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Protocol Care for the Pregnant Patient & Home Remedies

Morning Sickness

Vertebral Subluxation may be atlas or mid-thoracic involvement. Avoid "over adjusting" or high frequency of care

Severe Vomiting – Atlas involvement

Recommendations and Home Remedies

- Avoid caffeine, dairy and gluten
- Source of pre-natal vitamins
- 6 small meals
- Ginger tea
- Homeopathic Remedies
    - ✓ Nux Vomica, Sepia, Tabacum

Indigestion

Vertebral subluxation involvement mid-thoracics

Home Remedies

- Papaya enzymes – chewable after meal
- Bromelain
- Zypan or Multienzyme – Standard Process

Constipation – Recommendations and Home Remedies

- Hydration
- Fiber and avoid refined foods
- Probiotics
- Gastro Fiber – Standard Process
- Lac-Enz – Standard Process
- Homeopathic
    - ✓ Nux Vomica
    - ✓ Sepia

Ligament Laxity or Achy All Over

Can't stabilize after adjustments or "It's going out"

Home Remedies

- Ligaplex 2 and Sesame Seed Oil – Standard Process
- Bromelain to reduce inflammation

Diastasis Recti

An acquired condition in which the right and left rectus muscles have separated and/or the fascia has become stretched.

Recent studies have shown that up to 60% of women may experience diastasis recti during pregnancy or postpartum.

Sources: https://www.healthline.com/health/diastasis-recti
and https://bjsm.bmj.com/content/50/17/1092

There are techniques available for non-surgical diastasis recti treatments.

The Tupler Technique – specifically designed to help the patient with diastasis recti. To learn more or find someone trained in your area visit https://diastasisrehab.com/

Core Exercise Solutions – by Dr. Sarah Ellis Duvall, this program offers training in both diastasis recti, pelvic floor and SI joint therapy. To learn more or find someone trained in your area visit https://www.coreexercisesolutions.com/

The Pelvis

Planes of the Pelvis

Pelvic Classifications
Due to a diversity of anatomical presentations, the female pelvis is classified according to its conforming and nonconforming characteristics. The pelvis varies greatly with reference to each of the pelvic planes, being predominantly of the female type in one and the male type in another.

Caldwell and Moloy classifications of the pelvis:

- Normal Female
- Male
- Apelike
- Flat Female

Normal Female – Gynecoid

Inlet

Prevalence 50%
Shape: Round or transverse oval; transverse diameter is a little longer than the anteroposterior
Anteroposterior Diameter: Adequate
Anterior Segment: Well-rounded fore-pelvis
Sacrum: Wide, deep curve; short; slopes backward; light bone

Outlet

Labor: Good uterine function; early and complete internal rotation; spontaneous delivery; wide pubic arch reduces perineal tears
Prognosis: Good

Male – Android

Inlet

Prevalence 20%
Shape: Heart or wedge shaped
Anteroposterior Diameter: Adequate
Anterior Segment: Narrow, sharply angulated fore-pelvis
Sacrum: Flat; inclined forward; long; narrow; heavy

Outlet

Labor: Deep transverse arrest is common; arrest as OP with failure of rotation; delivery is often by difficult forceps application
Prognosis: Poor

Apelike – Anthropoid

Inlet

Prevalence 25%
Shape: Long anteroposterior oval
Anteroposterior Diameter: Long
Anterior Segment: Deep
Sacrum: Inclined backward; narrow; long

Outlet

Labor: Delivery and labor usually easy; birth face to pubis is common
Prognosis: Good

Flat Female – Platypelloid

Inlet

Prevalence 5%
Shape: Transverse oval
Anteroposterior Diameter: Short
Anterior Segment: Shallow
Sacrum: Wide, deep curve; often sharply angulated with enlarged sacral fossa

Outlet

Labor: Delay at inlet
Prognosis: Poor; disproportion; delay at inlet; labor often terminated by caesarean section

Pelvic Floor Definition – The pelvic floor is the layer of muscles that form a sling across the base of the pelvis and support the bladder, uterus and rectum.

The sphincter muscles surround the passages to the anus, vagina and urethra. Pregnancy and childbirth increase the strain on these muscles.

Pelvic Floor Dysfunction

Dysfunction or disorders occur when this group of muscles become weakened or damaged. Typical pelvic floor problems will fall under three general areas:

- Urinary incontinence
- Fecal incontinence
- Pelvic organ prolapse

Additional Information for future review.

For a woman in labor, being able to contract or relax the pelvic floor is vitally important to allow the baby to move through the birth canal, especially when crowning. Studies have shown that certain obstetrical exposures may be more traumatic to the pelvic floor, particularly forceps delivery or a prolonged second stage of labor and sphincter lacerations.

Chiropractic Care – Since the pelvis and sacrum are the base of the spine and connected to the pelvic floor, sacral subluxations will have an adverse effect on delivery. Research has demonstrated that adjusting pregnant women appears to relax the pelvic floor muscles which may result in less medical interventions during delivery.

Sources: www.ncbi.nlm.nih.gov/pubmed/23638782 and www.jmptonline.org/article/S0161-4754(16)30034-3/fulltext

Pelvic Floor Research

In 2016, the Australian Spinal Research Foundation published a paper wherein Dr. Haavik and her team investigated the effect of pelvic floor function following chiropractic adjustments. The results proved that adjusting pregnant women relaxes the pelvic floor muscles at rest, as reflected by an increase in levator hiatus area measured with trans-labial 3D ultrasonography. No changes occurred post-manipulation in the nonpregnant control group; thus, the changes seen in the pregnant group may be due to the hormonal changes of pregnancy. This relaxation of the levator ani muscles seen with spinal manipulation may mean that spinal manipulation could be of benefit to pregnant women's vaginal delivery by aiding the relaxation of their pelvic floor muscles if this does not occur naturally for them. This has the potential to give them a greater degree of control over the pelvic floor muscles, which in turn may make vaginal childbirth easier.

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Symphysis Pubis Dysfunction (SPD)

Signs of SPD include:

- Tenderness over the pubic symphysis and/or sacroiliac joints
- Palpable gap in the pubic symphysis
- Suprapubic edema and swelling
- Positive Trendelenburg's sign on one or both sides
- Positive Lasegue's sign on one or both sides

Differential Diagnosis for SPD

- Ectopic pregnancy
- STDs
- Urinary tract infection
- Round ligament pain
- Femoral vein thrombosis

Theoretical Causes of SPD

- Biomechanical strains of the pelvic ligaments and associated hyperlordosis
- Anatomical pelvic variations
- Metabolic (calcium) and hormonal (relaxin and progesterone) changes leading to ligamentous laxity
- Pathological weakening of the joint

Predisposing factors for SPD and pelvic pain

- Genetics
- Family history
- Personal pregnancy history
- Early menarche
- Oral contraceptive use
- Multiparity
- High weight
- High levels of stress
- Low job satisfaction
- History of low back pain

Chiropractic Benefit for Low Back Pain

Several research papers have shown conclusively that Chiropractic Care is beneficial in the care and relief of low back pain associated with pregnancy.

