NON OBSTETRIC SURGERY FOR THE PREGNANT PATIENT

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Objective

Understand the basics of the perinatal patient and fetus.

Explain the care of the non-obstetric pregnant patient.

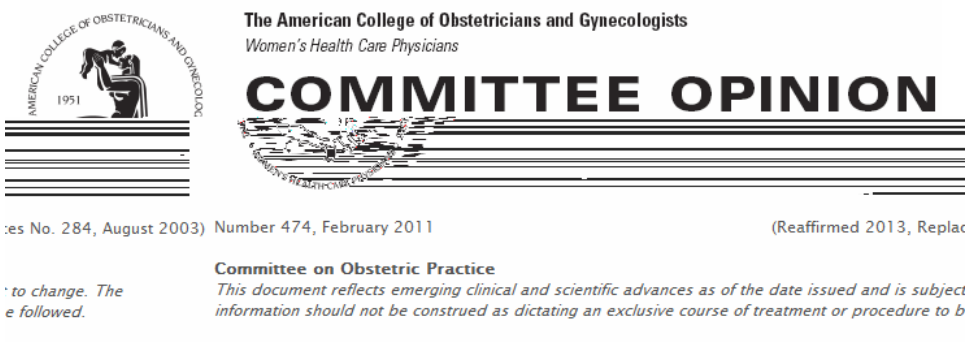
The peri-anesthesia nurses role in managing these patients.

Background

0.3% to 2.2% women will have non-obstetric surgery unrelated to pregnancy

1 in 500 pregnancies will need non-obstetric surgery

Two patients in one body



The American College of Obstetricians and Gynecologists

Women's Health Care Physicians

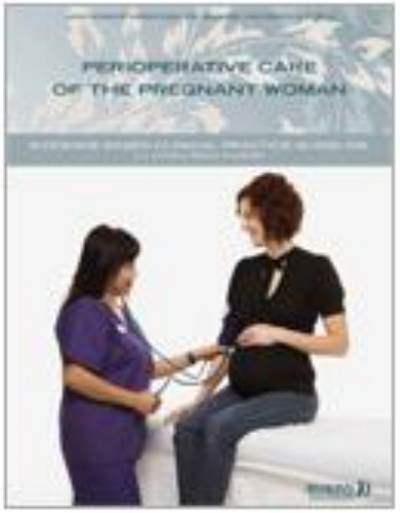
COMMITTEE OPINION

ces No. 284, August 2003) Number 474, February 2011 (Reaffirmed 2013, Replac

Committee on Obstetric Practice

to change. The e followed.

This document reflects emerging clinical and scientific advances as of the date issued and is subject information should not be construed as dictating an exclusive course of treatment or procedure to b



(Chestnut, et al., 2014).

Competency and Resources

"I Don't Know Nothin Bout Birthing No Babies"

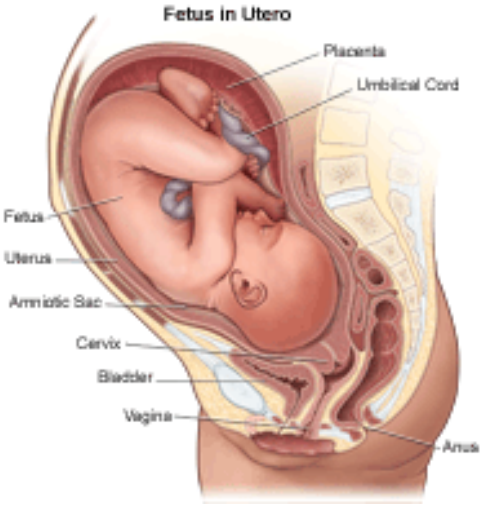
Can facility provide appropriate intra-operative and post-operative care to mother and fetus?

Resources to manage emergencies?

(Bing.com, 2014).

