ABDOMINAL PAIN DURING PREGNANCY

APPROACH TO DIAGNOSIS AND MANAGEMENT

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INTRODUCTION

- The **approach** to acute abdominal/pelvic pain in pregnancy is similar to that in the nonpregnant state, with some additional challenges. **The initial goal** is to identify patients who have a serious or even life-threatening etiology for their symptoms and require urgent intervention. Additional issues during pregnancy include consideration of the effects of anatomic and physiologic changes related to pregnancy, causes of acute abdominal/pelvic pain that may be more common due to the pregnant state or related to obstetric complications, and the effect of the disorder on the fetus. Indicated diagnostic imaging and interventions should be performed since delay in diagnosis and treatment can increase maternal and fetal/newborn morbidity and mortality.
- **Signs and symptoms that suggest a possible serious disease process** include moderate or severe abdominal or pelvic pain, vaginal bleeding, new onset hypertension, hypotension, vomiting, or fever.

History

Pain history - SOCRATES

Other **abdominal symptoms** - vaginal bleeding, bowel and urinary symptoms; pre-eclampsia symptoms (eg headache, visual change, nausea).

Fetal movements

Obstetric history

-last menstrual period (LMP)
-confirm whether the patient's last bleed was 'normal' for the patient (ectopic pregnancy may have some bleeding which can be mistaken for menstrual bleed)
-ask if there has been any difficult or assisted conception

-confirm use of any contraception (coil and progestogen-only pill (POP) increase ectopic risk).

Past medical and gynecological history, medication, allergies, last meal.

Physical examination

•**Vital signs** – Obtain vital signs: Hemodynamic instability is an indication for immediate evaluation of pregnant patients.

•**Abdominal examination** – Examine the abdomen: the examination is the same for pregnant and nonpregnant patients and includes inspection, auscultation, percussion, and palpation. However, the anatomical changes due to enlarged gravid uterus need to be

considered.

•**Uterus** – Determine uterine size (which correlates with gestational age) and evaluate tone, tenderness, and, in the second half of pregnancy, frequency of contractions.

The normal uterus is nontender and soft, like any other relaxed muscle. A rigid or tender uterus in the second half of pregnancy suggests placental abruption, intrauterine infection, uterine rupture, or possibly labor.

- **Fetal heart rate** – The fetal heart rate should be documented. Continuous fetal heart rate monitoring is usually appropriate in pregnancies that have reached a gestational age with a reasonable chance of extrauterine survival (≥22 weeks of gestation). An abnormal fetal heart rate may be the direct consequence of a pregnancy-related cause of abdominal/pelvic pain (eg, placental abruption) or it may be an indirect consequence of maternal compromise (eg, hypotension, infection). In either case, fetal resuscitation is usually indicated and urgent delivery may be appropriate.

- **Fetal membranes** – Whether the membranes have ruptured or remain intact should be determined via a sterile speculum examination. Rupture often leads to initiation of labor and may be associated with intrauterine infection or placental abruption.

- **Cervix** – Cervical dilation/effacement should be assessed by digital examination if the membranes are intact and ultrasound has confirmed the absence of placenta previa. Obstetric and nonobstetric disorders may lead to uterine contractions, which may result in cervical changes consistent with labor.

LABS

In general, we suggest the following, unless a specific diagnosis is strongly suspected:

- Complete blood count with differential Urinalysis Basic metabolic panel (electrolytes and renal function) Liver
- and pancreatic biochemical and function tests (aminotransferases, bilirubin, amylase, lipase) Pregnant patients
- with hemodynamic instability (hypotension or tachycardia) should have blood sent for coagulation studies and type and crossmatch. In the presence of fever or unstable vital signs possibly related to
- sepsis, blood and urine cultures are performed and may be helpful subsequently to confirm suspected infection
- and guide choice of antibiotic therapy.