“A multimodal approach to low back and pelvic pain in mid pregnancy benefits patients more than standard obstetric care.”

Source: A randomized controlled trial comparing a multimodal intervention and standard obstetrics care for low back and pelvic pain in pregnancy
by George, et. al.

“High-velocity and low-amplitude manipulation of the sacrum was associated with an increase of PPC and of BPT in women who had no associated osteoarticular diseases. These preliminary discoveries could be helpful in the future study of the treatment of women with perineal hypotony.”

Source: Effects of High-Velocity, Low-Amplitude Spinal Manipulation on Strength and the Basal Tonus of Female Pelvic Floor Muscles
by Nogueira de Almeida, et. al.

“The results [of this study] suggest that chiropractic treatment was safe in these cases and support the hypothesis that it may be effective for reducing pain intensity.”

Source: Chiropractic Spinal Manipulation for Low Back Pain of Pregnancy: A Retrospective Case Series
by Lisi

“Most pregnant patients undergoing chiropractic treatment reported clinically relevant improvement at all time points. No single variable was strongly predictive of ‘improvement’ in the logistic regression model.”

Source: Outcomes of pregnant patients with low back pain undergoing chiropractic treatment: a prospective cohort study with short term, medium term and 1 year follow-up
by Peterson, et. al.

“The management strategy used in this study appeared to yield favorable outcomes in this patient population and appears to be a safe option for patients with PRLP, although because of this study’s sample size, rare complications are not likely to be detected.”

Source: Outcome of Pregnancy-Related Lumbopelvic Pain Treated According to a Diagnosis-Based Decision Rule: A Prospective
by Murphy, et. al.

“Chiropractors approach pregnant patients with low back pain from a patient-centered standpoint, and the pregnant patients interviewed in this study who sought chiropractic care appeared to find this approach helpful for managing their back pain symptoms.”

Source: The treatment experience of patients with low back pain during pregnancy and their chiropractors: a qualitative study
by Sadr, et. al.

“Chiropractic evaluation and treatment during pregnancy may be considered a safe and effective means of treating common musculoskeletal symptoms that affect pregnant patients. The scarcity of published literature warrants further research.”

Source: Pregnancy and chiropractic: a narrative review of the literature
by Borggren

Biomechanical Message

Q. What is the pelvic subluxation and how does this dysfunction affect a pregnancy?
A. The pelvis can go into biomechanical dysfunction with sacral and/or ilium fixation creating aberrant or abnormal joint function causing muscular imbalance.

The most common subluxation pattern is in the sacrum.

Specific Sacral Adjusting – The Webster Technique

Several research papers have shown conclusively that when performed properly the Webster Technique helps reduce in-utero constraint allowing the baby to get into the proper position for delivery.

"The surveyed doctors reported a high rate of success (82%) in relieving the musculoskeletal causes of intrauterine constraint using the Webster Technique."

Source: The Webster Technique: A Chiropractic Technique with Obstetric Implications by Pistolese

"This case describes a patient who was able to avoid a c-section and proceed with an uncomplicated vaginal delivery. Ultrasounds were obtained of the transverse position of the fetus before the administration of the Webster Technique and after with the fetus in the vertex position."

Source: Resolution of Transverse Breech Presentation Confirmed by Ultrasound Following Webster Technique to Reduce Subluxation by Afshar

"This case discusses the result of the Webster Technique and chiropractic adjustments to relieve hip pain and sacral alignment. The patient was able to have a successful vaginal birth with no reported complications."

Source: Resolution of Breech Presentations Confirmed by Ultrasound Following Chiropractic Care using Webster Technique in Five Women: A Case Series by Mulcahy, et. al.

"The patient was able to avoid medical intervention such as cesarean section and underwent a natural, vaginal birth with no complications."

Source: Resolution of Breech Presentation and Successful Vaginal Birth Following the Webster Technique: A Case Study & Selective Review of the Literature by Drobbin, et. al.

"This case describes a patient who was able to avoid a c-section and proceed with an uncomplicated vaginal delivery. Ultrasounds were obtained of the transverse position of the fetus before the administration of the Webster Technique and after with the fetus in the vertex position."

Source: Pregnancy and chiropractic: a narrative review of the literature by Borggren

"This case describes a patient who was able to avoid a c-section and proceed with an uncomplicated vaginal delivery. Ultrasounds were obtained of the transverse position of the fetus before the administration of the Webster Technique and after with the fetus in the vertex position."

Source: Pregnancy and chiropractic: a narrative review of the literature by Borggren

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Specific Sacral Contact

Sacral Ala between the PSIS and the second sacral tubercle _____

_____

_____

Finding the Ligament Contact _____

_____

_____

The Broad Ligament
The broad ligament covers the lateral uterine corpus and upper cervix. A wide peritoneal fold extending from the lateral uterus to the pelvic wall, divided into mesometrium, mesosalpinz and mesovarium. The broad ligament on each side contains a variety of structures, including the fallopian tube (except fimbria), the suspensory (infundibulopelvic) ligament of the ovary laterally, ovarian ligament medially, round ligament anterio-inferiorly, uterosacral ligament posteriorly and cardinal ligament laterally.

The Round Ligament
The round ligament of the uterus (Ligamentum teres uteri) is the remnant of the ovarian gubernaculum. This structure helped the descent of the ovaries during embryonic development from the posterior abdominal wall. There are two in total, each extending from the lateral cornu of the uterus, through the broad ligament, enters the inguinal canal through the deep inguinal ring and ends in the connective tissue of the labium majus in the perineum.

Patient Evaluation

Case Management

Gait

Palpation and Adjustment of the Sacrum

Clinical Findings

- Static palpation will generally demonstrate tenderness and edema along the posterior side of Y-axis rotation.
- Restriction of motion in the sacroiliac joint on the side of sacral posteriority should also be present.
- Inspection can sometimes reveal prominence of the lateral border of the sacrum on the side of posterior rotation.
- The doctor places the distal end of the palpating digit on the sacral tubercle.
- Tenderness (i.e., flinching of the patient) or edema may be palpated at the level of the sacral tubercle.
- Skin temperature asymmetry at the level of the sacral segments (e.g., S1–S2, S2–S3, S3–S4) may also be present.

Side Posture Adjustment

What side posture is not.

Side Posture Sacral Push Adjustment

Contact Site

- The first or second sacral tubercle for the posterior (P) listing.
- Tissue pull is performed by the stabilization hand from inferior to superior.

Pattern of Thrust

- The thrust for the P listing is posterior to anterior (+Z).
- To improve the line of correction, the doctor leans over the patient to lower the elbow to the level of the plane of the sacroiliac joint.
- The direction of the fingers of the pisiform for the posterior sacrum listing is cephalad.

P-L Side Posture Adjustment

Contact Site

- The left sacral base is contacted.
- Tissue pull is performed by the stabilization hand from inferior to superior and medial to lateral.

