

# Management of the Pregnant Patient

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- Relevant license, certifications, and trainings
  - Doctorate of Chiropractic
  - Acupuncture Certification
  - Masters degree in Human Nutrition and Functional Medicine
  - Rocktape Certification
  - Webster Certified, Spinning Babies L&D
  - DNS Visceral Level 1
  - TPI Medical Level 2
- Co-Owner of Acacia Natural Medicine, an integrated medical practice in Scottsdale
- The team chiropractor for the Suns, the Mercury, and the Valley Suns
- Spring training coverage for the Chicago White Sox



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# Objectives

- ✓ Understand physiological and anatomical changes
- ✓ Learn chiropractic approaches for pregnancy care
- ✓ Identify patient education opportunities

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## First Trimester Week 1 - Week 12

### Endocrine and Hormonal Adaptations

- Endocrine system shifts immediately upon conception
- hCG maintains corpus luteum output of progesterone and estrogen
  - Placenta assumes hormonal control around week 10-12
- Progesterone: relaxes smooth muscles, promotes immune tolerance, maintains the endometrium
- Estrogen: increases uterine vascularity and promotes breast ductal development
- Relaxin: secreted by the corpus luteum and later by the placenta, contributes to ligamentous laxity- sacroiliac joints, lumbar spine, and pubic symphysis

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**First Trimester**  
**Week 1 - Week 12**

## **Immune and Inflammatory Modulation**

- Increased susceptibility to viral infections
  - Calculated shift from Th1 to Th2 immune response dampens cell-mediated immunity while enhancing humoral response
- Regulatory T cells (Tregs) increase to maintain maternal-fetal tolerance: "Relax. Don't attack this."

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**First Trimester**  
**Week 1 - Week 12**

## **Musculoskeletal and Ligamentous Adaptations**

- Relaxin: alters collagen fiber structure, contributes to ligamentous laxity- sacroiliac joints, pubic symphysis, and lumbar spine
  - instability and altered gait mechanics
- Lumbar paraspinal muscles may begin compensating early
  - Especially with baseline core weakness
- Round ligament: stretches from uterine horns and labia majora
  - More vascular and begins to lengthen- predisposing it to spasm and pain with rapid uterine expansion

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## **Female ligaments, pelvic biomechanics and sacral restriction may have a potential relationship with fetal positioning.**

- Broad ligament: holds the sides of the uterus to the pelvis and holds normal position of the uterus
- Uterosacral ligament: attaches from cervix to the anterior sacrum, forms the lateral boundaries of the pouch of Douglas (recto-uterine cul-de-sac)
- Round ligament: attaches from the lateral portion of the uterus to the pubic symphysis, undergoes significant hypertrophy and grows in both length and diameter throughout pregnancy

Williams Obstetrics 21st Edition

**“Imbalance in the muscles and torsion on ligaments may lead to uneven pull of the uterus and restrict fetal space of movement” -J. Ohm**

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### **First Trimester Week 1 - Week 12**

## **Uterine and Pelvic Organ Changes**

- Uterus: grows significantly
  - Increases from 70g to 120g by 12 weeks
  - Begins to exert subtle pressure on bladder and rectum
- Cervix: softening and increased vascularity
  - Cervical glands produce thick mucus under progesterone dominance
    - Forming mucus plug to protect from infection

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**First Trimester**  
**Week 1 - Week 12**

## Gastrointestinal and Visceral Shifts

- Progesterone-induced smooth muscle relaxation
  - reduces lower esophageal sphincter tone- early onset gastroesophageal reflux
- Gastric motility slows- promotes nausea and bloating
- Nausea and vomiting affects 70% of pregnant women

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**First Trimester**  
**Week 1 - Week 12**

## Ways to Support

- Begin pelvic balancing work
- Support immune system
  - Sunshine, prenatal vitamins, vitamin D<sub>3</sub> with K<sub>2</sub> (if bloodwork indicates), vitamin C, omega-3 (DHA + EPA), zinc
- Support heart burn
  - smaller meals, alkaline foods
- Support nausea and vomiting
  - Peppermint stick, ginger, vitamin B<sub>6</sub>, hydration
- Support gastric emptying
  - fiber, magnesium, hydration