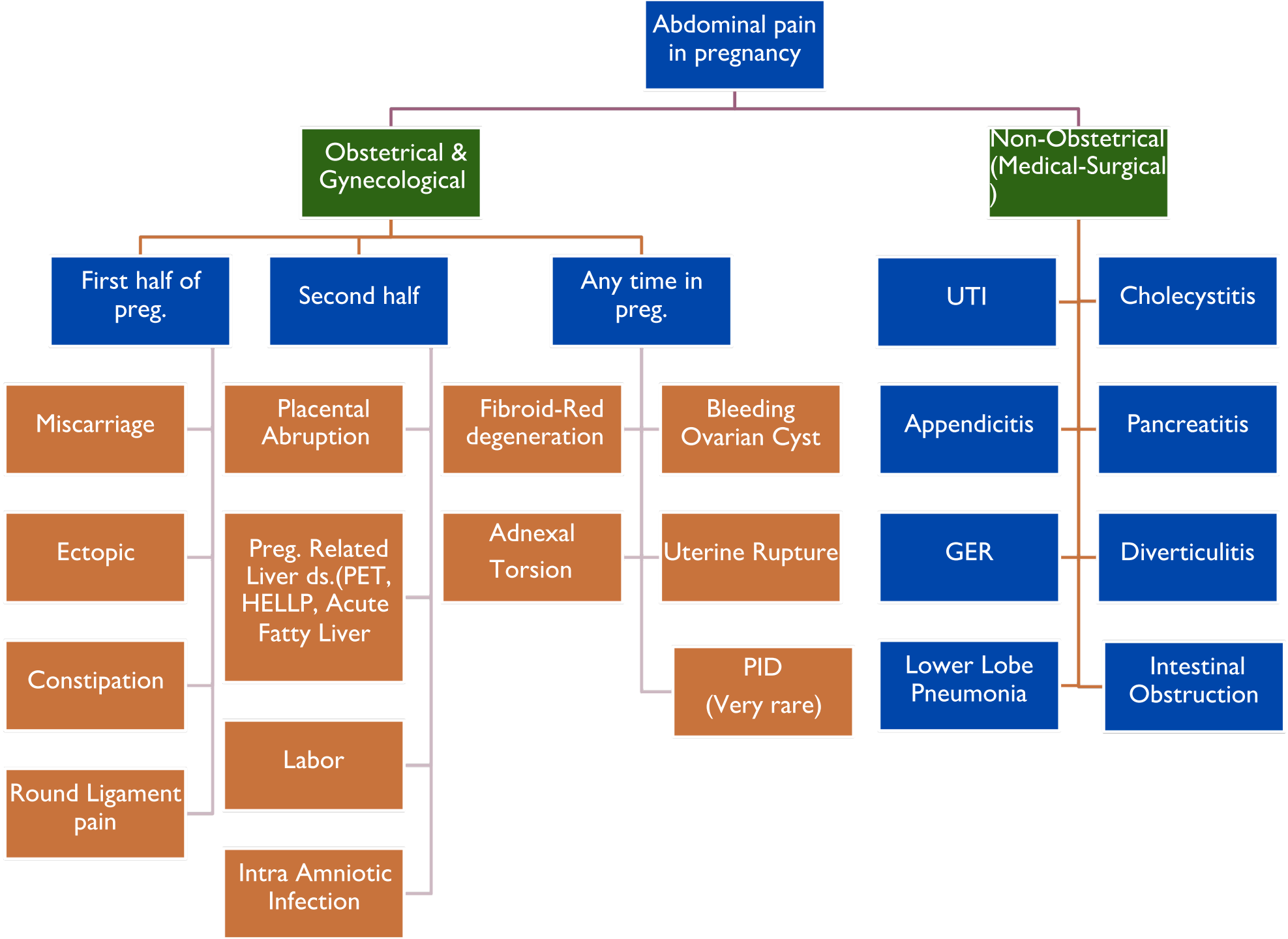
IMAGING

Ultrasound

- It is widely available, portable, nonionizing, and its diagnostic performance is often adequate.

MRI

- Use of MRI is preferable to CT because it avoids ionizing radiation, It is important to note that gadolinium crosses the placenta and may have potential harmful fetal effects. Therefore, the use of gadolinium generally should be avoided.


Abdominal pain in pregnancy
Obstetrical & Gynecological
Non-Obstetrical (Medical-Surgical)
First half of preg.
Second half
Any time in preg.
UTI
Cholecystitis
Miscarriage
Placental Abruption
Fibroid-Red degeneration
Bleeding Ovarian Cyst
Appendicitis
Pancreatitis
Ectopic
Preg. Related Liver ds.(PET, HELLP, Acute Fatty Liver
Adnexal Torsion
Uterine Rupture
GER
Diverticulitis
Constipation
Labor
PID (Very rare)
Lower Lobe Pneumonia
Intestinal Obstruction
Round Ligament pain
Intra Amniotic Infection

FIRST HALF OF PREGNANCY

1-MISCARRAIGE

is defined as the loss of a pregnancy before 20 weeks of gestation.

