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Maternal Musculoskeletal Pain Management and OMT

George Chou D.O.

The following persons are involved in this session and have indicated they do not have any relevant financial relationships with ineligible companies

- George Chou DO
- Stephanie Cox
- Miguel DeMarzo

Learning Objectives

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At the completion of this session, learners will be able to:

- Describe common modalities for managing MSK pain related to pregnancy
- Describe the use of manipulative medicine technique to treat pregnancy related neck, low back and pelvic pain through a case based approach.
- Demonstrate manipulative techniques to assist women with the discomforts of pregnancy in the antepartum, labor, and postpartum phases

Women's health: Osteopathy in Pregnancy

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- Osteopathy is a holistic approach
  - Structure and function are interrelated
- Osteopathic manipulative treatments (OMT)
  - Optimize the body's ability to cope with change
  - Improve pain and function
  - As other modalities become contraindicated

Osteopathic Tenets

1. The body is a unit; the person is a unit of body, mind, and spirit.
2. The body is capable of self-regulation, self-healing, and health maintenance.
3. Structure and function are reciprocally interrelated.
4. Rational treatment is based upon an understanding of the basic principles of body unity, self-regulation, and the interrelationship of structure and function.

Pregnant Patient Musculoskeletal Pain Management

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Common Standard of Care Options

- Pharmacology
- Exercise
- External Support

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Pharmacologic Modalities Teratogenic Risk

- Category A: Human studies = no/remote risk
- Category B: Animal studies = no risk, No human studies
- Category C: Animal studies = some risk, No human studies
- Category D: Evidence of fetal risk
- Category X: Significant fetal risk/abnormality

Acetaminophen = Category B

	Category				
	A	B	C	D	X
Antiepileptics					
Carbamazepine			●	*	
Gabapentin			●		
Lamotrigine			●		
Phenytoin				●	
Valproic acid				●	
NSAIDs					
Aspirin			●		
Acetaminophen		●			
Ibuprophen		●			
Indomethecin		●			
Naprosyn		●			
Sulindac		●			
Celcoxib			●		
Rofecoxib			●		
Ketorolac			●		
Tricyclic antidepressants					
Amitriptyline			*	●	
Desipramine			●		
Doxepin		*	●		
Imipramine				●	
Opioids					
Morphine		●	*		
Methadone		●			
Oxycodone		●			
Oxymorphone		●	*		
Codeine			●		
Buprenorphine			●		
Levorphanol		●	*		

● Indicate classifications used by Briggs et al[1]; * indicate classifications used by pharmaceutical companies.
NSAIDs, nonsteroidal anti-inflammatory drugs.

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Pharmacologic Modalities Teratogenic Risk

- Acetaminophen
  - Very rare gastroschisis and small intestinal atresia
- NSAIDS- Hemodynamic issues
  - Premature closure of ductus arteriosus
  - Renal injury
- Opioids
  - Few case of withdrawal
- Neuroleptics
  - Malformation
  - Delayed ossification

Pregnant Patient Musculoskeletal Pain Management

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Exercise

- Reduction in C section rates
- Appropriate maternal and fetal weight gain
- Improved management of gestational diabetes
- Improved psychological well being
- ACOG: 20-30 minutes of moderate exercise daily

https://www.aquastudiony.com/journal/aquastudio-is-perfect-for-moms-to-be

Pregnant Patient Musculoskeletal Pain Management

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External Support

- Abdominal Support Girdles
- Pillow Support
- Arch Support

https://m.media-amazon.com/images/I/51x7lz+60JL.jpg

https://springbud.us/products/springbud-belly-bands-maternity-support-belt-pregnancy-belly-band-beige

Pregnant Patient Musculoskeletal Pain Management

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Other options

- Acupuncture
- Manipulation/OMT
- Injections
- Give birth

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OMT for pregnant patients

Evidence for OMT for Pregnant patients

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Cochrane Library

- Cochrane Review
  - Moderate-quality evidence from individual studies
  - Manipulation for pregnant women
  - Significantly reduces low-back pain and functional disability

- Liddle SD, Pennick V. Interventions for preventing and treating low-back and pelvic pain during pregnancy. Cochrane Database of Systematic Reviews 2015, Issue 9. Art. No.: CD001139. DOI: 10.1002/14651858.CD001139.pub4. Accessed 07 September 2022.