Adjusting and Stabilizing Hand Contact

- The pisiform is placed on the sacral ala.
- The direction of the fingers of the pisiform contact for the P-L listing is toward the table (resting across the sacrum and contralateral ilium)
- The doctor’s forearm should follow the plane line of correction for the involved joint.

Pattern of Thrust

- The thrust is posterior to anterior and slight medial to lateral.

- To improve the line of correction, the doctor leans over the patient to lower the elbow to the level of the plane of the sacroiliac joint.

Exercise for the Pregnant Patient

Some exercises have been extensively studied and found to be safe and beneficial including:

- Walking
- Stationary Cycling
- Aerobic exercises
- Dancing
- Resistance Exercises
- Stretching Exercises
- Hydrotherapy or Water Aerobics

There are several benefits of exercising during pregnancy including:

- Higher incidence of vaginal delivery
- Lower incidence of
    - Excessive gestational weight gain
    - Gestational diabetes mellitus
    - Gestational hypertensive disorders
- Reducing blood pressure
- Decreasing other cardiovascular risks such as clot formation
- Helping to maintain an ideal body weight
- Managing stable diabetes

Look for the following warning signs to discontinue exercise:

- Vaginal bleeding
- Abdominal pain
- Regular painful contractions
- Amniotic fluid leakage
- Dyspnea before exertion
- Dizziness
- Headache
- Chest pain
- Muscle weakness affecting balance
- Calf pain or swelling
- Decreased fetal movement

American Congress of Obstetricians and Gynecologists Guidelines
Based on the unique physical and physiological conditions that exist during pregnancy:

- Consider regular exercise at least 3 times a week is preferable to intermittent activity

- Vigorous exercise should not be performed in hot, humid weather or during a period of febrile illness
- Ballistic movements such as jerky, bouncy motions should be avoided
- Deep flexion or extension of joints should be avoided because of connective tissue laxity
- Avoid jumping, jarring motions or rapid changes in direction due to ligament laxity and joint instability
- Vigorous exercise should be followed by a period of gradually declining activity that includes gentle stationary stretching
- Care should be taken to gradually rise from the floor to avoid orthostatic hypertension
- Liquids should be taken liberally before, during and after exercise to prevent dehydration
- Activity should be stopped and the health care provider consulted if any unusual symptoms appear

The following are absolute contraindications to aerobic exercise:

- Restrictive lung disease
- Incompetent cervix/cerclage
- Multiple gestation at risk for premature labor
- Persistent second or third-trimester bleeding
- Placenta previa after 26 weeks of gestation
- Premature labor during the current pregnancy
- Ruptured membranes
- Preeclampsia/pregnancy-induced hypertension
- Severe anemia

Consult a health care provider prior to exercise if any of the following:

- Severe anemia
- Unevaluated maternal cardiac arrhythmia
- Chronic bronchitis
- Poorly controlled type 1 diabetes
- Extreme morbid obesity
- Extreme underweight (BMI < 12)
- History of extremely sedentary lifestyle
- Intrauterine growth restriction in current pregnancy
- Poorly controlled hypertension
- Orthopedic limitations
- Poorly controlled seizure disorder
- Poorly controlled hyperthyroidism
- Heavy smoker

Pelvic Floor Exercises

Exercise for the Birth Canal or Pelvic Floor
The following exercise will familiarize the patient with these muscles:

1. While urinating, stop urine flow midstream
2. Void a little more and then contract again
3. Interrupt the flow several times during each subsequent urination
4. Then repeat these steps several times throughout the day when not urinating
5. Contract the sphincter muscles with the pelvic floor muscles and then release them slowly from front to back

Kegel Exercises
To do Kegels, pretend that you are trying to stop the flow of urine and not allow gas to pass. This is contracting the muscles of the pelvic floor. When doing Kegels, it's important not to move the leg, buttocks or abdominal muscles. It is normal to feel a little tightening of the lower abdominal muscles, but you shouldn't feel anything above the belly button if performing Kegels correctly. Each time you contract the muscles of the pelvic floor, hold for a slow count of five then relax for a slow count of 5. Most medical professionals will recommend you do a set of 10 of these three times a day.

Heel Sliding
Lying on your back, knees bent to tilt your pelvis backward. Hold your pelvic tilt ("bellybutton to backbone") while you slide your heels away from your buttocks. Just before you lose your pelvic tilt, draw your knees back one at a time, to the point where your spine began to arch. Work in this range of motion until your abdominal muscles control your pelvic tilt with both legs outstretched. Modification: if sliding both legs is too difficult, just slide one heel down.

Diaphragmatic Breathing
During inhalation, the diaphragm moves downward, allowing the lungs to fill with air. As the abdominal contents are displaced outwards, the abdominal wall rises like a balloon. It is easier to learn while semi-recumbent, with the knees bent to relax the abdominal wall. All air should be blown out of the lungs, pulling the bellybutton toward the spine. The allows the relaxed abdominal wall to rise as it "fills up with air". Upon exhalation, the abdominal wall "deflates" and flattens.

Note: it is easy to reverse this action, so take care that the patient is doing it correctly. Like a balloon, the patient "fills up with air" as they breath in; upon exhalation, the abdominal wall "deflates" and flattens again as the lungs "empty out".

Warning: Breathe with moderation. Too many deep breaths in succession can cause dizziness. Deep breathing must always be slow, according to their own natural rhythm.

These exercises have been shown to decrease the incidence of diastasis recti abdominus and decrease the inter-rectus distance in women who gave birth vaginally or by cesarean birth.

Supported Squat
Keeping feet as flat on the ground as possible, gently flex knees outward. Once they are comfortably abducted, scoop the pelvis forward and maintain this position for 5 to 10 seconds. Full relaxation should occur in between four and five of these movements.

Pelvic Tilt
The pelvic tilt is done on all fours or using a chair and strengthens the abdominal muscles and eases back pain during pregnancy and labor.

All Fours: elbows should be supported comfortably on a chair with the knees positioned slightly posterior and under the hips. Then easing backward, stretch out the arms and move the pelvis backward above the knees as far as the distended uterus will allow. At no time should the back be allowed to extend downward. This can be repeated in a gentle rocking motion with slow, sustained stretches for three to four repetitions.

Benefits: facilitates the fetal head being maintained in the occiput anterior position

Alternative Pelvic Tilt
On your hands and knees with your arms shoulder-width apart and your knees hip-width apart, keep your arms straight as you breath in, tighten your abdominal muscles, tuck your buttocks under and round your back. Then relax back into a neutral position as your breathe out.

Relaxation Positions to Prepare for Labor

Position 1 – arrange a few pillows comfortably under the legs to elevate them about 1 ½ feet off the ground then lie back and relax with the small of the back resting flat on the floor

Position 2 - lying only on the left side, which allows proper circulation for the baby, prop one pillow under the head and the second between the knees and bend the right leg slightly so that it comes forward. The spine should be parallel with the ground.