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**Second Trimester**  
**Week 13 - Week 27**

## **Physiological and Structural Changes**

- Shift from organogenesis to fetal growth
  - Maternal physiology adapting to support increase metabolic demands

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**Second Trimester**  
**Week 13 - Week 27**

## **Endocrine and Hormonal Adaptations**

- Placenta has fully assumed endocrine control
- Placenta estrogen (primarily estriol) contributes to ligament laxity
- Human placenta lactogen (hPL) increases
  - shunting glucose to the fetus
  - physiological insulin resistance is adaptive, forms the basis for gestational diabetes in susceptible individuals (glucose screening test weeks 24-28)

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**Second Trimester**  
**Week 13 - Week 27**

## **Immune and Inflammatory Modulation**

- Systemic immunomodulation occurs, suppressing maternal cytotoxic responses
  - May improve autoimmune conditions like rheumatoid arthritis and multiple sclerosis
  - Exacerbate antibody-mediated disorders like lupus

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**Second Trimester**  
**Week 13 - Week 27**

## **Musculoskeletal and Ligamentous Changes**

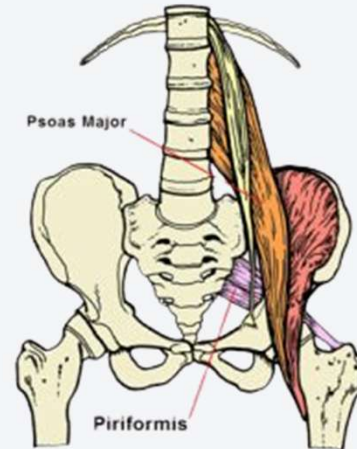
- Progressive uterus expansion and weight gain (average 1 lb per week)
  - exacerbating anterior pelvic tilt and deepening lumbar lordosis
  - compensatory activation of the thoracolumbar paraspinals, gluteus medius, and quadratus lumborum
- Ligamentous laxity progresses
  - symphyseal gap may physiologically widen up to 9mm
  - measurements beyond this with tenderness suggest pubic symphysis dysfunction
- Round ligament continue to stretch
  - sharp, intermittent lower abdominal or groin pain

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**Second Trimester**  
**Week 13 - Week 27**

## Musculoskeletal and Ligamentous Changes

- Broad ligament becomes more taut as the uterus rotates slightly dextro-rotated due to rectosigmoid compression on the left
- Psoas, piriformis, and pelvic floor muscles begin compensating asymmetrically
  - Sacral/lumbar pain and altered coccygeal tension



<https://corewalking.com/what-is-the-psoas-muscle/>

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**Second Trimester**  
**Week 13 - Week 27**

## Visceral Organ Changes

- Placenta is fully functional
- Mucus plug thickens as estrogen continues to stimulate endocervical gland secretion
- Gastrointestinal motility continues to slow due to elevated progesterone
  - Constipation and bloating
- Gastric reflux may become more noticeable as the uterus ascends and intra-abdominal pressure increases

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**Second Trimester**  
**Week 13 - Week 27**

## **Cardiovascular Changes**

- Maternal blood volume increases by 30-50% by the end of the second trimester
- Venous return may become impaired as the gravid uterus compresses the inferior vena cava when supine
  - Left lateral recumbency is often encouraged to improve uteroplacental perfusion

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**Second Trimester**  
**Week 13 - Week 27**

## **Ways to Support**

- Provide information to support glucose regulation and nutritional demands
  - Protein intake, timing of meals/snacks
  - Refer to dietitian or prenatal nutritionist
- Pregnancy sleep pillow for side lying
- SI/Pubic Symphysis Belt
- Support constipation: magnesium, fiber, hydration (minimum 80 ounces of water daily)

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## Third Trimester Week 28 - Delivery

### Endocrine and Hormonal Adaptations

- Progesterone remains dominant but a functional shift begins
  - Enables coordinated uterine contractions
- Cortisol levels rise steadily and may influence fetal lung maturation
- Oxytocin receptors in the uterus upregulate in the final weeks which prime the myometrium for labor
- Prostaglandin production promotes cervical ripening and uterine contractility

