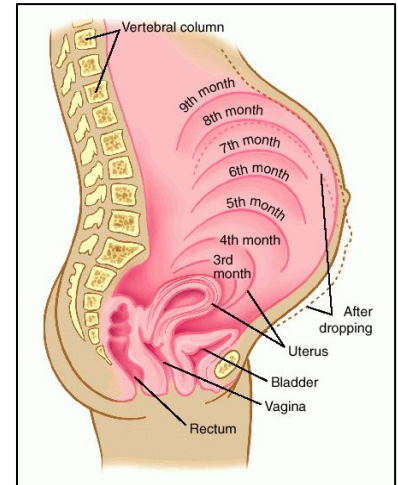


# Maternal Changes in Pregnancy

## Anesthetic Pearls: Anesthetic Implications of Changes in the Parturient during Pregnancy

**Uterus:** The uterus progressively enlarges throughout pregnancy. At 12 weeks, the gravid uterus rises above the pubic symphysis. At 20 weeks, the uterus reaches the umbilicus; and at approximately 36 weeks it reaches maximal height at the costal margin. After 36 weeks the fundal height can decline as the fetal head engages the pelvis. As the pregnancy progresses, the fetal intrauterine environment changes from protective to vulnerable as the amniotic fluid volume decreases and the fetal size increases. Initially, the uterine wall is thick, however it progressively becomes thinned during the 3rd trimester.



### Musculoskeletal

- Pubic symphysis widens to 8 mm by 7<sup>th</sup> month
- Widening of sacro-iliac joints

### Blood volume

- Total blood volume increases approximately 50%
- Relative anemia (increased plasma volume > cellular volume)

### Heart rate

- Progressive elevation (increase of ~ 20 beats/min greater than pre-pregnant state during the 3<sup>rd</sup> trimester)

### Blood pressure

- Up to 15 mmHg decrease in systolic and diastolic BP during 2<sup>nd</sup> trimester (returns to normal near end of 3<sup>rd</sup> trimester)
- Supine hypotension during 3<sup>rd</sup> trimester secondary to IVC compression.

### Cardiac output

- Progressive increase
- After 10 weeks, CO can become 1.5 L/min greater than baseline

### ECG

- Increase in ectopic beats
- Leftward deviation up to 15°

### Respiratory

- Increased total oxygen consumption
- Increased tidal volume
- Mild increase in respiratory rate secondary to effects of progesterone
- Relative hypcapnia in 3rd trimester

