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Lower Abdominal Pain in the First Trimester of Pregnancy

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INTRODUCTION

Abdominal pain in pregnancy is very common. Many of the complications of early pregnancy present with some form of abdominal pain. There are several causes of abdominal pain during early pregnancy, some being directly related to pregnancy while others are unrelated medical or surgical conditions. Table 1 gives an overview of possible differential diagnoses of lower abdominal pain in early pregnancy. Specific pregnancy-related complications are commonly limited to a certain gestational age.

This chapter explains briefly the conditions associated with lower abdominal pain in the first trimester of pregnancy. More details of some of the conditions are found in specific chapters. The diagnosis and management of medical and surgical causes of lower abdominal pain in pregnancy is beyond the scope of this chapter. Most gynecological causes are described in the respective chapters as indicated in Table 1. In this chapter, a description of signs and symptoms will be provided for the most common differential diagnoses, useful diagnostics and further management for those conditions which are not described in other chapters.

Many patients presenting with lower abdominal pain in clinics are not aware of their pregnancy or do not want to reveal their condition for various cultural or personal reasons. Thus, it is important to consider pregnancy in any of your patients with lower abdominal pain who are of reproductive age (15–45 years). Some of the conditions mentioned in Table 1 are life-threatening, such as ectopic pregnancy. In order to make this diagnosis you must keep in mind that a pregnancy might exist, even if the patient is not aware of it.

Table 1 Differential diagnosis of lower abdominal pain in pregnancy

Pregnancy-related	Miscarriage (Chapters 2 and 13), ectopic pregnancy (Chapter 12), uterine rupture (rare), pain associated with uterine growth
Non-pregnancy related	
Gynecological	Ovarian cyst accident and ovarian torsion (Chapters 5 and 11), acute urinary retention, pelvic infection (Chapter 17), complications of uterine fibroids (Chapter 19) and incarcerated uterus
Medical	Urinary tract infection, constipation, sickle cell crisis, porphyria, Crohn's disease, colitis ulcerosa, irritable bowel syndrome
Surgical	Appendicitis, gastroenteritis, ureteric calculus, intestinal obstruction/volvulus

SIGNS AND SYMPTOMS OF THE MOST COMMON DIFFERENTIAL DIAGNOSES

Common causes of lower abdominal pain in the first trimester include ectopic pregnancy, abortion/miscarriage, ovarian cyst accidents (e.g. ruptured cyst, ovarian torsion) and urinary tract infection (UTI). Table 2 summarizes the signs and symptoms of the most common differential diagnoses for lower abdominal pain in the first trimester.

NECESSARY DIAGNOSTICS

Chapter 1 describes how to take a gynecological history from a patient and how to do a speculum

GYNECOLOGY FOR LESS-RESOURCED LOCATIONS

Table 2 Signs and symptoms of the most common differential diagnoses

<i>Condition</i>	<i>Associated signs and symptoms</i>
Ectopic pregnancy	Lower abdominal pain which can be cramping and later on sharp or stabbing. Usually unilateral associated with vaginal bleeding. If ruptured, signs of shock may be present which include increased pulse/heart rate, increased respiration rate, hypotension, sweating, cold extremities and pallor. Patient may give history of amenorrhea corresponding to between 6 and 10 weeks of gestation. Paracentesis will reveal blood in the abdomen
Abortion/miscarriage	Cramping abdominal pain confined to the suprapubic area with or without vaginal bleeding. There may be history of amenorrhea. In more severe forms such as incomplete abortion or septic abortion, the patient will present with severe lower abdominal pain, intense vaginal bleeding, sometimes with high fever and shock (fast weak pulse, sweating, hypotension, fast breathing, possibly with altered mental status). Bowel sounds may be reduced, with abdominal distention/rigidity and rebound tenderness. Uterus may be palpable suprapubically On pelvic examination, there may be obvious vaginal bleeding with or without products of conception protruding in the vagina or cervical os. In septic abortion, there may be foul-smelling discharge. In illegal induced abortions, sticks and other 'instruments' may be found in the vagina, and in case of uterine perforation even bowels can protrude in the vagina Depending on the stage of the abortion, the cervix may be open or closed. In threatened and missed abortions, the cervix is usually closed. If the abortion is complete, the cervix may either be closed or dilated. In inevitable and incomplete abortion cervix will be open with products of conception protruding through the cervix. In most cases, the uterus will be enlarged and soft. If a proper history is taken and a thorough examination is done, the diagnosis of abortion may be achieved in most cases
Ovarian cyst accident	Unilateral dull pain, may be associated with bloating, constipation. Cyst rupture or torsion may lead to peritonism with guarding and rebound tenderness and increasingly sharp pain
Acute urinary retention	Suprapubic pain, often sharp, urge to urinate, suprapubic distention, retroverted uterus in late first trimester. In an incarcerated uterus the uterine fundus is retroverted and fixed in Douglas' pouch. As a consequence the cervix is positioned very cranially and anteriorly in the vagina and might even not be reachable
Appendicitis	Nausea, vomiting, diarrhea or obstipation, peritoneal signs, point of maximum tenderness moves upwards and laterally in late first trimester

and bimanual examination. Further diagnostics such as ultrasound are also described.