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## **Third Trimester**

### **Week 28 - Delivery**

## **Immune Shifts**

- Th<sub>2</sub>-dominant immune profile is preserved with a gradual rebalancing toward a pro-inflammatory state to prepare for labor
- Inflammatory cytokines (IL-1 $\beta$ , TNF- $\alpha$ , IL-6) increase to facilitate cervical effacement, fetal membrane rupture, and myometrial activation
- Local immune cells (macrophages and neutrophils) promote collagen breakdown and cervical softening
- Shift towards Th<sub>1</sub>-type responses contribute to labor onset

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## **Third Trimester**

### **Week 28 - Delivery**

## **Musculoskeletal and Ligamentous Changes**

- Biomechanical stress reaches its peak at this time
- Uterus weight may weigh over 2.2 lbs and contain 5-7 liters of fluid, fetal tissue and placenta
- Maternal center of gravity is significantly displaced anteriorly
  - deepening lumbar lordosis and anterior pelvic tilt
- Round ligaments: under maximal tensile load
  - intermittent, achy and/or sharp pain with sudden movements or fetal shifts
- Sacroiliac ligaments, sacrotuberous ligaments, and interpubic fibrocartilage are at their most lax which can provoke pelvic girdle pain

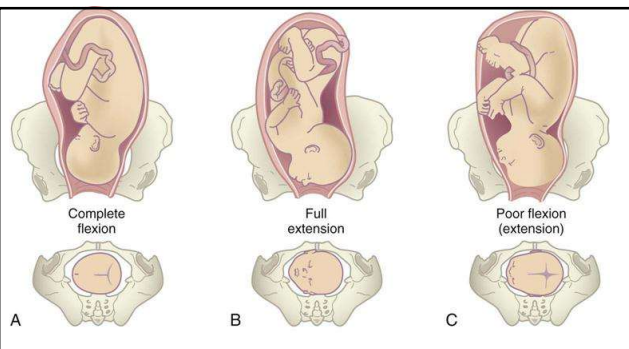
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## Third Trimester Week 28 - Delivery

### Musculoskeletal and Ligamentous Changes

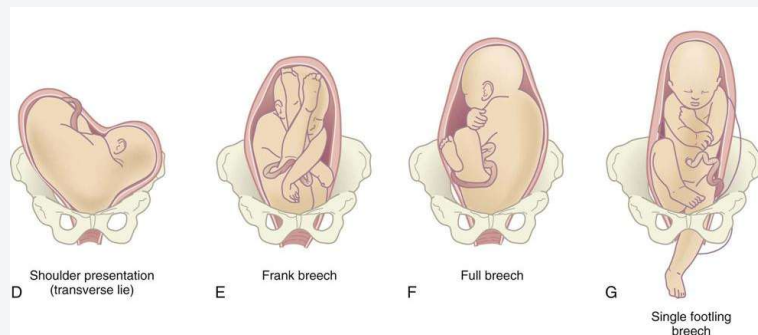
- Pelvic floor: begins to elongate under the pressure of the descending fetus
- Levator ani, obturator internus, piriformis may become clinically significant- presenting as referred pain or altered mobility
- Psoas muscle: hypertonic/shortened, can alter fetal position and contribute to functional dystocia by pulling the uterus anteriorly and off-axis

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### Fetal Presentations

The ideal position for a baby during delivery is head down, facing the mother's back, known as the occiput anterior position. This position allows for easier movement through the birth canal and reduces the likelihood of complications during delivery.



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## Moxibustion for Breeched Presentation

Bladder 67 is the acupuncture point that is supportive of baby positioning.