Evidence for OMT for Pregnant patients

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- Promote Study
  - N= 380 3rd trimester patients
  - Randomized to usual care, usual care + OMT, usual care + placebo ultrasound
  - Results
    - OMT: no increase risk in precipitous labor, operative vaginal delivery, conversion to C section, need for forceps/vacuum/episiotomy, incidence of perineal laceration or meconium stained amniotic fluid
    - OMT: helped improve pain and function over usual care but statistically different from placebo
      - Hensel KL, Buchanan S, Brown SK, Rodriguez M, Cruser dA. Pregnancy Research on Osteopathic Manipulation Optimizing Treatment Effects: the PROMOTE study. Am J Obstet Gynecol. 2015 Jan;212(1):108.e1-9. doi: 10.1016/j.ajog.2014.07.043. Epub 2014 Jul 25. PMID: 25068560; PMCID: PMC4275366.
      - Hensel KL et al. (2015). Pregnancy Research on Osteopathic Manipulation Optimizing Treatment Effects: The PROMOTE study. *American Journal of Obstetrics and Gynecology.* Vol 212. Hensel KL et al. (2015). PROMOTE Study: Safety of Osteopathic Manipulative Treatment During the Third Trimester by Labor and Delivery Outcomes.*J Am Osteopath Assoc*2016;116(11):698–703

OMT Technique Protocol

- Seated Thoracic Articulation
- Cervical Soft Tissue
- OA Decompression
- Thoracic Inlet MFR
- Lateral recumbent scapulothoracic soft tissue
- Lateral Recumbent Lumbar Soft Tissue
- Abdominal Diaphragm MFR
- Pelvic Diaphragm MFR
- SI Articulation
- Pubic Symphysis Decompression
- Frog Leg Sacral Release
- CV4

Evidence for OMT for Pregnant patients

- OMT during labor
  - N= 100 patients
  - Standard of care labor management versus standard of care plus OMT protocol
  - Results
    - Significantly shorter labor
      - Martingano D, Ho S, Rogoff S, Chang G, Aglialoro GC. Effect of Osteopathic Obstetrical Management on the Duration of Labor in the Inpatient Setting: A Prospective Study and Literature Review. J Am Osteopath Assoc. 2019 Jun 1;119(6):371-378. doi: 10.7556/jaoa.2019.066. PMID: 31135865.

OMT Technique Protocol

- suboccipital decompression
- thoracic inlet release
- rib raising
- paraspinal inhibition
- sacral inhibition.

OMT for Pregnant patients

- General Principles
  - Dysfunctions treat easily (hypermobility)
  - Recurrent somatic dysfunction
  - Suggest concurrent modalities
- Restrictions in patient positioning
  - No prone
  - Limited supine
  - Favor seated and left lateral recumbent techniques
    - Avoid position changes for comfort

Case 1: Neck Pain

- 22 year old G1PO at 18 weeks presents to clinic with neck pain
  - PMH: scoliosis
  - Started 2 weeks ago
  - Progressively worsening
  - Radiates from shoulder up to head
  - Better with rest and heat
  - Worse with sitting in front of a monitor
  - Denies numbness, tingling, or weakness
  - Occasional associated headaches

https://www.wellright.com/blog/help-your-employees-improve-ergonomics-home-workspaces

