1985;51(5):265–268.
29. Vons C, Barry C, Maitre S, et al. Amoxicillin plus clavulanic acid versus appendicectomy for treatment of acute uncomplicated appendicitis: an open-label, non-inferiority, randomised controlled trial. *Lancet.* 2011;377(9777):1573–1579.
30. Wilms IMHA, de Hoog DENM, de Visser DC, Janzing HMJ; Cochrane Colorectal Cancer Group. Appendectomy versus antibiotic treatment for acute appendicitis. *Cochrane Database Syst Rev.* 2011;82(2):CD008359.
31. Ansaloni L, Catena F, Coccolini F, et al. Surgery versus conservative antibiotic treatment in acute appendicitis: a systematic review and meta-analysis of randomized controlled trials. *Dig Surg.* 2011;28(3):210–221.
32. Young BC, Hamar BD, Levine D, Roqué H. Medical management of ruptured appendicitis in pregnancy. *Obstet Gynecol.* 2009;114(2 Pt 2):453–456.
33. Walsh CA, Tang T, Walsh SR. Laparoscopic versus open appendicectomy in pregnancy: a systematic review. *Int J Surg.* 2008;6(4):339–344.
34. Megory ML, Zingmond DS, Tillou A, Hiatt JR, Ko CY, Cryer HM. Negative appendectomy in pregnant women is associated with a substantial risk of fetal loss. *J Am Coll Surg.* 2007;205(4):534–540.
35. Weston P, Moroz P. Appendicitis in pregnancy: how to manage and whether to deliver. *Obstet Gynaecol.* 2015;17(2):105–110.
36. Mohammed JA, Oxorn H. Appendicitis in pregnancy. *Can Med Assoc J.* 1975;112(10):1187–