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### Third Trimester Week 28 - Delivery

## Uterine and Pelvic Organ Adaptation

- The uterus extends from the pubic symphysis to the xiphoid process
- Pelvic pressure increases affecting bowel, bladder and vascular structures
- Cervical ripening progresses
  - shortens (effacement), softens and begins to dilate
- Braxton Hicks: irregular and non-progressive contractions, contribute to uterine muscle conditioning but do not cause cervical change

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**Third Trimester**  
**Week 28 - Delivery**

## **Cardiovascular Stress**

- Increase risk of venous stasis, lower extremity edema, and varicosities (vulva and legs) due to increase venous capacity and uterine compression of the inferior vena cava
- Left lateral positioning improves maternal blood return
- Changes in clotting factor concentrations increase risk for blood clotting events, especially postpartum

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**Third Trimester**  
**Week 28 - Delivery**

## **Skin and Breast Changes**

- Colostrum: first form of breastmilk that is released by mammary glands, nutrient-dense and high in antibodies and antioxidants
  - Changes to breast milk 2 to 4 days after baby is born
- Linea nigra (linea alba) and melasma continue to progress due to melanocyte-stimulating hormone and estrogen
- PUPPP: pruritic urticarial papules and plaques of pregnancy due to immune and mechanical triggers (~1% of pregnant patients)

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## Third Trimester

### Ways to Support

- Compression socks: to reduce swelling
- Protein intake: 70-100 grams of protein daily
- Belly band or kinesiotaping to support round ligaments
- Red raspberry leaf tea: may help tone the uterus and potentially shorten labor, considered an “abortive”, start after 36 weeks pregnant with permission from OBGYN/midwife
- Dates: 7 dates a day in the 4 weeks leading up to delivery may help prepare the body for labor and improve outcomes

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## Chiropractic for Pregnancy The Patient Experience



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**“A 2014 study, with a cohort of more than 500,000 pregnant women in the United States, found that 14% of women filled a prescription for an opioid at least once during the antepartum period and 6% of women received opioids throughout all trimesters.”**

Bateman B. T., Hernandez-Diaz S., Rathmell J. P., Seeger J. D., Doherty M., Fischer M. A., and Huybrechts K. F., Patterns of opioid utilization in pregnancy in a large cohort of commercial insurance beneficiaries in the United States, *Anesthesiology*. (2014) 120, no. 5, 1216–1224.

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## **Red Flags**

- Premature labor: onset of labor prior to 37 weeks, sudden onset of back pain, menstrual-like cramps with or without diarrhea, changes in vaginal discharge, unexplained fever, fatigue, uterine tenderness
- The known contraindications to chiropractic adjustments are the same as those affecting the non-pregnant patient
  - sudden onset headache, vision changes, elevated blood pressure, rapid edema

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## Important Considerations

- Heavy handed manipulations to the middle and lower back should be avoided during pregnancy
- Round ligament pain with diarrhea, fever, bleeding, contractions. nausea = referral to birth provider
- No pelvic manipulations if there is bleeding
- Pelvic drops are preferred for patient comfort and minimal torsion

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## Initial Visit

- A thorough and pregnancy-specific chiropractic evaluation is essential for safe, effective care throughout all trimesters.
- The initial exam should blend standard musculoskeletal screening with obstetric considerations, identifying both opportunities for conservative management and red flags requiring referral or co-management.
- A structured intake includes history, red flag screening, physical and biomechanical assessment, and orthopedic testing (modified appropriately)

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## History Taking

- Identify previous spinal trauma, previous surgeries, ligamentous laxity syndromes, any known sacroiliac instability
- Pre-pregnancy low back pain or tailbone pain?
- Establish: gestational age, number of full term pregnancies and deliveries, miscarriages, any prior complications, patient's goals for birth
- Document: location, quality, duration, aggravating/relieving factors of current symptoms
- Functional questions: work posture, sleeping position, ability to walk/exercise
- Assess: stress levels, support system, emotional wellbeing

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## History Taking

- Pelvic floor considerations?
- Is this a high risk pregnancy?
  - Placenta previa
  - Prior preterm labor
  - Cervical insufficiency
  - Known fetal anomalies
  - History of blood clots

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## Pelvic Floor Referral Considerations

- Key indicators include: stress or urge incontinence, heaviness or bulging in the perineal area, pain with intercourse, symptoms of pelvic organ prolapse
- Scar tissue/pelvic floor hypertonicity: chronic perineal tension especially following a previous traumatic birth or episiotomy
- Referring to a pelvic floor physical therapist early can prevent labor dysfunction and postpartum complications

