

The Pregnant Patient

Assessment and Perioperative Management



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KEYWORDS

- Pregnancy • Preoperative evaluation • Perioperative management
- Preoperative pregnancy testing • Fetal effects of perioperative medications

KEY POINTS

- Pregnant women should not be denied indicated surgeries or procedures; however, the benefits and risks (both what is known and not known) need to be communicated so that informed decisions are made.
- Per American Congress of Obstetricians and Gynecologists guidelines, elective surgery should be postponed until after delivery. If it cannot, nonurgent surgery should be done in the second trimester.
- When a pregnant woman has a surgery or procedure, it is important that the entire health care team work together for optimal patient and fetal outcomes, and that coordination of care be clearly delineated beforehand.
- It is reasonable to offer urine pregnancy testing before diagnostic tests and procedures in a woman of childbearing age.

Although not common, pregnant patients do have surgery and a thorough preoperative evaluation is vital for maintaining maternal and fetal wellbeing. To accomplish this, it is important to remember that pregnancy itself can cause physiologic changes and that there are 2 patients (patient and fetus) to consider. This article reviews the types of surgeries that can occur during pregnancy, the physiologic changes that occur during pregnancy, both the maternal and fetal effects of anesthesia and surgery, and current recommendations for perioperative management.

PHYSIOLOGIC CHANGES OF PREGNANCY

The state of pregnancy has multiple systemic effects. These can vary from what can be considered the body's normal physiologic response to pregnancy to the abnormal

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diseased state. When evaluating a pregnant patient, it is important to keep in mind the expected normal physiologic changes of the major systems. This will help the clinician recognize when the level of care should be escalated and other medical services consulted. The expected physiologic responses to pregnancy are reviewed briefly, emphasizing what a clinician may encounter in the preoperative setting:

- Cardiac changes (**Box 1**)¹
 - Increased heart rate
 - Increased cardiac output
 - Audible S3 heart sound, midsystolic flow murmur
 - Left axis deviation on electrocardiogram
 - Aortocaval compression in the supine position resulting in hypotension and decreased uterine perfusion
- Respiratory changes (**Table 1**)¹
 - Increased minute ventilation
 - Decreased functional residual capacity
 - Respiratory rate within normal limits
 - Respiratory alkalosis on arterial blood gas
 - Upper airway capillary and mucosal engorgement
- Hematologic changes¹
 - Anemia: dilutional effect due to a large increase in plasma volume relative to red blood cell volume
 - Hypercoagulable state: laboratory test may reveal decreased prothrombin time, partial thromboplastin time, and normal platelet values
- Renal changes¹
 - Increased glomerular filtration rate
 - Decreased blood urea nitrogen and creatinine levels
- Gastrointestinal changes¹
 - Increased intragastric pressure
 - Decreased lower esophageal sphincter tone.

MATERNAL EFFECTS OF ANESTHESIA AND SURGERY OR PROCEDURES

Due to physiologic changes, additional anesthetic concerns are present for a pregnant patient compared with a nonpregnant patient. There is an increased risk of desaturation during periods of apnea (such as induction), increased risk of aspiration (second and third trimesters), increased risk of difficult intubation, decreased MAC, yet increased risk of awareness.²⁻⁴ In addition, the gravid uterus (second and third

Box 1

Changes in physical examination with pregnancy

Accentuation of S1 heart sound and exaggerated splitting of the mitral and tricuspid components

Typical systolic ejection murmur

Possible S3 and S4 (no clinical significance)

Leftward displacement of point of maximal impulse

Adapted from Gaiser R. Physiologic changes of pregnancy. In: Chestnut DH, editor. Chestnut's obstetric anesthesia: principles and practice. 5th edition. Philadelphia: Saunders; 2014. p. 15–38; with permission.

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