Maternal Safety: Altered Maternal Physiology

- Growing fetus
- Greater metabolic demand
- Hemodynamic consequences of the low-pressure placental circulation
- Increased concentrations of various hormones
- Hormonal changes are likely responsible for most of the changes that occur during the first trimester.
- https://www.youtube.com/watch?v=eVuittFyM34



Balance of Systems

Hormones = homeostasis

Placenta

Cytokines

Progesterone

Relaxin

Rectus Abdominis muscle

Fetal and Placental Physiology

PLACENTA

prevents rejection of the fetus

enables respiratory gas exchange

transports nutrients

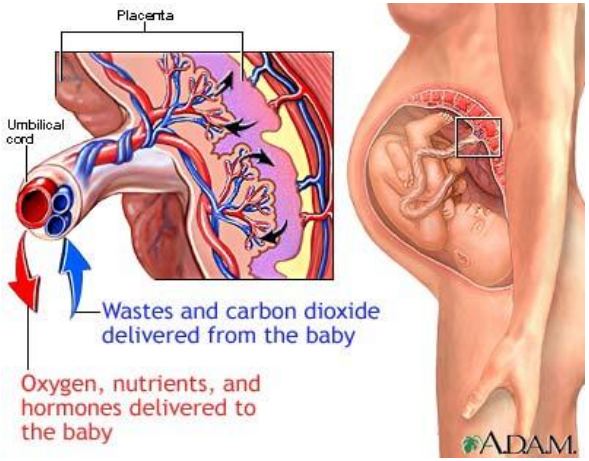
eliminates fetal waste products, and secretes peptide and steroid hormones fetal and neonatal use

FETUS

~ 500-600 mL/min.

Contributes to the amniotic fluid volume by urinating approximately 800 mL/day or 5 mL/hour.

Amniotic fluid reabsorbed by fetal swallowing and the mechanism of in utero breathing.



(Roberts, V. and Myatt, L. 2013).

Hematologic System

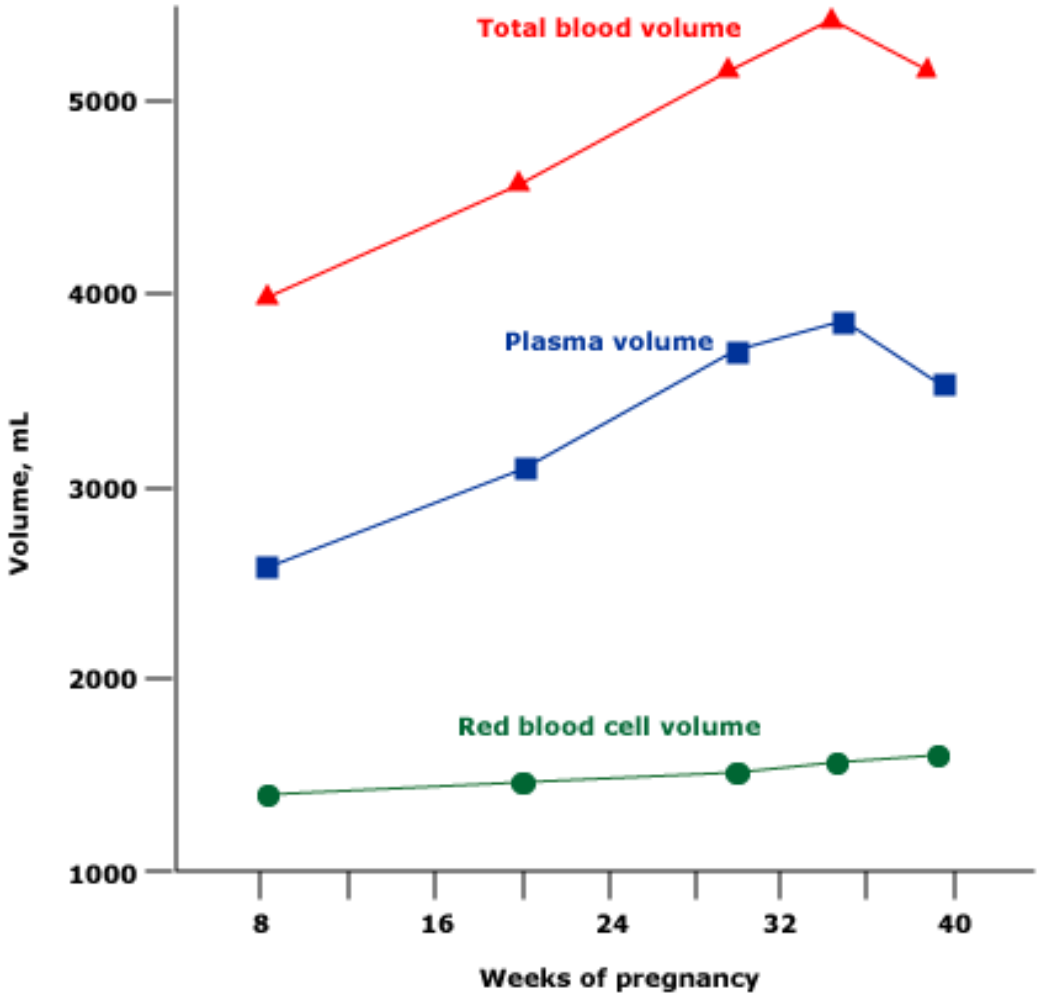
Red blood cell concentration

Physiologic anemia of pregnancy

Nursing assessment:

- Anemic?
- Hematologic disorders?
- Physiological leukocytosis?