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## Physical Assessment

- Blood pressure
- Visual postural scan: asymmetry in shoulder and hip height, abdominal distortion, gait compensation
- Seated: patellar and achilles reflexes, dermatomal light touch, lower extremity strength testing
- With patient prone (supported by pregnancy-safe bolsters or drop away table), leg resistance testing (sacral restriction)
- Prone palpation: sacrum, sacrotuberous ligament, piriformis muscle, glute muscles, lumbar paraspinals, and quadratus lumborum
  - Identify: compensatory fixations, joint restrictions

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## Treatment

- With patient prone-
- Check sacral position: heel-to-butt resistant leg may suggest sacral rotation of that side and/or palpation of sacral restriction
  - Using drop table, adjust sacrum
- Palpate hypertonic sacrotuberous ligament
  - Manually release sacrotuberous ligament, often opposite side of resistant leg, hold for 30 seconds to 3 minutes
- Consider additional muscle releases:
  - lumbar paraspinals
  - piriformis
  - quadratus lumborum

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## Physical Assessment

- Supine palpation (confirm that patient is comfortable on her back): assess for diastasis recti, round ligaments (right side most common) noting tension, spasm or tenderness, pubic symphysis noting height discrepancies or tension
- Supine testing: hip ROM, FABER/Patrick's test

If choosing to treat cervical, thoracic or other joints, be sure to assess thoroughly as you would for a non-pregnant patient.

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## Treatment

- With patient supine-
- Palpate pubic bone: difference in height at superior border, identify tenderness (communication is KEY to this palpation and adjustment)
  - activator to restricted side (usually opposite side of sacral restriction)
- Round ligament release after palpation indicates hypertonicity, commonly opposite side the sacral restriction
  - Use light, sustained digital pressure on the ligament for 20-60 seconds (this may elicit tenderness)
- Consider additional releases:
  - Psoas/iliopsoas
  - TFL
  - Diaphragm/visceral manipulation

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## Round Ligament

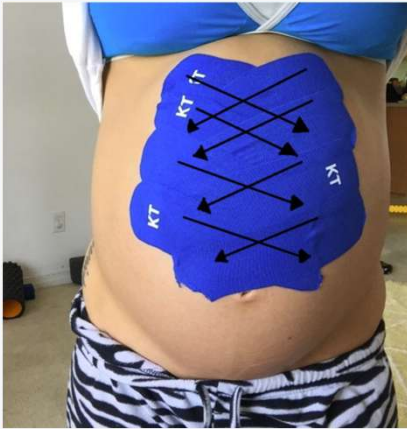
The round ligament's role in suspending the uterine fundus means asymmetrical tension can result in uterine torsion, which may influence fetal positioning or provoke discomfort. Addressing this tension can improve uterine tone and reduce compensatory pain patterns in the lower abdomen or groin.



The round ligament is palpated approximately one-third of the way from the anterior superior iliac spine (ASIS) to the pubic symphysis, slightly medial and inferior to the ASIS.

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## Kinesiotaping for Support



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## Treatment

- If assessed, consider performing additional adjustments:
  - Cervical
  - Thoracic (consider non-hvla techniques to lower thoracic)
  - Lumbar (activator or non-hvla techniques)
  - Hips and Shoulders
  - Mid-foot
  - Wrists

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## Clinical Integration and Frequency

- Frequency:
  - 1x a week throughout pregnancy
    - If pain is present: 2-3x a week until pain has improved
    - If baby remains in a breech position beyond 32-34 weeks: 3-4x a week
- Patient Folder:
  - ROF and treatment plan
  - Supplements recommendations
  - At home exercises to support pelvic balancing
  - Birth Plan
  - Vaccine education- Dr. Paul Thomas, MD

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## At Home Exercises

- Squats/wall sits 50 a day
- Ball squeezes
- Belly hangs/Inversions starting at 20 weeks 1x a day (only in blood pressure is normal)
  - If baby is breeched, increase to 5x a day
- Have partner help with posterior pelvic tilting holds
- Spinning Babies resource:
  - <https://www.spinningbabies.com/pregnancy-birth/techniques/rest-smart/>

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Interested in 1-on-1  
clinical support