Signs and symptoms

mild to moderate midline crampy pelvic pain and mild to moderate vaginal bleeding.

Diagnosis

Speculum and pelvic examinations are the first steps in the diagnostic evaluation. If no products of conception are identified grossly in the cervix or vagina, then ultrasonography is the most useful follow-up test. The sonographic signs of a nonviable pregnancy vary with gestational age.

Miscarriage

Type of miscarriage	Ultrasound scan (USS) findings	Clinical presentation	Management
Threatened miscarriage	Intrauterine pregnancy (with FH)	Vaginal bleeding and abdominal pain Speculum: cervical os closed	Supportive
Inevitable miscarriage	Intrauterine pregnancy **FH present**	Vaginal bleeding and abdominal pain Speculum: cervical os open	Expectant, medical or surgical
Incomplete miscarriage	Retained products of conception	Vaginal bleeding and abdominal pain Speculum: cervical os open, products of conception located in cervical os	Remove pregnancy tissue at time of speculum if possible Expectant, medical or surgical
Complete miscarriage	Empty uterus (need serum hCG to exclude ectopic pregnancy if no previous USS identifying intrauterine pregnancy)	Pain and bleeding has resolved Speculum: cervical os closed	Supportive
Missed miscarriage	Intrauterine pregnancy (no FH)	Asymptomatic Often diagnosed at booking USS	Expectant, medical or surgical

2-ECTOPIC PREGNANCY

Clinical manifestations

- vary somewhat depending upon the location and status of the pregnancy.
- Abdominal pain due to localized bleeding or rupture is a common symptom of all types of ectopic pregnancy.
- Vaginal bleeding
- Blood in the peritoneal cavity can be identified by ultrasound examination of the pelvis and abdomen.
- Patients with rupture may also have tachycardia, hypotension, low grade fever, and a mild elevation in the white cell count.

Diagnosis

is usually based upon results from a combination of ultrasound examination and B-hCG level in the early first trimester.

Management

Surgical.
Medical.
Expectant.

3-CONSTIPATION

Physiological changes in pregnancy result in the slowing of gut peristalsis.

It is due to a combination of factors, including the effects of the hormonal changes of pregnancy on the gastrointestinal tract, mechanical effects of the enlarging uterus, reduced physical activity, intake of iron supplements or vitamins with iron, and changes in diet

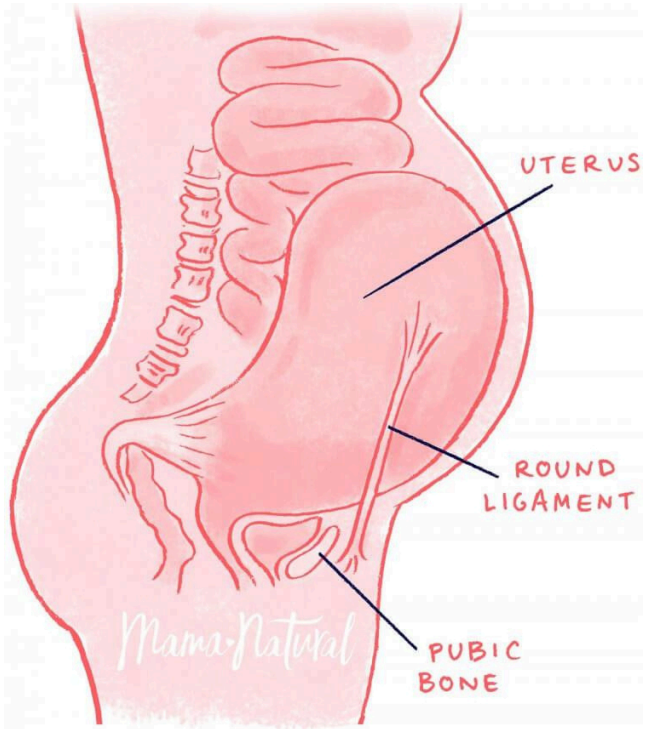
Signs and Symptoms

Varied but colicky lower abdominal pain (L>R) is the most common

Management

- High-fibre diet.
- Osmotic laxatives.
- Glycerin suppositories.