Total blood volume, plasma volume and red cell volume in normal pregnancy



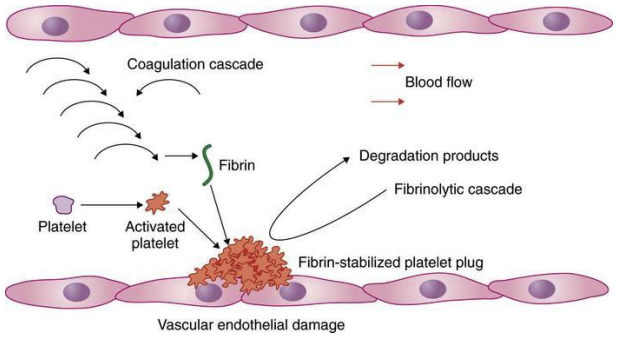
Data from Shnider, SM, Levinson, G. Anesthesia for Obstetrics, 3rd ed, Williams & Wilkins, Baltimore, p. 8.

DVT

Pressure of gravid uterus on iliac veins

Hyper-coagulable state

- SCDs
- Ambulation



Childbirth Through Time

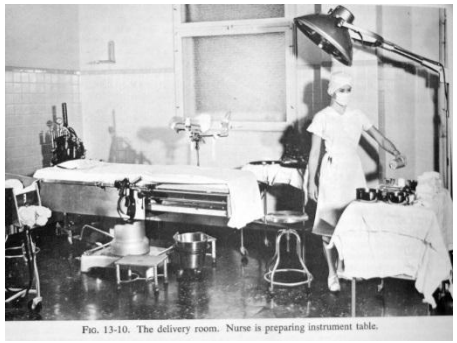


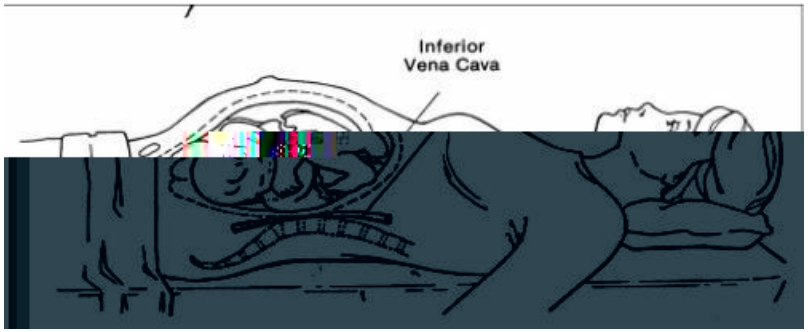
FIG. 13-10. The delivery room. Nurse is preparing instrument table.

Cardiovascular System

Compression of the vena cava by the gravid uterus can result in a 30% decrease in cardiac output by the end of the third trimester.
Place pt. in left lateral decubitus position with a 30-degree incline during the late second and third trimester of pregnancy

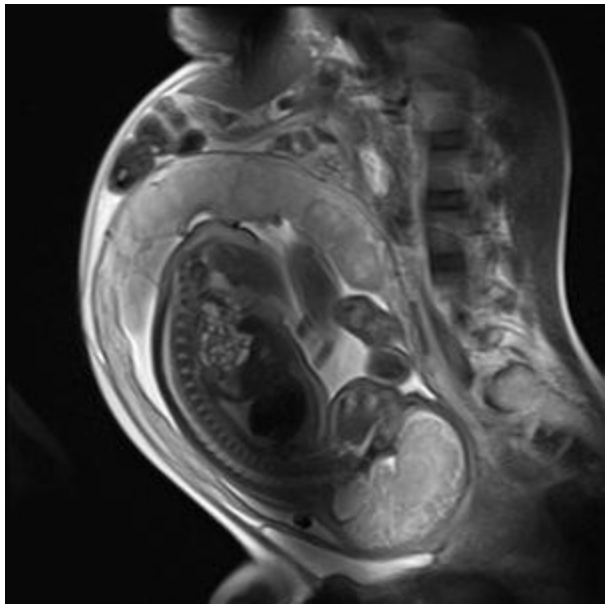
@ 18 to 20 weeks' gestation, transport patient on her left side