Case 1: Neck Pain

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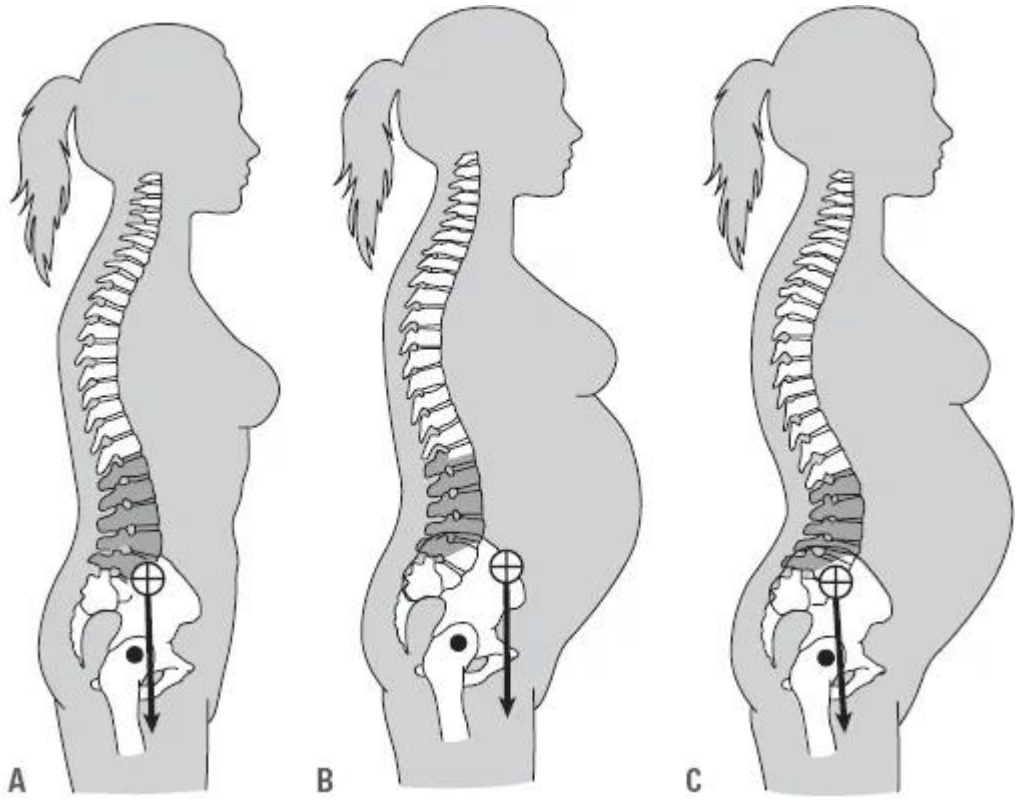
Postural Changes

- Anterior shift in center of gravity
- Pelvis widens
- Exaggeration of spinal curves
  - lumbar and cervical lordosis
  - Stress on spinal junctions



https://musculoskeletalkey.com/spine-12/

Case 1: Neck Pain

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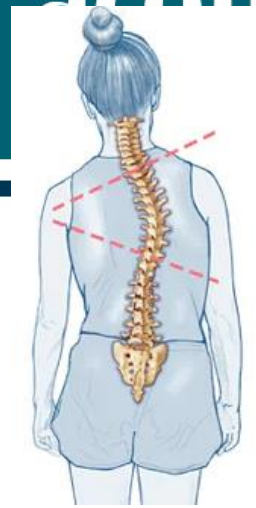
Preexisting risk factors

Scoliosis

- Prevents spines ability to compensate for changes
  - Fixed type 1 mechanics (neutral with oppc sidebending and rotation)

Anterior carriage of head and shoulder rc

- Common with office work
- Script for ergonomics
- Encourage increasing activity



https://www.mayoclinic.org/diseases-conditions/scoliosis/symptoms-causes/syc-20350716

https://www.ehstoday.com/industrial-hygiene/article/21916061/five-steps-to-improve-ergonomics-in-the-office

Case 1: Neck Pain OMT

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Seated Thoracic spine articulatory technique (seated rib raising)

- Patient: Seated with feet on the floor, arms crossed leaning on the patient
- Physician: Standing anterior to patient
- Localize: Wrap hands around the trunk and draw anteriorly to restricted barrier
  - Add rotation and sidebending by positioning as needed
- Activation force: gentle springing against the restricted barrier