4- ROUND LIGAMENT PAIN



Early in pregnancy, unilateral mild sharp pelvic pain related to "stretching" of one of the round ligaments is a common benign process

Pain is more common on the right (dextrorotation of the uterus) and may be bilateral. The pain may radiate to the groin and labia majora and Aggravated by movement. Vaginal bleeding is not present.

There are no positive laboratory or imaging findings. Round ligament pain is a clinical diagnosis of exclusion.

Tx:
- Reassurance.
- Simple analgesia
- Support belts may help.

SECOND HALF OF PREGNANCY

1- PLACENTA ABRUPTION

Placental abruption is the premature separation (partial or complete) of a normally situated placenta from the uterine wall, resulting in hemorrhage before the delivery of the fetus

Classically presents with
- Vaginal bleeding (except in concealed abruption)
- Abdominal and/or back pain
- Uterine contractions.
- Uterine rigidity
- Uterine tenderness

! The fetal heart rate pattern may be abnormal and is likely to be abnormal in pregnancies with substantial placental separation. In these cases, maternal DIC and/or fetal death commonly occur.

A retroplacental, preplacental, or subchorionic clot is the classic ultrasound finding of placental abruption but is not always present. Diagnosis is based on clinical findings, and delivery is usually indicated.

MANAGEMENT: The state of the mother and fetus is key.

- If the bleeding is life threatening or fetal testing is non-reassuring then deliver.
- Otherwise, stabilize, prepare for the possibility of a future bleed(Large bore IV cannulas, PRBCs, and FFP), Then Prepare for preterm delivery (dexamethasone).

Management:

Initial interventions for women with potentially severe acute abruption include admission to the labor room.

A) Stabilization of the mother:

1. I.V fluid : Secure intravenous access with at least one, and preferably two, wide-bore intravenous lines.

2. Closely monitor the mother's hemodynamic status (heart rate, blood pressure, urine output). Urine output should be maintained at above 30 cc/hour and monitored with a Foley catheter.

3. Keep maternal oxygen saturation >95 percent and keep the patient warm.

4. Draw blood for a complete blood count, blood type and Rh (preparation of 4 units PRBCs), and coagulation studies. Repeat coagulation tests in patients with clinical signs of severe abruption as coagulopathy may develop or worsen over time.

5. Call for help.

6. Notify the anesthesia team. Anesthesia-related issues in these patients include management of hemodynamic instability, technical issues related to bleeding diathesis, and the potential need for emergency cesarean delivery.

7. Notify the blood bank so blood replacement products (red blood cells, FFP, cryoprecipitate, platelets) will be readily available, if needed.

B) Immediately initiate continuous fetal monitoring

2- PREGNANCY RELATED LIVER DS:
1 PREECLAMPSIA

Preeclampsia is a syndrome characterized by the new onset of hypertension and usually proteinuria after 20 weeks of gestation in a previously normotensive patient.

- Right upper quadrant or epigastric pain is a sign of liver involvement and signifies the severe spectrum of the disease.
- The pain may be caused by stretching of Glisson's capsule due periportal or subcapsular bleeding or, rarely, hepatic rupture.

- The diagnosis is based on characteristic symptoms, findings on physical examination, and laboratory results

Management of severe preeclampsia: Delivery is the definitive treatment

- Hospitalization until delivery
- Antenatal corticosteroids
- Deliver after 32 to 34 weeks of gestation
- For acute therapy: labetalol, and hydralazine
- Seizure prophylaxis with magnesium sulfate

