Gallstones in pregnancy

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Introduction

• Gallstones are more common during pregnancy due to:
  
  Decreased gallbladder motility
  
  Increased cholesterol saturation of bile
Introduction

• Gallstone disease during pregnancy associated with increased risk of:
  
  Preterm birth
  Maternal morbidity
  Readmission
  Neonatal morbidity
Introduction

• After acute appendicitis, Acute cholecystitis is the second most common nonobstetrical indication for surgery in pregnant women.
Pathophysiology

- Increased levels of reproductive hormones during pregnancy induce a variety of physiologic changes in the biliary system, which promote gallstone formation:
Pathophysiology

- **Estrogen** increases cholesterol secretion
- **Progesterone** reduces bile acid secretion:
  
  Bile become supersaturated with cholesterol.

- **Progesterone** slows gallbladder emptying, bile stasis and formation of stones.

- These changes normalize one to two months following delivery.
Personal Risk Factors

- **Prepregnancy obesity**: major independent risk factor for gallstones
- Increasing age
- Genetic background
- Multiparous > nulliparous women?
Incidence

- Incidence of gallstone-related disease in pregnant women is low: 0.05 to 0.33 %

- Among women with sludge or stones, only 1.2 % developed symptoms during pregnancy.

- Serious complications: acute cholecystitis, choledocholithiasis or pancreatitis, developed in <10 % of symptomatic patients.
Course

• In the postpartum period, bile composition and gallbladder function return to normal.

• Sludge is more likely to resolve than stones: 39 versus 9 %
Clinical presentation

• Presentation is similar to nonpregnant state.
4 Clinical groups

- No symptoms, but gallstones on ultrasound examination (incidental gallstones)

- Typical biliary symptoms and gallstones on ultrasound examination

- Atypical symptoms and gallstones on ultrasound examination

- Typical biliary symptoms, but no gallstones on ultrasound examination
Asymptomatic Gallstones

• Most gallstones are clinically “silent,” and they are often uncovered as an incidental finding during abdominal ultrasound performed for another reason.
Biliary colic

- Obstruction of the cystic duct or CBD by a stone produces increased intraluminal pressure and distention of viscus that can not be relieved by repetitive biliary contractions.
Biliary colic

• Epigastric or RUQ pain

• Onset of pain 1 and 3 hours postprandially

• History of fatty food ingestion is common

• Radiation to interscapular area, right shoulder: Frequent

• Nausea and vomiting : Frequent
Biliary colic
Biliary colic

• Biliary colic begins quite suddenly and may persist with severe intensity for 30 min to 5 h, subsiding gradually or rapidly.

• It is steady rather than intermittent

• An episode of biliary pain persisting beyond 5 h should raise the suspicion of acute Cholecystitis.
Acute cholecystitis

• Acute inflammation of gallbladder wall usually follows obstruction of cystic duct by a stone.

• Acute cholecystitis often begins as an attack of biliary pain that progressively worsens.

• Approximately 60–70% of patients having prior attacks that resolved spontaneously.
Acute cholecystitis

• RUQ or epigastric pain that is steady and severe

• Prolonged (more than four to six hours)

• Possibly radiating to the right shoulder or back

• Fever, anorexia, nausea, and vomiting

• Abdominal examination: voluntary and involuntary guarding and, frequently, a positive Murphy's sign.
Murphy’s sign

- Deep inspiration or cough during subcostal palpation of the RUQ usually produces increased pain and inspiratory arrest.
Acute cholecystitis

• Diagnosis: on the basis of a characteristic history and physical examination.

• Triad of sudden onset of RUQ tenderness, fever, and leukocytosis is highly suggestive.
Atypical symptoms

- These patients should be evaluated for alternative diagnoses.
Differential diagnosis of pregnant women with RUQ or Epigastric pain

- Pregnancy-related conditions
- Nonpregnancy-related conditions
Pregnancy-related conditions

- Preeclampsia // HELP
- Acute Fatty liver of pregnancy
- Abruptio placentae
- Uterine rupture
- Intra-amniotic infection
Nonpregnancy-related conditions

- Non-gallstone-related biliary disease
- GERD
- Peptic ulcer disease
- Hepatitis
- Right-sided pneumonia
- Appendicitis
Diagnostic testing
Laboratory studies

• Normal in patients with uncomplicated biliary colic,

• Helpful for diagnosis of complicated gallbladder disease and for excluding conditions in differential diagnosis.
Reasonable baseline Laboratory studies

- AST, ALT, Total Bilirubin, ALK.P
- CBC: WBC, Diff // PLT
- Amylase, Lipase
- Urine protein

- Normal range for WBC: 9000 to 15,000 cells/microL
Imaging

- Ultrasonography
- MRCP
- HIDA scan
- CT scan // Plain radiograph: generally avoided
- ERCP: can be performed safely in pregnant women when clinically indicated
Ultrasonography

• Reliable and safe method for identifying gallstones in pregnant women.