Benefits: aids pregnant patients with insomnia

Recommended Exercises

Walking Program

- 2 times a week
- Goal: 4-5 times a week for 45 minutes for 3 miles

Pilates Reformer

- Pelvic floor
- Stomach
- Gluteal muscles
- Improve balance
- Learning to control breathing

Rebounder

Recumbent stationary bicycle – a stationary bicycle is safer than a standard bicycle because of the changes in balance that can occur during pregnancy.

Weight Training

- Lifting light weights for maintenance of strength can be cautiously continued throughout pregnancy provided proper breathing is performed and the Valsalva maneuver is avoided, especially in those exercises that may strain the lower back (e.g. dead lifts, bent-over rows and squats)

Warm-Ups and Cooldowns

The following should be used as warm-up and cooldown exercises:

- Shoulder rolling: raise shoulders up toward ears, backward, and down
    - Duration: continue rolling shoulders in this backward circular motion six times
    - Benefits: loosens the muscles in the shoulders and neck
- Arm swinging: begin by swinging arms from side to side, keeping the arms at shoulder height and swinging gently and easily
    - Duration: perform this exercise six times on each side
    - Benefits: releases any stiffness in the shoulders, increases blood circulation, and stretches the upper back muscles
- Knee raising: raise shoulders up toward ears, backward, and down
    - Duration: continue rolling shoulders in this backward circular motion six times
    - Benefits: loosens the muscles in the shoulders and neck
- Shoulder rolling: raise shoulders up toward ears, backward, and down
    - Duration: continue rolling shoulders in this backward circular motion six times
    - Benefits: loosens the muscles in the shoulders and neck
- Shoulder rolling: bring right knee up toward chest and hold for 2 seconds then repeat with the left side
    - Duration: these 2-second intervals should be repeated four times on each side
    - Benefits: loosens the knee and pelvic joints and gives abdominal organs a gentle massage

Cervico-Thoracic Exercises

The following exercises are beneficial for relaxing the neck muscles:

- Flexion/extension: sitting in a comfortable cross-legged position, relax the head forward and hold for 10 second, then relax head back slowly and hold for 10 seconds
    - Duration: these 10-second intervals should be repeated three times in each direction
- Rotation: with head at center looking straight ahead, turn to the right as far as possible and hold for 10 seconds, then turn to the left as far as possible and hold for 10 seconds
    - Duration: these 10-second intervals should be repeated three times in each direction
- Lateral flexion: with head at center, shoulders down and looking straight ahead, drop the head toward the right shoulder for 10 seconds and then the same with the left shoulder
    - Duration: these 10-second intervals should be repeated three times in each direction
    - Benefits: relieves tension in the neck and upper back
- Cat stretch: on hands and knees with back flat, round the back toward the ceiling while flexing the head toward the knees then return the back to flat while extending the head toward ceiling
    - Duration: repeat this motion five times
    - Benefits: stretches all anterior muscles from knee joints to facial muscles while also stretching all posterior muscles from hamstring to the neck extensors
- Rotation: with head at center looking straight ahead, turn to the right as far as possible and hold for 10 seconds, then turn to the left as far as possible and hold for 10 seconds
    - Duration: these 10-second intervals should be repeated three times in each direction

Lumbo-Pelvic and Lower Limb Exercises

The following exercises are beneficial for lumbo-pelvic and lower limbs:

- Butterfly: bring soles of feet together to allow the knees to relax out to the sides, gently bringing the knees up and down like the wings of a butterfly then relax knees and come forward as far as possible, attempting to touch head to the feet, then come up slowly and breathe
    - Duration: repeat this exercise slowly three times
    - Benefits: helpful in alleviating stiffness in legs and tones the spine, stretching the sacroiliac joints as well as the iliofemoral ligaments
- Bridge: on the back with knees bent, heels next to the buttocks and hands on the floor to the side with palms facing down, then begin by slowly raising up the pelvis lifting the buttocks off the floor as well as the lumbar and thoracic spine, then slowly lower down, first the midback, then lower back and then buttocks back to the floor and relax

    - Duration: hold the pelvis up for 10 seconds and then release slowly, repeating this three times
    - Benefits: helpful in eliminating or minimizing pregnancy backache, relieves neck strain, and tones and tightens the thighs

- Alternate leg stretch: spread legs hip distance apart in front, then bend the right leg and place the sole of the foot on the inside of the left thigh, then raising both arms over the head stretching them up alongside the ears, slowly relax forward, bringing the forehead to the right knee without bouncing or straining then slowly return to an upright position and repeat the stretch to the left side
    - Duration: perform the exercise three times on each side
    - Benefits: stretches the muscles and the connective tissues in the hamstrings and lower back, increases the blood circulation in the abdominal organ and gives a gentle stretch to the knee tendons and muscles
- Squat: while standing, squat down with feet flat on the floor, palms together in front of the chest and elbows pressing against the knees, hold the stretch for 20 seconds while breathing normally then sit back on the buttocks and relax the legs
    - Duration: repeat this exercise one time but work up to being able to hold the position for 1 minute
    - Benefits: increases flexibility in the knee joints and relieves lower back pressure while relaxing the pelvic floor muscles
- Pregnancy sit-ups: in a seated position, bend knees with arms extended in front over the knees, then slowly roll back one vertebra at a time until the shoulders recline and then sit up and repeat the sit-up exercise three times
    - Duration: slowly work up to 10 repetitions
    - Benefits: strengthens the abdominal muscles and the anterior neck muscles

Post-Natal Recommendations

- Weekly visits or per patient needs
- Hydration and calorie intake have been increased
- Review nutrition and stress levels
- Encourage exercise

Be Mindful of the Big Pretender

- With the increase of the hormone Relaxin do not let ligament laxity sway your chiropractic findings

Hypermobility the False Positive Complaint

- Significant increase of symptomatic complaints
- Temporary relief if adjusted
- Recommendation is to static and motion palpated this region

Most Common Site for Hypermobility

- Upper Cervical
- Bilateral SI joint complaints

Most Common Subluxation Pattern

- Sacrum

The Pre-Natal Chiropractic Evaluation

- Instrumentation
- Static Palpation
- Motion Palpation
- Postural

Instrumentation

- Careful not to misinterpret evaluation findings
- Adhere to protocol

Simplifying Static Palpation

- Contact for C2 to L5 is the inferior aspect of the spinous process
- Looking for edema, tenderness or a red response

Simplifying Motion Palpation

- Same contact
- Looking for restriction in the P to A motion from the C2 to L5 segments

Most Common Postural Distortions

- Anterior head transition
- Pelvis rotation (sacral rotation)

Teach Postural Correction

- Posterior translation of head
- Foot forward awareness
- Avoiding sitting or lying on soft surfaces

Chiropractic Equipment for the Pre-Natal Patient

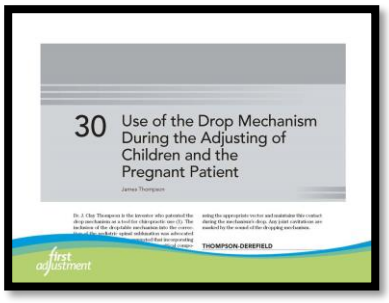
Above All Do No Harm – Safety is our top concern