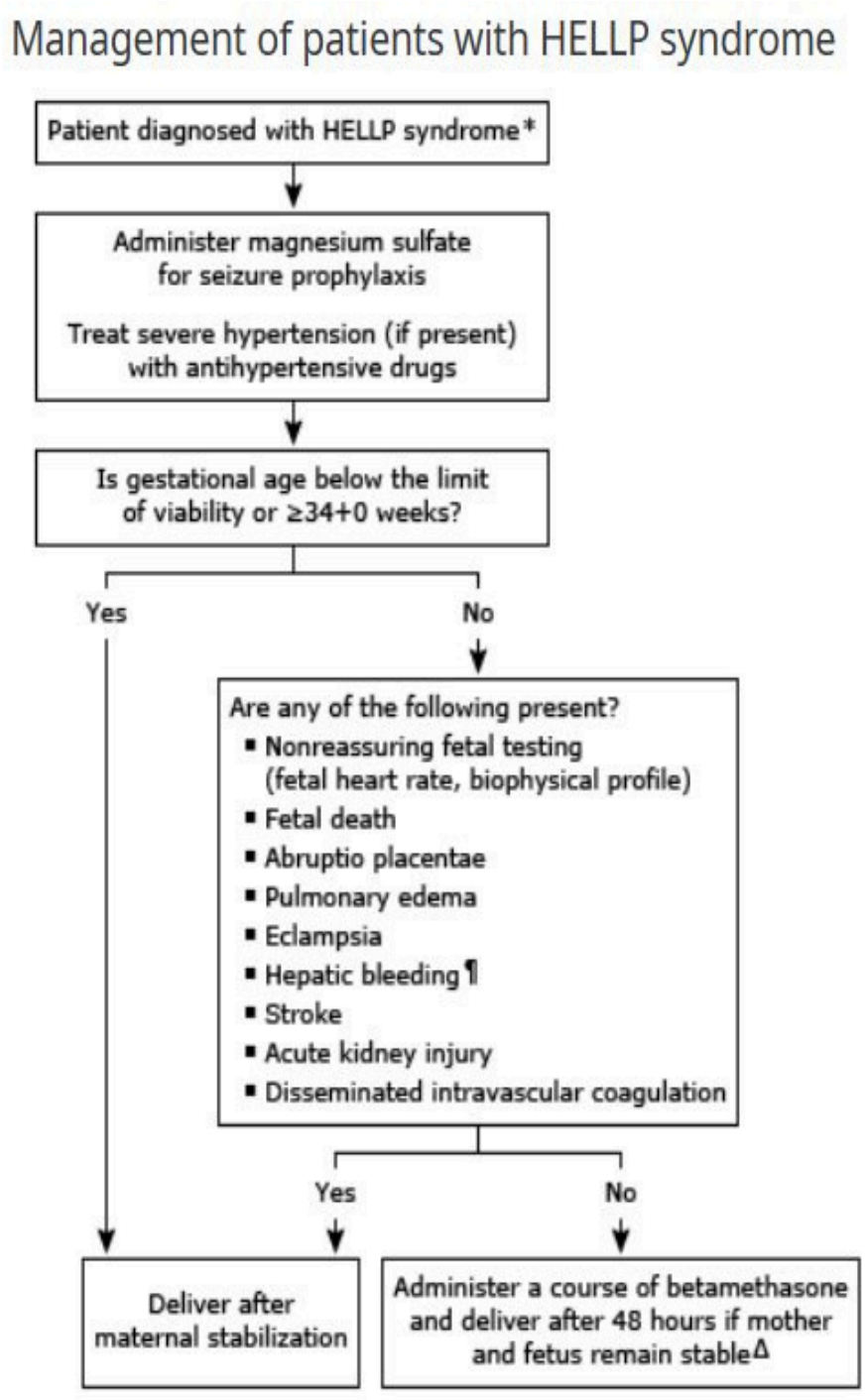
2 HELLP SYNDROME

Hemolysis with a microangiopathic blood smear, elevated liver transaminases, and a low platelet count are the findings in HELLP syndrome

Hypertension and proteinuria are present in approximately 85% of cases, but it is important to remember that either or both may be absent in HELLP

Clinical presentation:

- The most common clinical presentation is abdominal pain and tenderness in the midepigastrium, right upper quadrant, or below the sternum. As with preeclampsia, the pain may be caused by stretching of Glisson's capsule due periportal or subcapsular bleeding or, rarely, hepatic rupture.
- Many patients with HELLP also have nausea, vomiting, and malaise, which may be mistaken for a nonspecific viral illness or viral hepatitis, particularly if the serum AST and LDH are markedly elevated



3 ACUTE FATTY LIVER

- Acute fatty liver of pregnancy occurs after 20 weeks of gestation, usually in the third trimester.
- The most frequent initial symptoms are nausea or vomiting (approximately 50% of patients), abdominal pain (particularly epigastric, 50%), anorexia, and jaundice (30%).
- Approximately 70% of patients have signs of preeclampsia at presentation or at some time during the course of illness

The diagnosis of acute fatty liver of pregnancy is usually made clinically

- Laboratory test findings may show increased levels of aminotransferases, bilirubin, uric acid, ammonia, and creatinine; thrombocytopenia; prolonged prothrombin time; hypoglycemia; and leukocytosis.
- Imaging tests of the liver are primarily used to exclude other diagnoses, such as a hepatic infarct or hematoma, although some authors have reported finding fat on ultrasound, CT, or MRI.