For the OR, displace uterus to the left
Progesterone acts as both a veno- and arterial dilator



Maternal Respiratory System

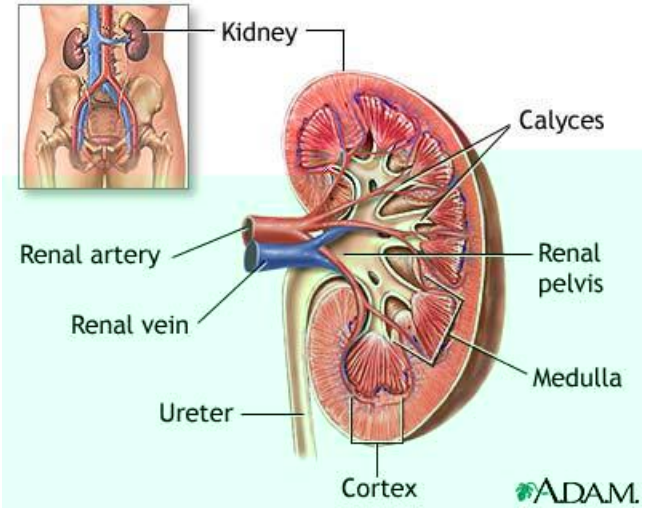
- Antepartum pulmonary changes ~4th week of gestation.
- Mucosal capillary engorgement
- Diaphragm elevates 4cm rise
- Subcostal angle widens as the transverse thoracic diameter increases by 2 cm.
- Compensated respiratory alkalosis
- Increased respiratory effort and concomitant reduction of PCO_2



(Bing, 2014).

Renal System

- Increase in renal blood flow and glomerular filtration rate.
- Ureteral dilation due to progesterone and compression of fetus.
- Increased risk for both urolithiasis and pyelonephritis.