- Can our equipment adapt to the abdomen?
- Can you avoid abdomen contact in a prone adjustment
- Can you adapt your contact to meet her needs?
- Listen to her – if she is uncomfortable about anything
  - Wait
  - Change your adjustment or table
  - Confer with her birth provider

Hi-Lo Table

- Once she is showing, never have a pregnant woman lying prone contacting her abdomen
- Lock the thoracic piece
- Inform the patient to keep her head in a neutral position
- Specifically contact the spine to avoid manipulation of normal healthy joints
- Once the adjustment has been given, hold for a count of about 3 seconds to avoid rebounding

Adapting for the Use of the Drop Table – Review Chapter 30 in *Pediatric Chiropractic* by Dr. James Thompson, pages 1118-1127



Contraindications

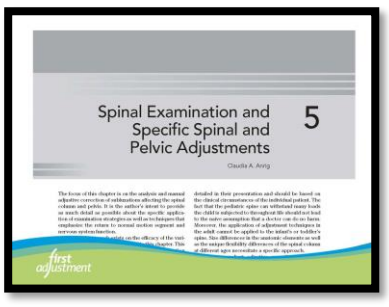
- Presence or Suspicion of placenta previa
- Severe endometriosis or gynecological problems

Cautions

- Tension settings on the lumbar and pelvic section is very “light”
- See page 1127 for further instructions
- Adjust with one application of the corrective thrust

Adapting for the Use of the Side-Posture Table – Review Chapter 5 in *Pediatric Chiropractic* by Dr. Claudia Anrig, pages 280-282

- Foot placement off the end of the table
- Doctor placement to secure safety of patient
- Patient placement close to the edge of the table



Adapting Doctor Position for the Comfort of the Patient

- Hand placement
- Stepping away from the abdomen

Carefully Caring for the Doctor's Spine

- Lumbar belt or tuck your tummy/pinch your gluts
- Assistance of the lower limbs being held for the adjustment

Patient Safety

- Absolutely no Lumbar Roll on the pregnant woman

Adapting for the Knee Chest Table – Review Chapter 5 in *Pediatric Chiropractic* by Dr. Claudia Anrig, pages 284-286

- Great table for the pregnant, breastfeeding mothers, obese or surgical patient
- Great table for the small, pregnant or injured doctor
- Assist the patient up and down from the table
- Specifically contact the spine to avoid the introduction of unnecessary forces to healthy joints
- Hold for 3 seconds after the adjustment to avoid rebounding
- Pisiform contact
- Pisiform on thumb contact
- Bilateral thumb contact

Webster History

- Dr. Larry taught hundreds of doctors via Life University and his seminars the "Webster Breech Turning Technique"
- Dr. Larry in 1989 gives personal permission to Drs. Anrig & Forrester to teach his "Webster Breech Turning Technique" in their seminar, Peter Pan Potential (which he attended 4 times)
- Drs. Larry and Claudia start the ICPA certification program in 1992 and they both teach his technique and her advanced application
- Dr. Larry gives Dr. Anrig permission to change the name of his technique in 1993 to the "Webster In-Utero Constraint Turning Technique" which was later shortened, after his death, to the Webster Technique

  Source: Ohm, J. The Webster Technique – A Chiropractic Analysis and Adjustment for Pregnant Women. *Am Chi*. 2003
- Dr. Larry approved Drs. Anrig & Forrester description of his technique in the first edition of *Pediatric Chiropractic* 1996

Why the Previous Webster definition is more accurate:
The Webster Technique is a specific chiropractic analysis and adjustment which reduces interference to the nervous system, improving function of the pelvic muscles and ligaments

leading to the reduction of constraint to the woman's uterus allowing the fetus the best opportunity to be positioned for a healthy birth.

Used by the ICPA until January 2011.

Biomechanical Message

What is the pelvic subluxation and how does this dysfunction affect a pregnancy?

Explanation to an OB or Midwife "The pelvis can go into biomechanical dysfunction with sacral and/or ilium fixation creating aberrant or abnormal joint function causing muscular and ligament imbalance that can contribute to the following symptomatic picture:

- Low back pain
- Symphysis Pubis Pain
- Sciatic
- Symmetry problems leading to In-Utero Constraint

Explanation to Expectant Mother – "The pelvis is like a basketball ring and your muscles and ligaments are like the net. If the basketball ring/pelvis is not round, the basketball/baby cannot descend, and the muscles and ligaments will cause a twist or constraint on the baby."

The Webster Technique is not an obstetrical maneuver as the Doctor of Chiropractic only contacts the mother's pelvis biomechanically and not the fetus.

The Webster Technique is about In-Utero Constraint and Fetal Malposition

To date there are more than 18 articles that have been published showing the effectiveness of the Webster Technique in the Third Trimester

Original Webster Technique – See last pages of notes for visual aids.

Patient Placement

- At the seventh month, place the patient in the prone position
- The Hi-Lo table may be used, separate the thoracic and pelvic piece to provide space for the abdomen
- Make sure her neck remains in a neutral position for the analysis and each ASIS joint is equally positioned
- When using a pregnancy pillow, instruct the woman to kneel on the end of the table and slowly come forward, the pregnancy pillow offers maximum comfort, safety and accuracy in patient placement for analysis and correction

Doctor's Stance

- Stand at the foot of the table and simultaneously lift the ankles bringing the knees into flexion toward the buttocks
- Apply equal pressure on both legs to determine the more resistant leg
- Be careful not to rotate the legs as you flex them, or touch the feet together
- Be sure you are holding ankles uniformly
- The side of leg resistance is the side of sacral rotation
- This will determine PL or PR sacral rotation

The Adjustment

Perform the sacral adjustment on the same side of the leg exhibiting the most resistance for the correction of PL or PR sacral subluxation.

Side Posture

- The patient should be placed involved side up
- The doctor should use a pisiform contact on the sacral ala between the PSIS and the second sacral tubercle
- With a P-A line of correction, adjust the sacrum
- Caution to side posture adjustment – No patient rotation or torsion to the pelvis

Drop Table

- The doctor should use a pisiform contact on the sacral ala between the PSIS and the second sacral tubercle
- With a P-A line of correction, adjust the sacrum

The Webster Technique is not an obstetrical maneuver as the Doctor of Chiropractic only contacts the mother's pelvis biomechanically and not the fetus.

Finding the Ligament Contact

- Position the patient supine on the table
- The doctor stands on the *opposite* side of the patient's *sacral listing*
- Draw an imaginary line from the umbilicus 45° inferior and lateral
- Draw another imaginary line 45° from the ASIS inferior and medial
- The intersection of these two lines in the lower quadrant is the contact point
- The intersection is approximately the area of the ***broad ligament*** as it joins with the inguinal ligament
    - Per Dr. Judy Forrester, author of Chapter 6 in *Pediatric Chiropractic*, while attending a C-section to observe the ligaments anatomically with the Chief of Obstetrics at a leading Calgary hospital, she said, "It is highly doubtful that the contact can be the Round Ligament, but rather the Broad."