Kendi Hensel, DO

Case 1: Neck Pain OMT

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Cervical Soft Tissue

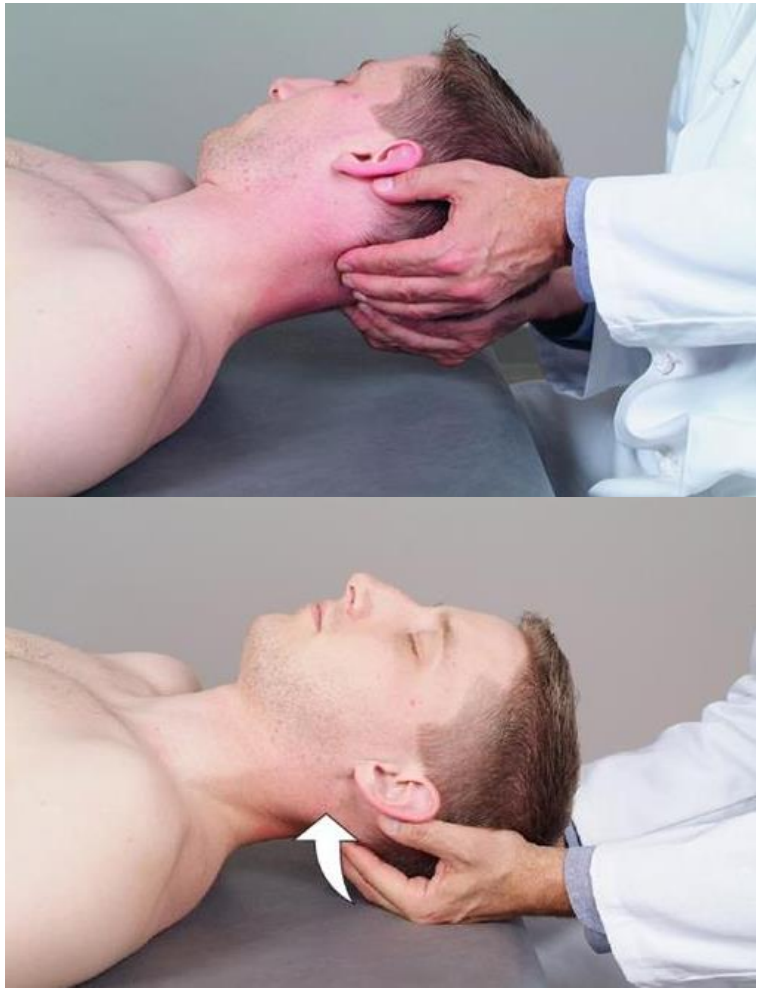
- Patient: Supine
- Physician: Standing contralateral to hypertonic tissues
- Localize: Find muscle knots, apply traction force to restricted barrier
- Activate: Apply anterior kneading, gently rotate head as counter force until tissues relax

Atlas of Osteopathic Techniques (3rd ed). Nicholas, A, Nicholas, E. Wolters Kluwer. 2016.

Case 1: Neck Pain OMT

OA Decompression (Myofascial Technique)

- Patient: Lying supine
- Physician: Seated at head of table
- Localize: Apply fingers to occipital condyles, provide superior traction
- Activation force: Superior traction, pull elbows medially to add lateral force at fingers until tissues complete relaxing



Atlas of Osteopathic Techniques (3rd ed). Nicholas, A, Nicholas, E. Wolters Kluwer. 2016.

Case 2: Low Back Pain

- 36 yo G3P2 at 36 weeks presents to clinic with low back pain.
  - Began after first pregnancy
  - Intermittent before but now constant
  - Progressively worsening
  - Occasional burning sensation in right gluteal region
  - Worse with position changes and walking
  - Better with support band

https://www.medicalnewstoday.com/articles/324545#first-trimester

Case 2: Low Back Pain

>2/3 pregnant patients report low back pain

Ligamentous changes

- Increasing hormones (Estradiol, Progesterone, Relaxin)
- Softening/lengthening of ligaments
- Pubic symphysis distension -> pelvic pain

Muscular changes

- Postural changes redistributes forces across musculature
  - Change in core strength

