Osteopathic Manipulative Treatment in Pregnancy

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February 10, 2010

Objectives

1. Describe the Osteopathic philosophy
2. Describe the pathology and physics of low back pain in pregnancy
3. Describe how Osteopathic Manipulative Treatment (OMT) can improve low back pain in pregnancy
4. Participate in OMT through observation or performance

Definition

Osteopathic Medicine

“A complete system of medical care with a philosophy that combines the needs of the patient with current practice of medicine, surgery and obstetrics. Emphasizes the interrelationship between structure and function, and has appreciation of the body’s ability to heal itself.”

From: Glossary of Osteopathic Terminology Usage Guide

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Definition

- A system of diagnosis and treatment that recognizes the role of the musculoskeletal system in the healthy functioning of the human body.

From: AMA Encyclopedia of Medicine

The Osteopathic Concept

Osteopathic medicine is a philosophy of health care and a distinctive art, supported by expanding scientific knowledge. Its philosophy embraces the concept of the unity of the living organism’s structure (anatomy) and function (physiology). Its art is the application of the philosophy in practice of medicine and surgery in all its branches and specialties.

The Osteopathic Concept

Its science includes the behavioral, chemical, physical, spiritual and biological knowledge related to the establishment and maintenance of health as well as the prevention and alleviation of disease.

Osteopathic Philosophy

- Four basic principles
- 1. The human person is a unit in which structure, function, mind and spirit are mutually and reciprocally interdependent.
- 2. The body, through a complex equilibrail system, tends to be self-regulatory and self-healing in the face of disease processes.
Osteopathic Philosophy

3. Adequate function of body systems depends upon the unimpeded circulatory mechanisms, nerve impulses and neurotrophic influences.

4. A rational treatment regimen is based on this philosophy and these principles.

Osteopathic Examination

- Uses palpation to assess for somatic dysfunction (particularly spinal dysfunction).
- The pneumonic TART allows for accurate assessment:
  - T – Tender paraspinal muscles
  - A – Assymetry of joints
  - R – Restriction in range of motion (ROM)
  - T – Tissue texture abnormalities

Physiologic Changes in Pregnancy

- Pregnancy is a time when women are most aware of the workings of their body. It is the largest postural change that a woman's body will undergo.
- As the fetus grows in the womb, its extra weight results in a changed center of gravity and postural changes. This often leads to back and leg pain.

Physiologic Changes of Pregnancy

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Physiologic Changes of Pregnancy

- As breast weight increases, this also causes changes and pain may occur in the upper back and neck.
- For many women pregnancy means having to cope with a whole range of symptoms from morning sickness to back pain.

Physiologic Changes in pregnancy

- The main systems affected by pregnancy are:
  - Endocrine
  - Cardiovascular
  - Pulmonary
  - Gastrointestinal
  - Hematologic
  - Renal

Endocrine

- Increase estrogen
  - by placenta and ovaries
- Increase progesterone
  - relaxation of smooth muscles
- Increase HCG
  - first by the corpus luteum then by the placenta
- Increase HPL
  - insulin antagonist

Cardiovascular

- Elevated progesterone causes smooth muscle relaxation
- Increased cardiac output
- Decreased SVR
  - > 24wks, return to normal
**Pulmonary**
- Increased Tidal volume
  - progesterone
- Decreased Total lung capacity
  - elevation of diaphragm
- Dyspnea of pregnancy
  - Increased CO₂ gradient between mother and fetus

**Gastrointestinal**
- Nausea, vomiting
  - Increased estrogen, progesterone, hCG
- Reflux
  - Increased gastric emptying time
  - Decreased sphincter tone
  - Constipation
  - Decreased motility
  - Increased water absorption

**Renal**
- Kidneys enlarge
- Ureters dilate
  - pyelonephritis
- Increased GFR, decreased BUN, decreased Cr
- Increased Renin – increased Angiotensin – Increased Aldosterone

**Hematologic**
- Increased Plasma volume
  - hemodilutional anemia
- Increased WBC
  - mean = 10.5
- Slight decreased platelets
- Hypercoagulability
  - Increased fibrinogen and factors VII-X
Pathology of Low Back Pain in Pregnancy

- The enlarging uterus causes a change in weight distribution
- There is a shift in the center of gravity resulting in an increase in the lumbar lordotic curve
- There is also dextrorotation of the uterus into the pelvis
- Subtle rotational component causes torsional stress pattern up the spine to restrict motion of the chest, ribs and diaphragm

Pathology of Low Back Pain in Pregnancy

- With ligamentous attachments to the sacrum, the uterus increases sacral tilt and subsequently lumbar lordosis
- The weakening and separation of the abdominal muscle further allow for the above changes
- This increased lordosis puts an added strain on the paraspinal muscle,

Pathology of Low Back Pain in Pregnancy

- SI joints, vertebral facets and lumbar disc
- Relaxin relaxes the ALL (anterior longitudinal ligament) and PLL (Posterior longitudinal ligament) of the lumbar spine and increases SI mobility
Common Findings in Back Pain

- Increased lumbar lordosis
- Lumbar-sacral junction compression
- Paraspinal muscle strain or muscle spasm
- Myofascial strain

Types of OMT Used in Treatment of Back Pain

1. HVLA (High Velocity Low Amplitude)
2. Soft Tissue Techniques
   - HVLA is a relative contraindication in pregnancy

OMT Treatment of Back Pain in Pregnancy

- Soft Tissue Techniques
- Myofascial release
- Facilitated positional release
- Balanced Ligamentous Tension
  - direction of ease
  - Lumbo-sacral decompression
  - Modified Lumbar Roll