Very important note regarding the inferior hand –
This hand may have to rotate from inferior and medial to superior and medial, this is due to the shape of the abdomen.

Ligament Contact

- At this intersecting point, palpate for the point of tension or tightness
- Hold an I-S contact with your thumb for one to three minutes, gradually turning 5° in either direction until you feel a give in the tenseness.
- The amount of pressure varies from several ounces to indenting the abdomen. The patient should feel no pain from the pressure.

Post Check

- Return the patient to a prone position and re-check leg resistance – look for an equalization or improvement of resistance in the legs
- If there is no improvement of the leg resistance analysis, the doctor should perform the sacrum adjustment again

Frequency of Care for the Webster Technique
Depending when the constraint position is discovered will determine the frequency of care.

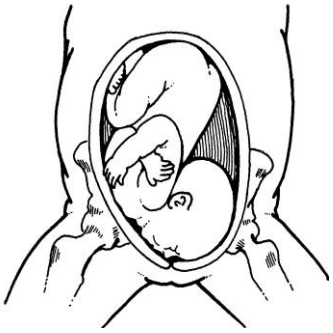
Chiropractic Pregnant Patient at 7th Month

- Perform the Webster Technique evaluating the patient 2-3 times a week over a two-week period.
- Once the legs are equal in resistance, do not perform the Webster Technique
- On alternate days, you may adjust other areas of the spine, however it is advisable to stay in the parasympathetic nervous system only.
- Once the fetus has achieved an optimum position, continue to evaluate the patient at least once a week starting with the Webster evaluation. If the legs continue to be equal, continue on with your other chiropractic evaluation.

Non-Chiropractic Patient seen in the last Trimester

- Perform the Webster Technique daily if the patient is in the last month of her pregnancy until there are changes
- If the patient is in the last two weeks or within days of the due date, evaluate 2 times a day until changes occur

Advanced Webster Technique Developed by Dr. Anrig

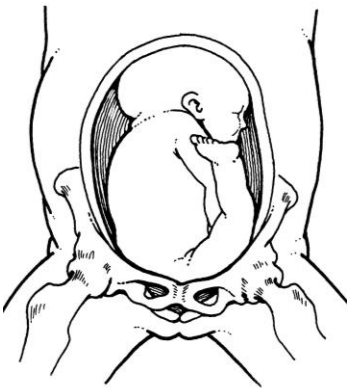


Facial or Brow presentations

Leg Evaluation the same
Sacral Adjustment the same
Contact ligament is on the ***same side*** of sacral adjustment

Transverse Lie Presentation

Leg Evaluation the same
Sacral Adjustment the same
Ligament contact ***is bilateral*** – held at the same time



Breech Presentation

Leg Evaluation reveals ***equal legs of resistance***
Base Posterior sacral subluxation
Contact the second sacral tubercle
Line of Correction – ***posterior to anterior with an inferior to superior arcing movement at the end of the thrust***
Ligament contact is ***bilateral*** – held at the same time

Breech in an Oblique Lie Presentation

Leg Evaluation reveals ***unequal legs of resistance***
PL or PR sacral rotation
Contact the sacral ala
Line of Correction – ***posterior to anterior***
Ligament contact is ***bilateral*** – held at the same time

The Webster Technique is not an obstetrical maneuver as the Doctor of Chiropractic only contacts the mother's pelvis biomechanically and not the fetus.

Webster Technique Visual Aid

Webster Protocol

- At the seventh month, place the patient in the prone position

Patient Placement

- The Hi-Lo table may be used, separate the thoracic and pelvic piece to provide space for the abdomen

Patient Placement

- Make sure the patient's neck remains in a neutral position for the analysis and each ASIS joint is equally positioned

Pregnancy Pillow

- When using a pregnancy pillow, instruct the woman to kneel on the end of the table and slowly come forward, the pregnancy pillow offers maximum comfort, safety and accuracy in patient placement for analysis and correction

The Doctor's Stance

- Stand at the foot of the table and simultaneously lift the ankles bringing the knees into flexion toward the buttocks

Leg Evaluation

- Apply equal pressure on both legs to determine the more resistant leg

Leg Evaluation

- Be careful not to rotate the legs as you flex them, or touch the feet together
- Be sure you are holding the ankles uniformly

Leg Evaluation

- The side of leg resistance is the side of sacral rotation

Leg Evaluation

- This will determine PL or PR sacral rotation

The Adjustment

- Perform the sacral adjustment on the ***same side*** of the leg exhibiting the most resistance for the correction – PL or PR sacral subluxation

Side Posture

- The patient should be placed involved side up

Side Posture

- The doctor's pisiform will contact the ***sacral ala*** between the PSIS and the second sacral tubercle

Drop Table

- The doctor's pisiform will contact the ***sacral ala*** between the PSIS and the second sacral tubercle

Side Posture

- With a P-A line of correction, adjust the sacrum

Caution to Side Posture Adjustment:

- No patient rotation or torsion to the pelvis

Finding the Ligament Contact

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- The doctor stands **opposite** side of the patient's sacral listing

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Finding the Ligament Contact

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Very important note regarding the inferior hand:

- This hand may have to rotate from inferior and medial to superior and medial, this is due to the shape of the abdomen

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I-S Contact

- Hold an I-S contact with your thumb for *1 to 3 minutes*, gradually turning 5° in either direction until you feel a give in the tenseness

Pressure Varies

- The amount of pressure varies from several ounces to indenting the abdomen
- The patient should ***feel no pain*** from the pressure

Post Check

Post Check

- Return the patient to a prone position and re-check leg resistance. Look for an ***equalization*** or ***improvement*** of resistance in the legs
- If there is **no** improvement of the leg resistance analysis, the doctor should perform the sacrum adjustment again

Advanced Webster Technique

Developed by Dr. Anrig

- Facial/Brow Lie
- Transverse Lie
- Breech Lie

Facial or Brow Presentation

Leg Evaluation

- The same
- PL or PR sacral listing

Sacral Adjustment

- The same

Contact Ligament

- Is on the **same** side of sacral adjustment

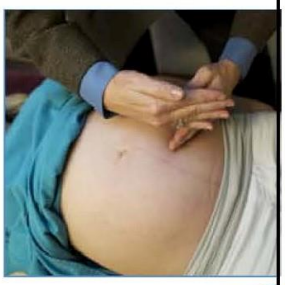
Transverse Presentation

Transverse Presentation

- Leg evaluation the ***same***
- Sacral adjustment the ***same***

Transverse Presentation

- Find bilateral contact points



Bilateral Contact

- Ligament contact is bilateral

Breech Presentation

Breech Presentation

- Leg Evaluation reveals ***equal*** legs of resistance
- ***False negative***

Breech Presentation

- ***Base Posterior*** sacral subluxation
- Contact the ***second sacral tubercle***
- LOC – ***posterior*** *to* ***anterior*** and ***inferior*** *to* ***superior***