Case 2: Low Back Pain OMT

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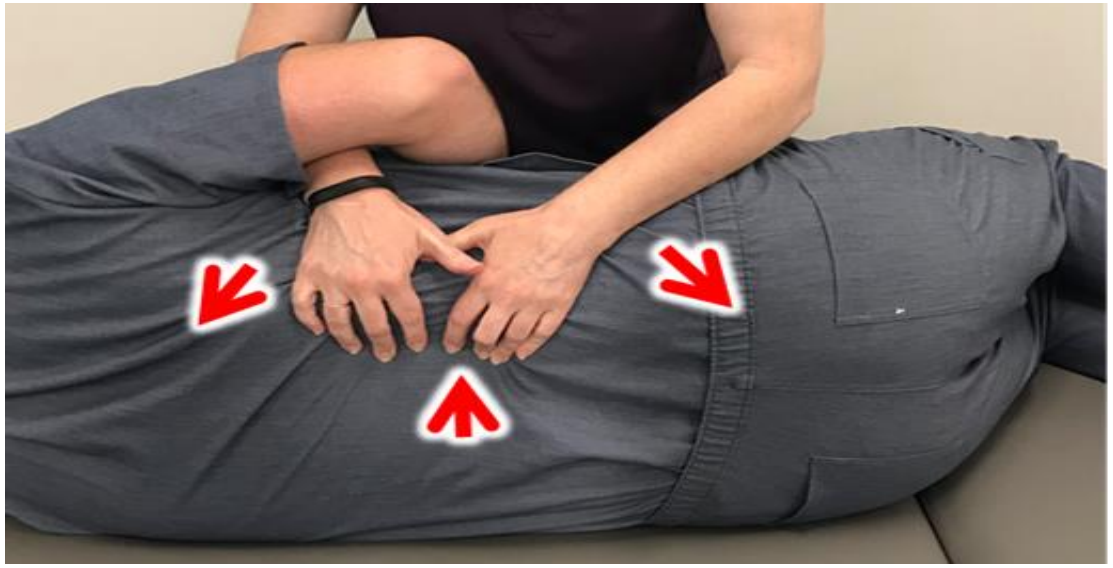
Lateral Recumbent Lumbar Soft Tissue

- Patient: Lateral recumbent with hypertonic muscles up
- Physician: standing anterior to the patient
- Localize: draw hypertonic erector spinae muscles up
- Activate: use elbows to push torso and hips away to add more force (or rotate). Hold until tissues relax



Case 2: Low Back Pain OMT

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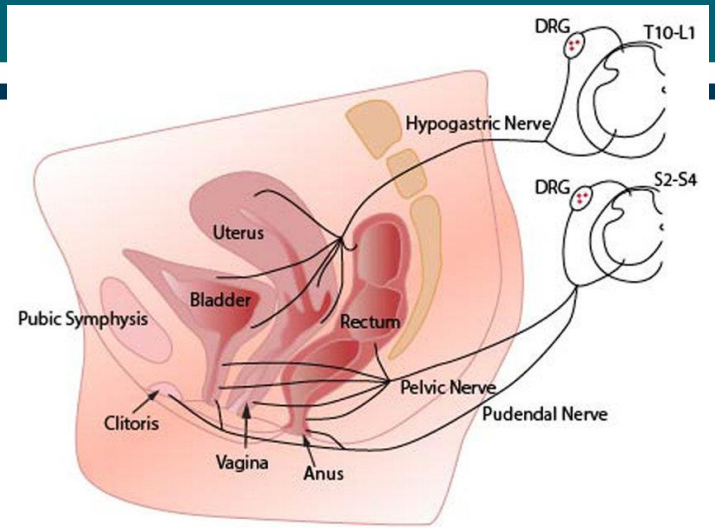
Paraspinal Thoracolumbar Soft Tissue

- Patient: Supine
- Physician: Seated
- Localize: Place hands (or fists) under thoracic/lumbar spine, apply anterior pressure to restricted barrier
- Activate: Hold until tissues relax



https://www.researchgate.net/figure/Innervation-of-pelvic-organs-Sensory-axons-innervating-the-vagina-reach-the-spinal-cord_fig1_260487230

Atlas of Osteopathic Techniques (3rd ed). Nicholas, A, Nicholas, E. Wolters Kluwer. 2016.

Case 2: Low Back Pain OMT

“OB Roll” Lumbar rotational HVLA

Treats opposite rotation (L3-5 NRrSl or L4 F/E RrSr)

- Patient: Supine with hands laced behind head
- Physician: standing contralateral to rotation (left)
  - Link cephalad hand under pt elbow ipsilateral to PTP (right) and place back of hand on the sternum
  - Stabilize hip ipsilateral to PTP
- Localize and Activate: Engage direct barrier and thrust in a single fluid motion: Physician draws patient toward themselves into contralateral rotation (left)

Atlas of Osteopathic Techniques (3rd ed). Nicholas, A, Nicholas, E. Wolters Kluwer. 2016.