HISTORY TAKING

- Onset and progression of pain.
- Localization of pain: where is the maximum point, where does it radiate, what makes it better or worse.
- Character of pain: is it sharp or dull, continuous or intermittent, deep or superficial?
- Associated symptoms: nausea, vomiting, bloating, abdominal distention, constipation, diarrhea, dysuria, hypotension, fever, vaginal bleeding.
- Last menstrual period, regularity of cycle. Was the last period regular or unexpected; was it

heavier or lighter than normal? Obstetric history.

- Contraceptive history: actual contraception, desire for children.
- Gynecological history: recent vaginal discharge, other gynecological diseases (e.g. fibroids), problems conceiving.
- Previous abdominal surgery: specifically ask about appendectomy.
- Medical history: sickle cell trait, thalassemia, porphyria.

MEDICAL EXAMINATION

- General physical examination including physical appearance: very sick, in pain, pale, sweating,

weak, pale, level of consciousness. In a ruptured ectopic pregnancy with severe blood loss, patient may be unconscious.

- Cardiorespiratory system: respiration rate, pulse/heart rate, blood pressure.
- Abdominal examination: physical appearance, if distended, flat, tenderness, palpable masses, percussion note and bowel sounds. Tenderness at McBurney's point and Rovsing's sign may imply appendicitis. Abdominal muscle guarding: appendicitis, ectopic pregnancy, torsion of ovarian tumor. Rebound and percussion tenderness is an indication of appendicitis, ectopic pregnancy or torsion of ovarian tumor.
- Speculum examination is also very important. It may reveal products of conception in the vagina or at the cervical os found in incomplete abortion. It may reveal frank blood in ectopic pregnancy. Uneventful speculum examination does not rule out the suspected disease.
- Bimanual palpation/digital vaginal examination is used to elucidate the enlargement of the uterus, cervical excitation test, incarcerated uterus etc.

Proper history taking and medical examination will guide further investigations, which may be ultrasound, wet mount and other laboratory investigations [urine pregnancy test (UPT), urinalysis, full blood count and erythrocyte sedimentation rate (ESR)].

MINIMAL REQUIRED CARE/TREATMENT

A very brief explanation on various differential diagnoses is given here. This section will briefly explain the minimal required treatment for the different conditions. More detailed descriptions are given in other chapters as indicated.

Ectopic pregnancy

Ectopic pregnancy remains one of the common causes of maternal deaths especially in low-resource countries. The incidence has been increasing steadily in the past four decades due to increased prevalence of sexually transmitted disease (STIs) and assisted reproductive techniques¹. On average ectopic pregnancy accounts for 1.3–2% of reported pregnancies². Ectopic pregnancy should be considered in a woman with lower abdominal pain with or without vaginal bleeding, especially within 6–10 weeks of gestation. The pain can be mild or

crampy in early stages but with time it becomes sharp and stabbing. It may concentrate on one side of the pelvis. Signs of shock (tachycardia, pallor, collapse) and syncope indicate ruptured ectopic pregnancy. There may be pain at the tip of the shoulder.

On examination, findings will depend on the severity of the disease. In unruptured ectopic pregnancy, the general appearance of the patient may be completely normal. Recent studies have shown that one-third of patients with unruptured ectopic had no clinical signs³. In typical ruptured cases, a woman will present with pallor, tachycardia, low blood pressure, and abdominal distention with unilateral tenderness on palpation. Bimanual examination (which has to be done cautiously to avoid provoking bleeding) reveals positive cervical excitation test in about three-quarters of the patients. In half of the patients, there may be a palpable adnexal mass.

In diagnosing ectopic pregnancy, history and physical examination play a major role. Diagnosis of unruptured ectopic pregnancy is achieved using measurement of urine or serum β -human chorionic gonadotropin (β -hCG) concentrations and pelvic or transvaginal ultrasonography. Diagnosing ectopic pregnancy before it ruptures allows conservative management (methotrexate) and avoidance of all risks associated with tubal rupture (bleeding, shock, tubal blockage, death etc.).

Management of ectopic pregnancy may be surgical, medical or expectant. The choices of the management option depend on several factors – clinical presentation, severity of the disease, available treatment options and patient's preference. See Chapter 12 for more details on management.

Abortion/miscarriage

Abortion is one of the most common causes of lower abdominal pain in early pregnancy and it should be considered as a differential diagnosis when a woman of a reproductive age presents with lower abdominal pain. There are various types of abortion but all are categorized into either spontaneous or induced abortion. See Chapter 13 for a more detailed description.