Bilateral Contact

- Bilateral trigger points

Breech in an Oblique Lie

Breech-Oblique Lie

- Leg Evaluation reveals ***leg of resistance***
- PL or PR sacral subluxation

Breech-Oblique Lie

- Contact the sacral ala
- LOC – posterior to anterior
- ***Bilateral contact points***

DOCUMENTATION

Why is Documentation so Important? Freedom to Practice

Consultation and History Intake – Starts with a great Case History Form

_____

_____

_____

Questions during your Child History

- Current & Past History
- Adolescent History
- Childhood History
    - In Elementary School, does your child:
        - Play any organized sports? (If so, which sport, what position and how long?)
        - Have any slips or falls landing on their tailbone?
        - Use a backpack? ❑ Yes or ❑ No If yes, which side is dominant? Right / Left / Bilateral
        - Have a minor car accident? ❑ Yes or ❑ No
        - Approximately how many hours a day do they collectively watch TV, play video games, use a computer, etc.? 1-2 hours / 2-4 hours / 5 or more hours
        - Get hit in the head with a bat or ball or do they play a contact sport?
        - Fall from swings, slide, monkey bars or any high places?
- Under the age of 5, did your child:
    - ❑ Fall in baby walker
    - ❑ Fall from crib
    - ❑ Fall from highchair
    - ❑ Fall from changing table
    - ❑ Fall from bed or couch
    - ❑ Fall off swing
    - ❑ Fall off slide
    - ❑ Fall off monkey bars
    - ❑ Fall/bump on chin or tailbone
    - ❑ Fall off bicycle
    - ❑ Fall downstairs
    - ❑ Other _____

- Delivery
- Birth Trauma
- Pregnancy History
- General
    - How does your child sleep? Back / Side / Stomach
    - Do they wake up? Rested / Tired / Unsure
    - Approximately how many hours a day does your child sit? 1-2 hours / 2-4 hours / 5 or more hours
    - How old is their mattress? 0-2 years / 2-4 years / 4-6 years / 6-8 years / older
    - On a scale of 1 to 10, what would you rate their stress level?

Don't Forget

- Permission to Treat a Minor
- Informed Consent
- HIPAA

Communicate to the Parent and Child what to expect from your Exam

"Emily, we are going to take Keane and you to our exam room, and we are going to perform the following test FILL IN THE BLANK".

Don't Forget to explain what each test is and what you are looking for in each instance.

Static and Motion Palpation

"We will be performing a palpation examination on your son's spine. I will be gently touching his spine and applying a light pressure (touch parent's arm or leg) to see if there is any FILL IN THE BLANK (i.e. edema, taut fibers, asymmetry-this should reflect your technique style)."

"Then we will perform motion palpation. This is where we will take Keane's spine and place it into motion. The best way I can explain it is like pushing a swing, it should move away. If Keane's spine has a subluxation, the vertebra or swing won't move (or it's stuck)."

X-Ray

"We will be taking an x-ray of Alyssa's spine. What I will be looking for and will review with you at your next visit or Report of Findings is the following: whether your daughter has grown up straight or has her small injuries caused her spine to deviate or be crooked, her side picture will let you know if she has a normal and healthy curve in her neck and lower back region."

Postural – Software

"We will be performing on Alyssa's spine a postural examination. We will have her naturally standing and we will be taking a photo that our advance software program will scientifically evaluate her spine. We are going to furnish you a printed assessment at your Report of Findings tomorrow."

Postural – Standard

"We will be performing on Alyssa's spine a postural examination. She will be naturally standing and I will look for the following: level-head, shoulders and hips, level scapula (or her wing bones), the positioning of her feet, rolling shoulders and if her head is sitting over her shoulders."

SEMG

"This is a scanning system that gives us a report on how the nervous system is working with FILL IN THE BLANK (this would be determined by who's product and which studies you are conducting). We will be evaluating how your daughter's spine and nervous system has been adapting to the small and big traumas she has had over the last few years. We will be providing you tomorrow at the Report of Findings all the test results."

Other Examination Procedures

- X-Ray Listing and Interpretation
- Spinal Palpation
- Cervical Motion Studies
- Dorso-Lumbar Motion Studies
- Leg Check
- Instrumentation Finding
- Localization Diagram
    - Pain
    - Tender
- Neurological
    - Cranial Nerves
    - Infant Reflexes
    - Reflexes
- Orthopedic
- Physical
- Additional Testing
- Clinical Comments

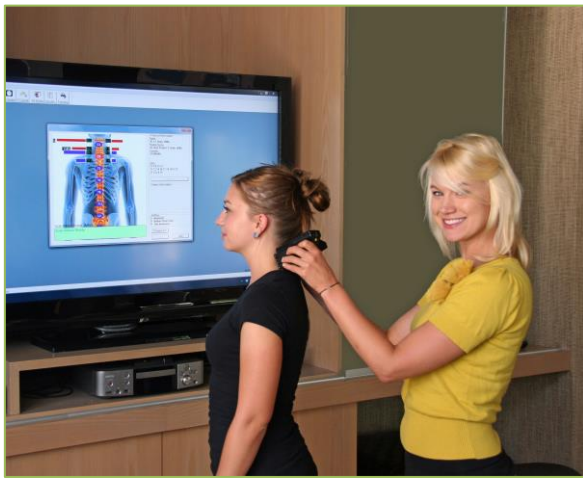


Image of SEMG scan in progress.

Need to Expand Your History and Exam – *Pediatric Chiropractic* – Second Edition

History Chapter 15, pages 687-711
Pre-Natal Chapter 6 pages 289-369
Orthopedics Chapter 13 pages 603-646
Diagnostic Imaging Chapter 4 pages 49-170
Neurology Chapters 9, 11, & 12

Technique Examination – *Pediatric Chiropractic* – Second Edition

Gonstead/Full Spine - Chapter 5 Anrig (pages 171-288)
Logan - Chapter 31 (pages 1128-1138)
Thompson - Chapter 30 (pages 1118-1127)
SOT - Chapter 28 – (pages 1067-1111)

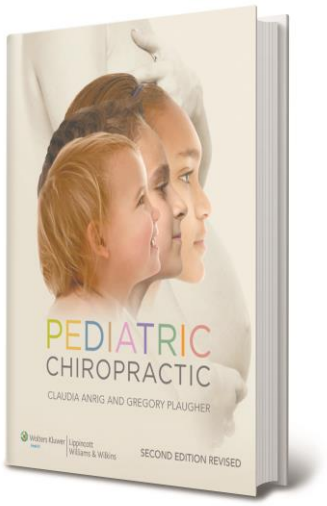
Neurological Evaluation – Pages 37-48 are additional notes not covered in the lecture.

All health care providers can improve on documentation. **Please turn to page 50**

The purpose of the Neurological Evaluation is to introduce important examinations to the pediatric patient, and more specifically the infant. The Neurological Evaluation can be interrupted for Chiropractic purposes when the presence of vertebral subluxation is present and is corrected.