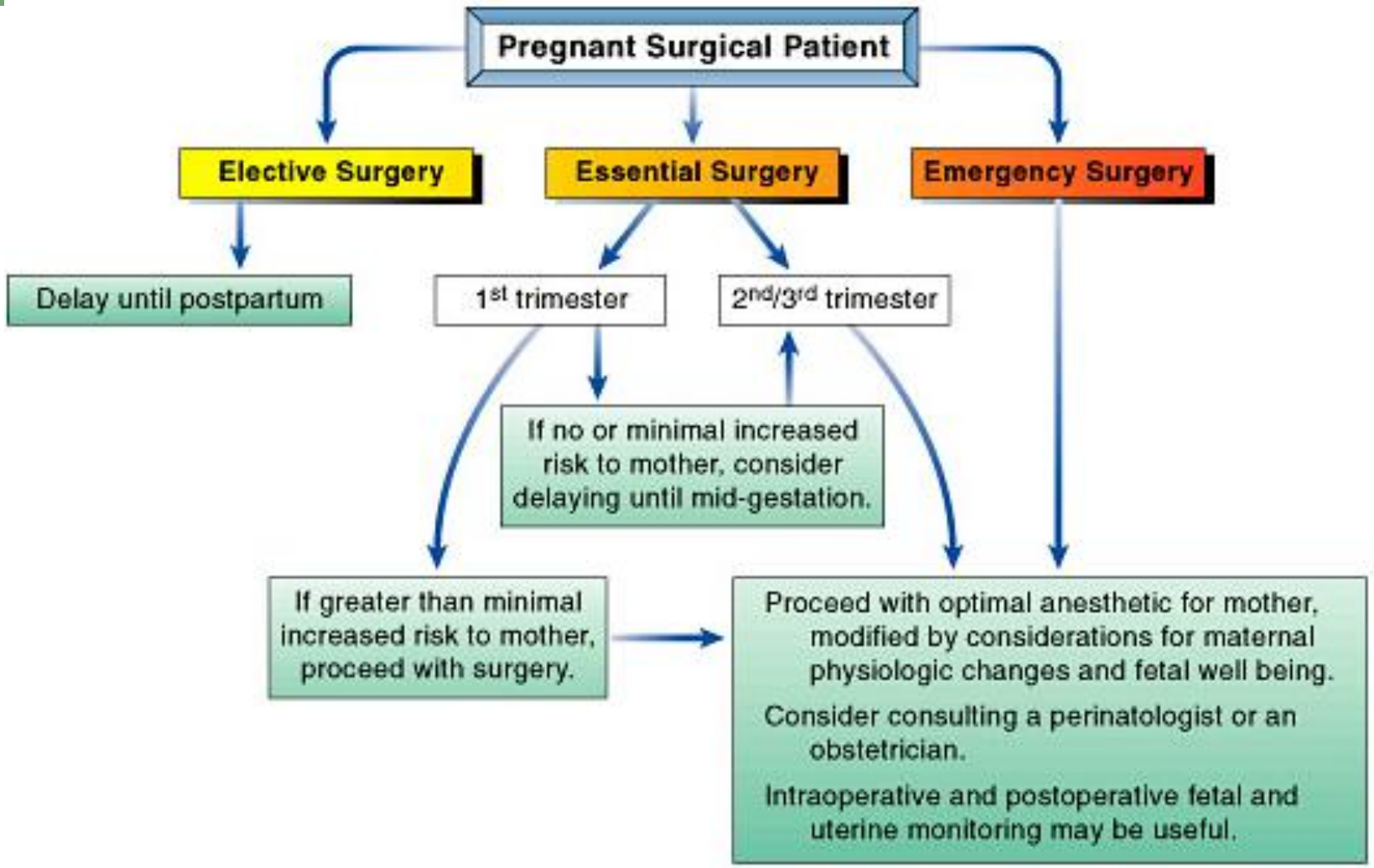


http://adam.about.net/encyclopedia/infectiousdiseases/Kidney-infection-pyelonephritis.htm

System	Change	Anesthetic Considerations
Respiratory	Upper airway edema Upper airway friability	Difficult intubation Bleeding with nasal tubes Rapid induction/emergence Rapid desaturation
Cardiovascular	Aortocaval compression (>20 wk)	Slows induction for inhaled agents Hematologic reserve for hemorrhage Low mean blood pressure Left lateral tilt
Neurologic	anesthetic anesthetics	
Hematologic		
Musculoskeletal		dural puncture
Gastrointestinal	Gastroesophageal junction integrity Slowed gastric emptying during active labor	general anesthesia

(Belden, M., 2010).

Timing of Surgery



Pal, S. (2014)
Carvalho B, Anesth Analg Suppl IARS

Risks

Preterm labor

Possible teratogenicity of anesthetic agents

Anatomic and physiologic changes of pregnancy (e.g., difficult intubation, aspiration) and with the underlying maternal disease.

Intraoperative changes of uteroplacental perfusion and/or fetal oxygenation

https://www.youtube.com/watch?v=Qbnv6eHKjCQ

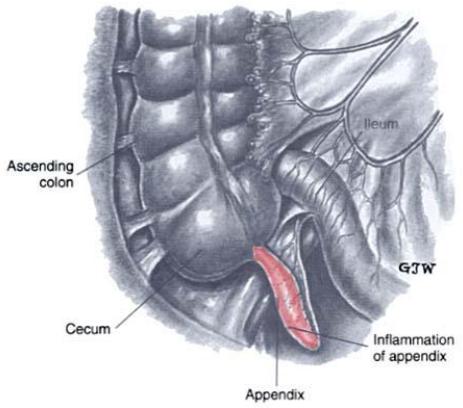
AWHONN, 2011.
Biro, P, 2014.

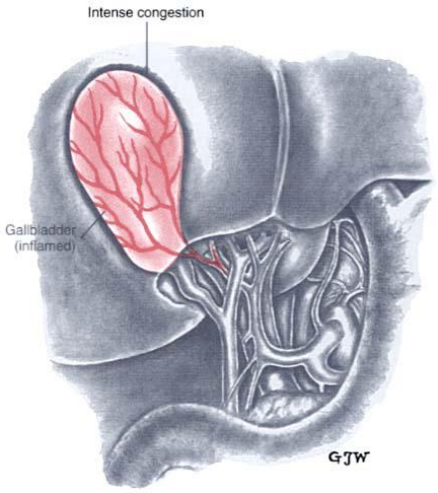
Recommendations

- Neonatal and pediatric services available
- OB with cesarean delivery privileges readily available
- Qualified individual readily available to interpret the fetal heart rate patterns.
- EFM- fetal heart rate check pre and post procedure:
- Viable fetus -simultaneous electronic fetal heart rate and contraction monitoring pre and post procedure to assess fetal well-being and the absence of contractions.