Initial management of the patient with AFLP includes prompt delivery of the fetus, regardless of gestational age.
Medical treatment is provided to stabilize the mother while the liver recovers.

3- LABOR

Labor should always be considered in the differential diagnosis of abdominal pain in pregnant patients, especially when symptoms are increasing over time It is a clinical diagnosis defined by uterine contractions of increasing frequency, intensity, and duration that cause cervical dilation and/or effacement over time.

The presence of light vaginal bleeding and/or rupture of membranes increases diagnostic certainty in patients with minimal cervical dilation or effacement

• Preterm labour may present with a history of vague abdominal pain which the woman may not associate with uterine activity.

Consider a VE in pregnant women with abdominal pain.

Differentiate btween labor pain and Braxton Hicks Contractions:

4- INTRA AMNIOTIC INFECTION(CHORIOAMNIONITIS)

Infection of the amniotic fluid, membranes, placenta, and/or umbilical cord. It may be subgrouped as clinical (overt) or subclinical infection, or as histologic chorioamnionitis (which may be noninfectious).
*** IAI is typically polymicrobial and usually results from migration of cervicovaginal flora through the cervical canal in patients with ruptured membranes**

- Signs and symptoms of intra-amniotic infection include fever, abdominal pain, uterine tenderness, leukocytosis, maternal and fetal tachycardia, and uterine contractions. It is most common in the setting of preterm or term rupture of the fetal membranes, with or without labor.

Management:

- IAI cannot be cured medically without delivery. We suggest **prompt induction or augmentation of labor**, as appropriate, with cesarean birth reserved for standard obstetric indications
- **Broad spectrum antibiotics** should be started as soon as diagnosis is made and continued through delivery to minimize maternal and fetal morbidity
- Our preference is ampicillin 2 g intravenously every six hours plus gentamicin 5 mg/kg once daily.

ANY TIME IN PREGNANCY

1- FIBROID (RED DEGENERATION)

- The majority of fibroids remain asymptomatic in pregnancy.
- Degeneration may occur and is more common with leiomyomas >5 cm in diameter
- Pedunculated fibroids are at risk of torsion; symptoms are similar to those with degeneration
- Red degeneration is a hemorrhagic infarction of the uterine leiomyoma.

- Most patients have only localized pain, although mild leukocytosis, fever, peritoneal signs, and nausea and vomiting can occur.
- Fibroids are readily identified on ultrasound examination.
- Pain after ballottement by the abdominal ultrasound probe directly over the fibroid supports the diagnosis of degeneration or torsion.

Treatment

- Analgesia (pain should resolve in 4–7 days; however, it may be severe and prolonged, so advice from pain specialists should be sought).

NOTES

- Placental abruption differs in that the fibroid uterus is soft except at the site of the fibroid and the FH is normal.
- Myomectomy must not be performed in pregnancy as it will bleed ++ (the only exception being for a torted pedunculated fibroid).

2- BLEEDING OVARIAN CYST

Rupture of an ovarian cyst into the peritoneal cavity or bleeding into an ovarian cyst may be associated with the **sudden onset of unilateral lower abdominal pain.**

Although it can **occur anytime in pregnancy,** rupture is most likely to occur in the first or early second trimester. The **pain** often begins during strenuous physical activity, such as exercise or sexual intercourse. Rarely, bleeding is sufficiently severe to cause hemodynamic instability.

Ultrasound is the first-line imaging study for identification and characterization of the ovarian neoplasm and to look for fluid in the cul-de-sac.

3- ADNEXAL TORSION

✓Adnexal torsion may involve → the ovary, fallopian tube, or both structures.

✓**Ovarian torsion** typically presents with right lateralized lower abdominal pain, frequently accompanied by nausea, vomiting, low-grade fever, and/or leukocytosis.

✓It occurs in all three trimesters but is **most common in the first trimester** and can occur postpartum.