The pain associated with abortion/miscarriage is usually cramping in nature confined to the suprapubic area. It may be associated with vaginal bleeding. A history of amenorrhea strengthens the

diagnosis of abortion. In more severe forms of the disease such as incomplete or septic abortion, the patient will present with severe lower abdominal pain, intense vaginal bleeding, sometimes with shock (fast weak pulse, sweating, hypotension, fast breathing, possibly with altered mental status). Patients will have conjunctiva and skin pallor (around the mouth and palms). In the abdomen, the bowel sounds may be reduced, with abdominal distention/rigidity and rebound tenderness. Uterus may be palpable suprapubically.

On pelvic examination, there may be obvious vaginal bleeding with or without products of conception protruding in the vagina or cervical os. In septic abortion, there may be a foul-smelling discharge. Depending on the stage of the abortion, the cervix may be open or closed. In threatened and missed abortions, the cervix is usually closed. If the abortion is complete, the cervix may either be closed or dilated. In inevitable and incomplete abortion the cervix will be open with products of conception protruding through the cervix. In most cases, the uterus will be enlarged and soft. If a proper history is taken and a thorough examination is done, the diagnosis of abortion will be achieved in most cases.

In severe conditions where the patient presents with severe bleeding and signs of shock, she should be treated as follows (see also Chapters 2 and 13):

- Check hemoglobin level, cross-matching and blood grouping after establishing intravenous (IV) access with a large cannula.
- Stabilize the patient with IV fluids.
- Give oxygen and blood transfusion if indicated.
- If there are signs of infection, IV/intramuscular (IM) broad-spectrum antibiotics will be given according to local guidelines.
- Pain control by using injectable analgesics.
- Tetanus toxoid.

Definitive management of abortion depends on the stage of the disease and the severity of vaginal bleeding. In inevitable, incomplete, missed abortion, uterine evacuation is done for complete removal of the products of evacuation. Details on the management of abortion are provided in Chapter 13.

Ovarian cyst accidents in pregnancy

Ovarian cysts are rare pregnancy complication reported in 1 in every 1000 pregnancies⁴. In most

cases ovarian cysts occurring in the first trimester regress with time as pregnancy advances. They arise from the corpus luteum gravidarum which maintains the pregnancy until the fetal–maternal unit takes over hormonal production. In some cases this corpus luteum gravidarum doesn't collapse but continues to increase in size. In addition to these functional cysts there are a few non-functional cysts, e.g. dermoid cyst, endometriosis cyst of ovary, ovarian serous cystadenoma, ovarian mucinous cystadenoma and rarely borderline cysts of the ovary.

Symptoms that tend to accompany ovarian cysts in pregnancy are pain during sexual intercourse or during defecation, or pain in the abdomen that may radiate to the thighs and buttocks. In rare cases, ovarian cysts may be complicated by rupturing or torsion.

Torsion of the ovarian cyst is the total or partial rotation of the cyst around its axis or pedicle⁵. The predisposing factor is the length of its pedicle, i.e. the longer the pedicle, the higher the mobility and hence higher chances of torsion, and the size of the cyst. When torsion occurs, there is vessel blockage, hence, stasis, congestion, hypoxia, necrosis and hemorrhage. As the tension increases, the cyst may rupture. The risk of ovarian torsion rises by five-fold during pregnancy making the incidence of 5 cases per 10,000 pregnancies⁵.

In most cases, torsion of the ovarian cyst presents with severe sharp lower abdominal pain which is commonly unilateral. In about three-quarters of cases, it is accompanied by nausea and occasionally vomiting.

Incarcerated uterus

In cases of an incarcerated uterus the uterine fundus is fixed in Douglas' pouch (e.g. due to adhesions or fibroids). The first sign is usually urinary retention either recurrent or acute. In vaginal examination you may be able to palpate the uterine fundus in Douglas' pouch and very often the uterine cervix is displaced in the anterior and cranial position, and you may even not be able to palpate the cervix. It is a rare but serious complication in pregnancy and, unrecognized, it can lead to very serious complications if you perform a cesarean section: when you are not aware of the condition your 'uterine incision' will damage the bladder and you may end up in the vagina instead of the uterus. Treatment in early pregnancy is administration of an indwelling

catheter in the bladder and, afterwards, digital repositioning of the uterus by careful manipulation (sometimes under anesthesia) and to prevent re-incarceration a vaginal pessary (see Chapter 23 on prolapse) may be necessary.

Appendicitis

Appendicitis in pregnancy can be very hard to diagnose since symptoms may be subtle and the cecum and appendix are displaced upwards in pregnancy. We refer to surgical books for management.

Round ligament pain in a normal uterine pregnancy

Many pregnant women experience some pain during pregnancy due to the fact that the growing uterus puts traction on bands and ligaments. This is not a serious condition that needs treatment, but all serious complications (see Table 1) should be excluded.

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