Most Common Non Obstetric Indications

- Appendicitis
- Biliary disease
- Ovarian disorders
- Trauma
- Breast or cervical disease
- Bowel obstruction





Things To Consider

Regional versus General

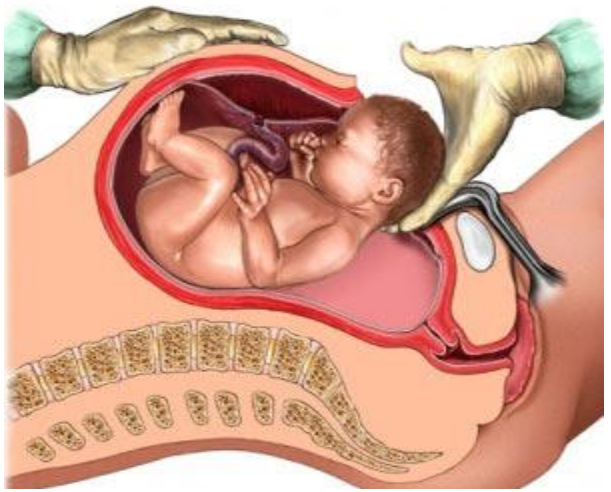
Risk of PTL

Increased work of breathing

Increased O2 consumption

Swollen mucosa

Risk of aspiration



Peri-operative Assessment & Interventions

- OB Consult
- Height
- Weight
- Antibiotics
- Bicitra

Prenatal Care

Communication

Prevent Hypothermia

Fetal Heart Rate Monitoring

Assess FHR depends on patient

- >24 weeks continuous EFM ~ 10 mins
- <24 weeks prior to and immediate after the procedure
- Sterile external transducer, Doppler, or transvaginal US probe for abdominal procedures

Intraoperative EFM:

- Viable fetus
- A health care provider with obstetric surgery privileges is available and willing to intervene during the surgical procedure for fetal indications.
- Plan for possible c/s delivery

Assess for uterine contractions

Position >18 weeks left lateral tilt

- Prevent hypotension and uterine hypo-perfusion

Boisseau, 2012.

LABs

CBC

PT/PTT/INR

Fibrinogen/D-dimer

Type and screen

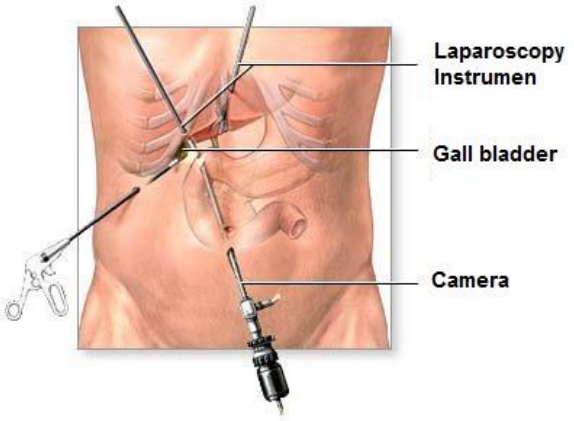
ECG

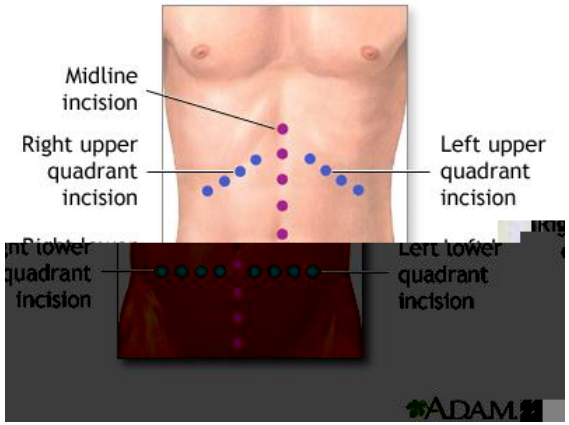
CXR

Considerations

Laparoscopy is performed during pregnancy for both diagnostic and therapeutic indications with increasing frequency.