✓**Risk factors** include an ovarian cyst or mass and induction of ovulation, which can cause enlarged multicystic ovaries

A **presumptive diagnosis** of torsion can be made with reasonable confidence in patients with acute pelvic pain and an adnexal mass with the characteristic sonographic appearance (including Doppler studies) of torsion and after exclusion of other conditions. A **definitive diagnosis** requires direct visualization of a rotated ovary at the time of surgery. The preferred **treatment** for a viable appearing ovary is to attempt to conserve the ovary by untwisting the pedicle to allow for the return of blood flow to and from the ovary.
A salpingo-oophorectomy is required if the ovary is clearly nonviable (necrotic/gelatinous with loss of all normal anatomic structures) at surger y.

4- UTERINE RUPTURE

This usually occurs during labour but has been reported antenatally.

Risk factors

- Previous CS or other uterine surgery.
- Congenital abnormalities of the uterus.
- Induction or use of oxytocin in labour.
- Failure to recognize obstructed labour.

Rupture of an unscarred uterus in a laboring patient is rare; risk factors include grand multiparity, dystocia (malpresentation, macrosomia), obstetric procedures (breech extraction, uterine instrumentation, cephalic version), and prolonged or excessive use of uterotonic drugs

Investigations • FBC. • Cross-match blood.

Signs and symptoms include nonreassuring fetal heart rate tracing or fetal death, uterine tenderness, abdominal pain, peritoneal irritation, vaginal bleeding, shock, and loss of fetal station.

Management

- Maternal resuscitation.
- Urgent laparotomy to deliver fetus and repair uterus.

NON-OBSTETRIC (MEDICAL-SURGICAL) CAUSES

1- UTIS

- UTIs are more common in pregnancy and are an important association of preterm labour.

Signs and symptoms

- Suprapubic/lower abdominal pain.
- Dysuria, nocturia, and frequency.

Investigations

- Urine dipstick:
- nitrites strongly suggest a UTI
- blood, leucocytes, and protein raises index of suspicion.
- Midstream sample urine (MSU).

Management

- Antibiotics.
- Analgesia.
- Fluid intake.

2- APPENDICITIS

This is the most common surgical emergency in pregnant patients. Its incidence is 1:1500–2000 pregnancies with equal frequency in each trimester. Pregnant women have the same risk of appendicitis as non-pregnant women.

Signs and symptoms

• Classically periumbilical pain shifting to right lower quadrant. Pain moves towards the right upper quadrant during the 2nd and 3rd trimesters due to displacement of the appendix by a gravid uterus.
• Nausea and vomiting.
• Anorexia.
• Guarding and rebound tenderness present in 70% of patients.
-Rovsing's sign and fever are often absent in the pregnant patient.

Investigations

• White cell count (WCC) and C-reactive protein (CRP) are often i .
• USS: to exclude other causes of pain; CT/MRI may be considered.

Management

Diagnostic laparoscopy/laparotomy and appendicectomy. Fetal loss is 3–5% with an unruptured appendix, i to 20% if ruptured.

3- CHOLECYSTITIS

This is the second most common surgical condition in pregnancy (progesterone diminishes smooth muscle tone and predisposes to cholestasis leading to gallstone formation). The incidence of gallstones is 7% in nulliparous and 19% in multiparous women. The incidence of acute cholecystitis is 1–8:10 000 pregnancies.

Signs and symptoms

- Colicky epigastric/right upper quadrant pain.
- Nausea and vomiting.
- Murphy's sign may be positive in acute cholecystits.
- Jaundice (indicating obstruction of the common bile duct).
- Signs of systemic infection (fever and tachycardia).

Investigations

- FBC, LFTs, CRP (WCC and alkaline phosphatase are i in pregnancy).
- Bilirubin (identify patients with concomitant biliary tree obstruction).
- USS biliary tract (may demonstate calculi or a dilated biliary tree)

Management

1. • Conservative approach is the most common management.
- Analgesics and antiemetics.
- Hydration.
- Antibiotics.
- Cholecystectomy preferably by laparoscopic approach may be indicated in patients with recurrent biliary colic, acute cholecystitis, and obstructive cholelithiasis (usually after delivery).

4- INTESTINAL OBSTRUCTION

It is the third most common non-obstetric reason for laparotomy during pregnancy. It complicates 1:1500–3000 pregnancies. Incidence increases as the pregnancy progresses. Adhesions are the commonest cause.

Signs and symptoms

- Acute abdominal pain.
- Vomiting.
- Constipation.
- Pyrexia.