Case 2: Low Back Pain OMT

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Innominate Articulation

- Patient: Supine
- Physician: standing ipsilateral to SI joint dysfunction
- Localize: Use ipsilateral lower extremity to gently compress to engage SI joint
- Activate: Internally rotate circumduction and then externally rotate through the direct barrier

Case 3: Pelvic Pain

- 35 year old G2P2 current recovering on mother baby ward 36 hours post partum reports significant pelvic pain.
  - Prior complications from previous pregnancy (prolonged labor at home)
  - Pain starts in anterior of pelvis, radiates posterior
  - Better when not moving
  - 9/10 severity when attempting to walk

https://www.verywellfamily.com/what-is-symphysis-pubis-dysfunction-5071701

Case 3: Pelvic Pain

- ~20% experience pelvic pain.
  - Worsens with advancing pregnancy
- Pubic symphysis distension -> pelvic pain

Post Partum Treatment

- Large biomechanical and fluid shifts
- Ideal to treat patients soon to take advantage of hypermobility
- Increased laxity will required management

Case 3: Pelvic Pain OMT

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Pubic Symphysis Decompression

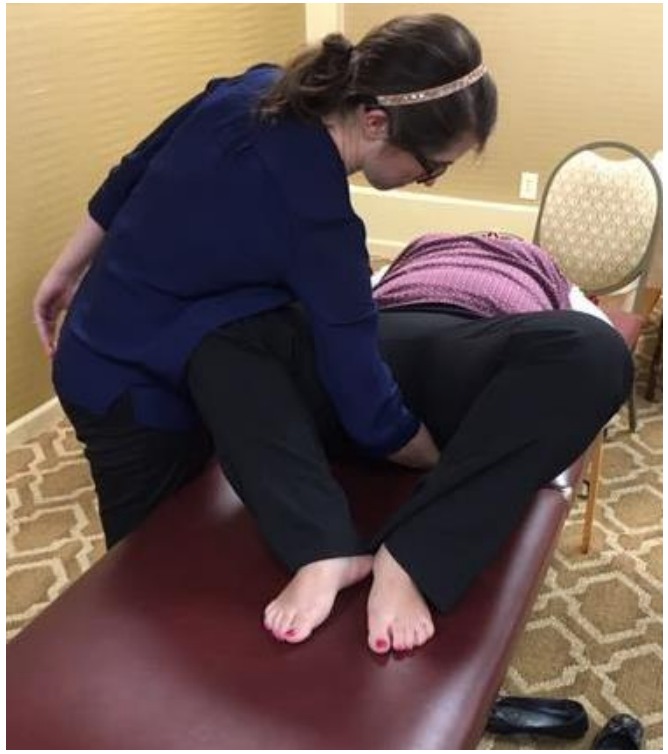
- Patient: Supine hips and knees flexed
- Physician: Standing
- Localize and Activate:
  - Brace between patient's knees and ask patient to forcibly adduct
  - Brace outside patient's knees and ask patient to forcibly abduct
  - Alternate a total of 3 times, begin with knees together and progressively increase distance

Atlas of Osteopathic Techniques (3rd ed).
Nicholas, A, Nicholas, E. Wolters Kluwer. 2016.

Case 3: Pelvic Pain OMT

Frog Leg SI Articulatory

- Patient: Supine hips and knees flexed
- Physician: Standing, hand between legs
- Localize: Palm of the hand on the sacrum, move to the balance point (indirect)
- Activate: Provide inferior sacral traction to maintain balance point while patient externally rotated and extends lower extremities



OMT for Obstetrics Maggie Larson, DO
Photos courtesy of UW Madison DFMCH Osteopathic Physicians Catherine Nelson, DO; Maria Din, DO, Sarah James, DO

Case 3: Pelvic Pain OMT

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Pelvic Floor Soft Tissue

- Patient: Supine hips and knees flexed
- Physician: Seated
- Localize: Palpate ischial tuberosity and move just medial to engage pelvic floor and move it to the restricted barrier
- Activate: Hold until tissues relax

Atlas of Osteopathic Techniques (3rd ed). Nicholas, A, Nicholas, E. Wolters Kluwer. 2016.

Practice Recommendations

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Visits

Early Pregnancy

- Simple: Similar to OB visits (4-6 weeks)
- Complicated: 2-3 weeks

Mid-Late Pregnancy

- Closer to delivery (weekly)

Post Partum

- Within 2 weeks of delivery

OMT

- Hypermobility
- Patient Position
- This is a limited review
  - No lymphatic techniques covered

Management

- Exercise
- Support

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