• Sensitivity and specificity approaching 100%

• Acute cholecystitis: gallbladder distention, gallbladder wall thickening, pericholecystic fluid, and ultrasonographic Murphy's sign.
IMPACTED STONE IN NECK
Magnetic resonance imaging

• May be useful in some complicated cases, such as women with choledocholithiases or pancreatitis if ultrasound is nondiagnostic.
Magnetic resonance imaging

- During the first trimester not recommended, since information is limited regarding fetal safety during the period of organogenesis.

- Administration of gadolinium during pregnancy is controversial,

- Avoid gadolinium whenever possible but realize that, at times, it may be needed.
CT scan // Plain radiograph

- Generally avoided
ERCP

• Can be performed safely in pregnant women when clinically indicated, with fetal shielding.
Management

- Supportive care
- Biliary colic
- Acute cholecystitis
- Choledocholithiasis/cholangitis
- Gallstone pancreatitis
Supportive care

- Pain control
- Intravenous fluid therapy
- Nutritional support, as needed
- Antibiotic therapy: Depending upon the clinical presentation
Pain control

• Intravenous opioids

• NSAIDs: avoided in pregnancy, especially after 32 weeks of gestation: potential adverse fetal effects when used for more than 48 hours (premature closure of the ductus arteriosus, oligohydramnios).

• Acetaminophen can be used to manage mild pain.
Antibiotic therapy

- Antibiotic therapy is required only for patients with acute cholecystitis or cholangitis.

- In a patient with biliary pancreatitis, antibiotics are not required unless there is reliable evidence of infection.
Antibiotic therapy

• Monotherapy with a beta-lactam/beta-lactamase inhibitor,
  
Ampicillin-sulbactam
Piperacillin-tazobactam
Ticarcillin-clavulanate
Antibiotic therapy

• Alternative: a third-generation cephalosporin, such as ceftriaxone plus metronidazole
Antibiotic therapy

• Aminoglycosides are relatively safe but carry a risk of fetal (and maternal) ototoxicity and nephrotoxicity,

• Fluoroquinolones and carbapenems: avoided
Biliary colic

• For pregnant patients with a first episode of biliary colic: supportive care, usually successful

• Recurrent bouts of bothersome pain, or who are unable to gain weight at an acceptable rate due to the symptoms: Cholecystectomy
Biliary colic

• Near term: avoid cholecystectomy and reevaluate the patient after delivery.

• Wait six weeks following delivery.
Acute cholecystitis

- Definitive, prompt surgical therapy:

- Cholecystitis and signs of sepsis, suspected gangrene, or perforation,
  Disease progression on antibiotic therapy.
Acute cholecystitis

• In the absence of such indications:

• For women in their first and second trimesters, good surgical candidates: Cholecystectomy during their initial hospitalization.

• Although symptoms of cholecystitis may abate within 7 to 10 days of initiating nonoperative treatment, there is a high risk of recurrence or serious complications.
Acute cholecystitis

• For women in the third trimester, nonoperative medical management with antibiotics and fluid therapy should be tried first, to allow delay of cholecystectomy until postpartum period.

• Cholecystectomy in third trimester: technically difficult and increased preterm delivery.
Acute cholecystitis

- Responds to nonoperative treatment: Wait six weeks following delivery

- Continues to have symptoms or shows signs of developing complications in spite of nonoperative treatment: Cholecystectomy
Choledocholithiasis/cholangitis

• Symptomatic choledocholithiasis / cholangitis require initial supportive care with hospitalization, intravenous fluid therapy and nutritional support, pain control, antibiotics, and prompt intervention, typically initial ERCP with sphincterotomy followed by cholecystectomy.
Choledocholithiasis/cholangitis

• ERCP with sphincterotomy can be performed by experienced gastroenterologists, and multiple studies have demonstrated low rates of maternal or fetal morbidity.

• ERCP can be accomplished safely during pregnancy with fetal shielding.
Gallstone pancreatitis

- Gallstone disease is the most common cause of acute pancreatitis during pregnancy,
Acute Pancreatitis

Gallstones

Stone obstructing both ducts
Gallstone pancreatitis

• Management consists of initial supportive care with hospitalization, pain control, intravenous fluid therapy, and nutritional support.
Gallstone pancreatitis

- Many patients will improve rapidly with supportive care.
Gallstone pancreatitis

- Women who do not respond promptly to supportive medical care, and those with concomitant cholangitis, should undergo prompt intervention with ERCP and sphincterotomy, biliary stent placement, or cholecystectomy.

- Cholecystectomy is also indicated for patients with mild disease that resolves, usually during the same hospitalization, to prevent recurrence and reduce costs.
Cholecystectomy during pregnancy

• Cholecystectomy can be performed safely and effectively during any trimester of pregnancy.

• Pregnancy alone does not appear to increase postoperative morbidity for cholecystectomy.
Cholecystectomy during pregnancy

• Laparoscopic approach rather than open surgery.

• If a laparoscopic procedure cannot be safely and/or effectively completed, an open cholecystectomy should be performed.
Thank you for your attention