Laparotomy continues to be performed for many abdominal conditions that occur during the later stages of pregnancy.





Suggested Guidelines for Laparoscopic Surgery during Pregnancy

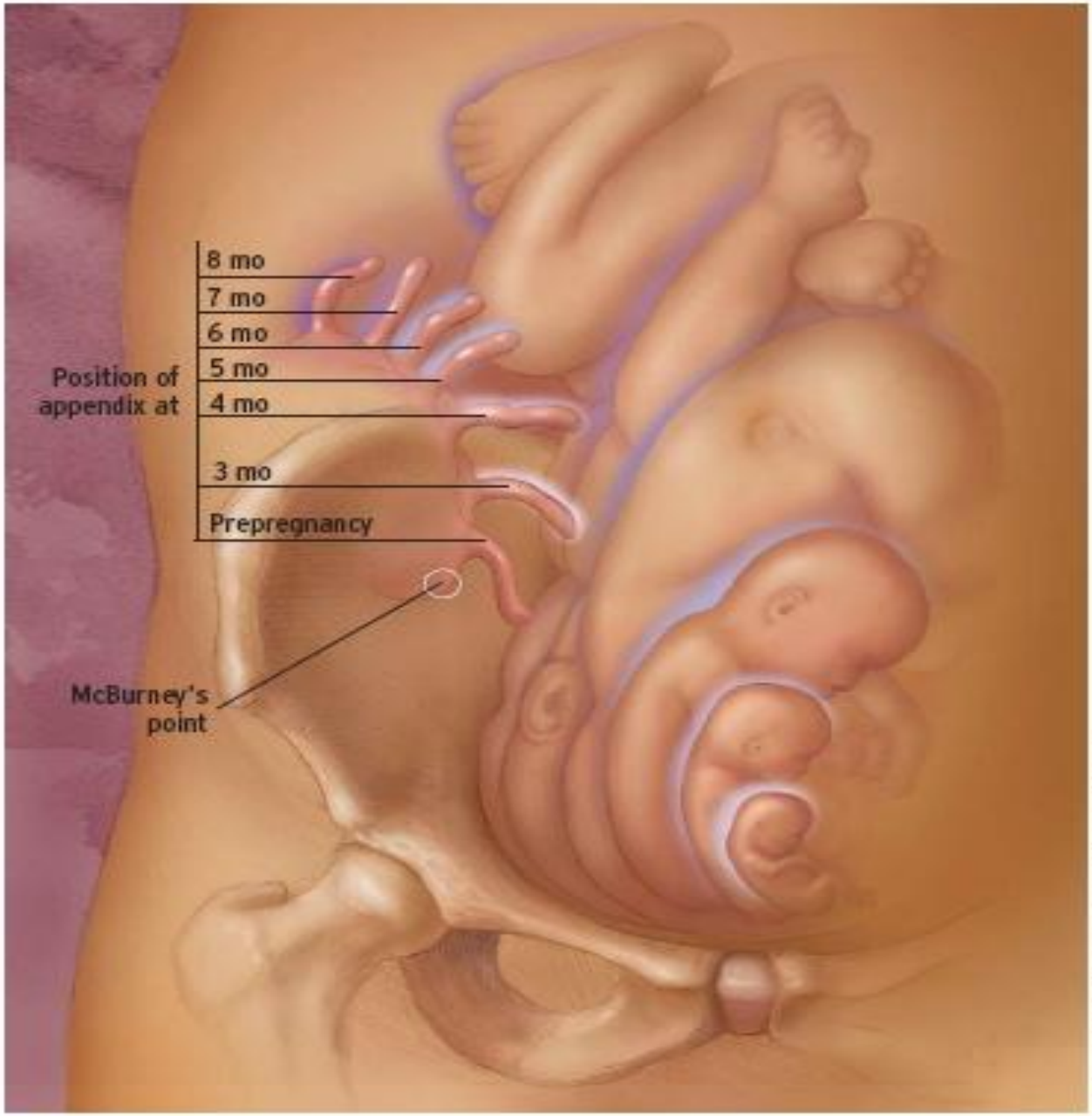
- Indications for laparoscopic treatment of acute abdominal processes are the same as for non-pregnant patients.
- Safely performed during any trimester of pregnancy.
- Preoperative obstetric consultation should be obtained.
- SCDs for VTE prevention.
- EFM and uterine tone should be monitored both preoperatively and postoperatively.
- End-tidal CO_2 should be monitored during surgery.