Treatment plan for LBP in Pregnancy

- Stretch the Hamstrings
- Frog Leg Technique
- SI Mobilization
- Chicago Roll
LBP treatment plan

- Can be used at every routine OB visit where LBP is an issue
- Very safe and requires no osteopathic diagnosis
- Addresses the dysfunctions common to all pregnant patients with LBP

**Stretch the Hamstrings**

- This is a Muscle Energy Technique
- By stretching the muscle you inhibit the Golgi-tendon Reflex and as the muscle stretch they will relax and therefore lengthen

**Stretch the Hamstrings**

- Pt supine, flex hip to 90° and extend knee until resistance is felt
- Support the leg by holding the ankle with one hand and use the rest of your body as a wall that the pt will push off of
- Have pt attempt to flex knee and bring there leg down pushing against you for 3-5 secs, then relax
- Once relaxed, take the patients leg to the new point of resistance and repeat the above 2 more times for a total of 3 reps

**Stretch the Hamstrings**

- At the end of the 3 rep, take the pts leg to new point of resistance, then slowly lower leg back down to the table
- Do the same to the other side
Frog Leg Technique

- This is a Muscle Energy Technique
- By pulling caudal traction on the sacrum, the paraspinal muscle and the ligaments of the lumbosacral spine get stretched
- This causes a decrease in lumbar lordosis

The Frog Leg Technique

- With the pt supine, have them assume the frog leg position
- Position your hand under the pt's pelvis and cup the sacrum so you can pull caudally
- Have the pt take a deep breath in and as they exhale extend their leg straight. You will be able to pull the sacrum caudally during leg extension

The Frog Leg Technique

- Have the pt bring their legs back to the frog leg position, but as they do so maintain traction preventing the sacrum from moving cephalad
- Repeat the above 2 more times for a total of 3 reps

SI Mobilization

- This is an Articulatory technique
- Takes the SI joint through its full range of motion allowing it to reset self evenly back into the SI joint
**SI Mobilization Technique**

- Pt laying on their side with their torso turned toward the table; knees slightly flexed
- Get behind the pt and take your cephalad hand and place it on the sacrum to stabilize it
- Take your caudal hand and reach over and grab the pt's knee closest to the ceiling
- Have the pt exhale as you bring the hip into full flexion
- Then have the pt exhale while fully externally rotating the hip and then extend the leg
- Repeat 3 times
- You will likely feel an articulation of the SI with your stabilizing hand during the first rep
- Do the same on the other side

**Chicago Roll**

- This is an articulatory technique; by taking the lumbar through their range of motion the disc spaces will gap and lumbar rotated out of place will “pop” back into place
- Mobilizing the lumbar relieves pain at the affected level by allowing the paraspinal muscles and nerves attached to lay evenly without being stressed

**The Chicago Roll**

- Patient is supine with fingers interlaced behind their head
- Cephalad forearm under patient's arm opposite from you and caudal hand stabilizes the opposite ASIS
- Use cephalad arm to lift pt's torso up and over toward your side of the table
- Repeat above from opposite side
Hip Pain/Sciatica in Pregnancy

Common Findings in Hip pain/Sciatica
- L5 slides anterior
- ASIS compression
- Sacral iliac compression
- Interosseous sacral compression resulting in sciatica
- Sacral somatic dysfunction
- - sacral torsion
- - sacral base anterior/posterior
- - unilateral sacral flexion/extension

Treatment of Hip Pain/Sciatica
- Sacral rock
- Sacroiliac decompression
- Interosseous sacral decompression
- Sacral inhibition S2-S3
- L5 – S1 decompression
- Cupping the sacrum

Sacral Rocking
- With the pt prone place one hand over the other on the sacrum with the tips of the finger at the lumbosacral joint, reinforced by the other hand
- Intermittent downward pressure is exerted and a rocking action is added with the pivotal point at S-2
Pubic Pain

- Relaxin and progesterone help to loosen ligaments resulting in extra laxity and pelvic pressure
- Symptoms:
  - pubic bone very tender to palpation
  - pain when lifting one leg at a time or parting the legs, walking, turning over in bed, strong round ligament pain
  - May recur or progress with each pregnancy

Pubic pain

- Risk factors:
  - Past trauma
  - Past pelvic or back pain
  - Multiparity
  - h/o macrosomic infant
  - Pre-existing problems with joint

Findings in Pubic Pain

- One iliac more superior than other
- ASIS/PSIS more superior on one side
- One pubic bone more superior than other
- Leg length discrepancy

Treatment of Pubic Pain

- Gapping the Pubes
- Counterstrain
Gapping the Pubes Technique

- Pt supine and Physician stands beside the table
- Flex hips to 45° and knees to 90°, with feet flat on table
- Separate knees ~ 18 inches
- Physician hugs both knees
- The pt pulls both knees laterally against the physician while the physician applies an equal counterforce
- Maintain contraction for 3-4 secs for 3-7 reps

Summary

- The dramatic changes of pregnancy often times results in common musculoskeletal related complaints
- These include headaches, neckache, backaches and exacerbation of preexisting strain problems
- Virtually every body system is drastically affected by pregnancy, and the changes become more dramatic as the woman approaches term

Summary

- OMT provides a therapeutic approach to address many of the root causes of common pregnancy complaints
- By using a variety of hands on techniques much of the primary strain on the spine, and other organs can be relieved
- OMT is not a cure for all problems however it can be extremely helpful in relieving physical and mental stress

Summary

- OMT does not remove the cause of these symptoms (the growing pregnancy)
- Rather it helps the body to have a more functional and adaptive response to these changes, thus the woman feels better
THANK YOU