Diagnosis

- Erect abdominal X-ray (AXR) showing gas-filled bowel with little gas in large intestine.
- USS (abdominal and pelvic).

Treatment

- Conservative treatment ('drip and suck').
- Surgery for any acute obstructive cause or when not responding to conservative management.

5- PANCREATITIS

This occurs more frequently in the 3rd trimester and immediate post-partum period. It can occur in early pregnancy associated with gallstones. Although rare, it is more common in pregnancy than in non-pregnant women of a similar age. Incidence 1:5000 pregnancies.

Risk factors

- Gallstone disease.
- High alcohol intake.
- Hyperlipidaemia.

Signs and symptoms

- Epigastric pain commonly radiating to the back.
- Pain exacerbated by lying fl at and relieved by leaning forwards.
- Nausea and vomiting.

Investigations

- Serum amylase and lipase levels.
- USS to establish presence of gallstones.

Management

-Conservative treatment is the mainstay:

- IV fluids.
- Electrolyte replacement.
- Parenteral analgesics, e.g. morphine (pethidine is contraindicated).
- Bowel rest with or without nasogastric suction.

-Early surgical intervention is recommended for gallstone pancreatitis in all trimesters as >70% of patients will relapse before delivery.

- Laparoscopic/open cholecystectomy.
- Endoscopic reterograde cholangio-pancreatography (ERCP) has a limited role in pregnancy because of radiation exposure to the fetus.

-If pancreatitis is severe, liaise with high dependancy unit/intensive care unit (HDU/ITU).

🟩 Investigations & Management: Abdominal Pain Causes in Pregnancy

Condition	Investigations	Management
UTI (Cystitis)	- Urinalysis (WBCs, nitrites) - Urine culture - Renal ultrasound if pyelonephritis suspected	- Oral antibiotics safe in pregnancy (e.g., **cephalexin**, **nitrofurantoin** in 2nd–3rd trimester) - Hydration
Appendicitis	- CBC (↑WBC) - US abdomen (limited sensitivity) - **MRI without contrast** preferred if US inconclusive	- **Surgical appendectomy** (laparoscopic preferred if available) - Perioperative antibiotics
Cholecystitis	- RUQ ultrasound: **gallstones, wall thickening, pericholecystic fluid** - LFTs, WBCs	- Initially **conservative** (IV fluids, antibiotics) - **Laparoscopic cholecystectomy** if recurrent/severe
Intestinal Obstruction	- Abdominal X-ray (with shielding) → **air-fluid levels** - MRI if needed - Electrolytes, CBC	- **NG tube**, IV fluids, electrolyte correction - Surgery if strangulation, no improvement, or volvulus
Pancreatitis	- Serum **amylase/lipase** (↑) - LFTs, triglycerides - **Abdominal ultrasound** - MRI if uncertain	- **Supportive care**: NPO, IV fluids, analgesia - Treat cause (e.g., gallstones) - ICU if severe

🟩 Comparison Table: Abdominal Pain in Pregnancy

Site of Pain	Character of Pain (English)	Associated Features
Suprapubic / lower abdomen	*Dull, aching, pressure-like*	Dysuria, frequency, urgency, ± hematuria, no fever unless complicated
RLQ (may shift upward with gestation)	*Dull to sharp, constant, localized, may radiate*	Nausea, vomiting, anorexia, mild fever, leukocytosis
RUQ or epigastric	*Sharp, constant, deep, may radiate to right shoulder or scapula*	Nausea, vomiting, fever, positive Murphy's sign, intolerance to fatty meals
Periumbilical, diffuse, or lower abdomen	*Crampy, colicky, intermittent becoming constant if strangulated*	Nausea, vomiting, distension, obstipation, high-pitched bowel sounds → absent later
Epigastric ± LUQ or RUQ, radiates to back	*Severe, steady, deep, burning or piercing, worsens when supine*	Nausea, vomiting, fever, abdominal tenderness, ↑amylase/lipase, possibly jaundice

Thi is
the real pain

نسأل الله أن ينتهي إنه هو العزيز الحكيم

RESOURCES :

- ✓ UP-TO-DATE: APPROACH TO ACUTE ABDOMINAL/PELVIC PAIN IN PREGNANT AND POSTPARTUM PATIENTS
- ✓ OXFORD HANDBOOK OF OBSTETRICS AND GYNAECOLOGY 3RD EDETION

THANK YOU