Suggested Guidelines for Laparoscopic Surgery during Pregnancy

- Left uterine displacement should be maintained to avoid aortocaval compression.
- An open (Hassan) technique, a Veress needle, or an optical trocar technique may be used to enter the abdomen.
- Low pneumo-peritoneum pressures (between 10 and 15 mm Hg) should be used.
- Tocolytic agents should not be used prophylactically but should be considered when evidence of preterm labor is present.

Acute Appendicitis

- Most common non-obstetric surgical problem
- 1 per 1500 pregnancies
- Usually 2nd trimester
- Difficult to confirm- abdominal pain, nausea and vomiting, rupture
- Right-sided abdominal pain, depends on gestational age
- Leukocytosis
- Ultrasound--sensitivity and specificity are 86% and 81%
- Avoid ionizing radiation
- MRI - sensitivity and specificity are 100% and 93%, respectively.
- CT scan -sensitivity of 97% and specificity of 100%



Here and on the cover: © Molly Borman

FIGURE 1. The growing uterus progressively displaces the appendix in a counterclockwise rotation out of the pelvis into the right upper quadrant.

Case Study #1

34 yo, presents to ER with right lower quadrant pain

point not tender

Nausea and vomiting

12 weeks pregnant

BP 100s/60s, P 82-102, Temp 98.3

OB and Surgical consults

Case Study #1

- Labs drawn, IV started
- US confirms acute appendicitis
- Zofran 4mg, Morphine 5mg, and Zosyn administered
- WBCs 12.1
- Prepped for laproscopic appendectomy

Case Study #1

- Avoidance of the uterus
- Trocars placed and EnSeal and Endocatch used
- EBL 5ml
- Pt sent to recovery and extubated
- FHTS 153
- Sent to floor and discharged that pm without complications
- F/U with OB

Case Study #2

30 year old, 2 week PP

ER admission with c/o of 24 hour pain

Hx of uterine inversion and 2U PRBCs

WBCs 11.9

CT Scan of acute appendicitis

Case Study #2

General endotracheal anesthesia

Foley cath

Large umbilical hernia left subcostal access

Left lower quadrant 5mm port placed and 12mm suprapubic port

Inflamed appendix removed with Ligasure device

Gallbladder Disease

Cholecystectomy second most common nonobstetric surgical procedure

Ultrasound to confirm

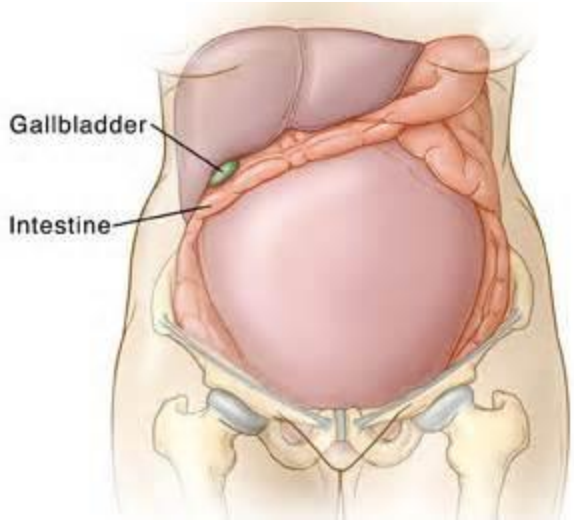
Complications from non-operative management are higher than uncomplicated surgical intervention

- Conservative management for asymptomatic cholelithiasis.
- surgical intervention should not be reserved for the sequelae of cholelithiasis, such as cholecystitis, choledocholithiasis, and gallstone pancreatitis.
- nonoperative management leads to increased length of hospital stay, multiple readmissions, and higher incidence of preterm deliveries.

Laparoscopic cholecystectomy can be performed during each of the trimesters

Try to avoid contrast

An open technique is advocated for peritoneal access to prevent iatrogenic uterine injury.



Summary

- A multidisciplinary approach
- If possible, surgery should be delayed until the second trimester
- Elective surgery should not be performed at all
- Avoid (unwanted) drug effects on the fetus
- Avoid oxytocic effects to preserve pregnancy
- Avoid tocolytic effects postpartum

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