Recommendation for clinical review from the following chapters from the textbook, *Pediatric Chiropractic.*

- Pre-natal pages 127-154
- History & Physical pages 179-201
- Clinical Neurology pages 479-611
- Orthopedics pages 612-641



Cerebral Function

- Flaccid paralysis
- Hypotonic – “Frog leg”
- Spastic contracture as seen in cerebral palsy
- Hypertonia – Scissoring of legs

Cerebellar Function

- Decreased coordination
- Decreased tendon reflex causing possible intention tremor
- General hypotonia of muscles

Brain Stem Function – APGAR

Motor System Function

- Movement Symmetry
- Grip
- Muscle tone – Hypotonia

Neurological Reflexes - evaluates for brainstem and spinal cord function.

- Absence of a reflex suggests depressed motor function at a central or peripheral level
- Asymmetry suggests central or peripheral focal motor lesion

Infant Reflexes

Rooting & Sucking

- Present from birth to 4 months
- Absence of this reflex suggests CNS disorder

Rooting – Stroke the cheek unilaterally slightly above the mandible in the direction of the mouth. The infant will respond by moving the mouth or "rooting toward the direction of the stimuli. Test both sides.

Rooting will disappear after the 3rd to 4th month during waking hours and may be elicited up to the seventh month.

Sucking – Insert the first phalange of the clean 4th digit into the infant's mouth. The infant will respond by heartily "sucking".

The absence or diminishment of the Rooting or Sucking reflex may also be associated with upper cervical subluxation (Occiput to C3).

Blink

- Present from birth and disappears after the 1st year
- Absence of reflex may indicate blindness

Blink – is performed by the examiner shinning a bright, concentrated light source into the infant's eyes. The infant will respond by blinking the eyes tightly shut.

Acoustic Blink

- Present from birth
- Absence may indicate decrease or loss of hearing

Acoustic Blink – the doctor claps hands near infant's ears or creates a similar noise. The infant will respond by blinking eyes in a "startle" reaction.

Moro Reflex

- May be referred to as Startle
- Present from birth to 3 months
- Absence at the upper extremity suggests hemiparesis, brachial injury or clavicle fracture
- Absence at the lower extremities suggest lower spinal cord injury or congenital hip dislocation

Moro/Startle – carefully holding the infant in a supine position the doctor creates a falling sensation. The first phase of Moro's response consists of symmetric abduction and extension of the arms with extension of the trunk. Phase two is marked by adduction of the upper extremities. It is not uncommon for the infant to cry due to the abrupt change of position.

Galant's

- Present from birth to 2 months
- Absence suggest transverse spinal injury

Galant's – while the infant is in a prone position, stroke the paraspinal musculature unilaterally. The infant will respond by arching the back and turning the head slightly to the ipsilateral side of the stimulation. Perform this test on both sides of the spine.

Asymmetric Tonic Neck Reflex

- May also be called the Tonic Neck or Fencer
- Present from 2 weeks to the 6th month
- Absence of this reflex suggest cerebral damage

Tonic Neck/Fencer – Turning the head to one direction, the arm on the side of head rotation will extend, while the opposite side will adduct. The lower limbs will manifest the abduction and adduction to a lesser degree.

Tonic Neck

- This reflex does not occur normally with each testing
- Suspect major cerebral damage if you have a persistent "present" during each testing under 6 months or is present after the 6th month

Neck Righting

- Present from 4 to 24 months

Neck Righting – the examiner holds the infant in a vertical position, and then tilts the infant gently to one side. The infant will respond by ipsilateral rotation of the trunk.

Palmar Grasp and Digital Response

- Present from birth to 6 months
- Absence suggest cerebral involvement
- Note that a newborn will have their fist closed the first month of life

Palmar Grasp – place one finger into the palm of the infant's hand. The infant will respond by grasping the finger in the palm, or palmar flexion. Test bilaterally.

Digital Response – The examiner strokes on the ulnar side from proximal to distal to the hand. The infant will respond by a fist like. Test bilaterally.

Babinski Response

- Present up to 2 years
- Normal response will be the same as the adult pathological response. Extension of the large toe and fanning extension of the other four toes

Babinski Response – examiner strokes the plantar surface of the foot from the heel to the toes, using the flat surface of a reflex hammer or finger.

Vertical Suspension

- Present from birth to 4 months
- Lower limb extension or adduction may suggest spastic para/diplegia

Vertical Suspension – supporting the infant from under the axilla, lift the infant quickly in the air. The response should be the flexing bilaterally of the hips and knees.

Placing Response

- Present from birth to 6 weeks
- Absence suggests paresis often as a result of a breech delivery

Placing Response – Supporting the infant under the axilla the examiner places one foot lightly touching the table. The infant will respond by lifting the other foot on the table.

Parachute Reflex

- Appears 6 to 8 months and developed by age one
- Examines for upper extremity pyramidal function
- Asymmetry suggest hemiparesis

Parachute Reflex – In a prone position the doctor plunges the infant downwards a few inches. The response is extension of the arms to "break the fall".

Cranial Nerve Examination

This examination is more difficult to perform on the newborn/infant. The cranial nerve examination is conducted in the same manner as the adult.

II Optic & VII Vestibulocochlear nerves are difficult to perform on the newborn/infant.

Deep Tendon Reflexes

This aspect of the neurological test is diverse according to the state of reflex maturation.

The deep tendon reflexes in the neonate may be tested with the reflex instrument applied over the examiner's thumb or finger overlying the tendon.

The reflex response should be brisk and easily palpated under the examiner's thumb. This evaluation is to evaluate the corticospinal tract.

The triceps reflex is difficult to elicit in the first 6 months, due to predominance of flexor tone.

Should there be a reduced or absent superficial abdominal reflexes suspect a central motor lesion or spinal cord session of the involved vertebral/nerve segment.

Orthopedic Examination

The orthopedic examination may be performed on the young child.

A positive Kernig and Brudzinski's test may indicate meningeal irritation.

The Ortolani's Reduction test is to establish congenital hip dislocation.

The infant is placed in a supine position with the knees and hips flexed to 90° or greater. The joints are examined unilaterally, with the examiner's long finger being placed over the long axis and the greater trochanter of the femur and the thumb over the medial aspect of the upper thigh.

The thigh is slowly abducted, and the examiner lifts the greater trochanter forward. Any instability is perceived by a "slipping feeling" as the femoral head moves into the acetabulum.

A sense of reduction may be discerned by the palpation of a "clunk" with forward movement of the head of the femur.

Physical Examination

The pediatrician traditionally performs the physical examination. It should be documented in your notes when the child's last physical was performed.

The palpation of the abdomen may detect the following -

- Distention insinuates an intestinal obstruction or intra-abdominal mass.
- Umbilical hernias are commonly seen in the first 2 years of life and usually resolve spontaneously.
- Detection of a hernia, unilateral or bilateral, warrants referral.

The lymph nodes should be palpated and noted for any irregular masses or swelling.

The axillary and femoral lymph nodes should be barely discernible. The posterior cervical lymph nodes will be present only with infection.

There are lymph nodes located above the superior nuchal line bilaterally on the occiput. These are considered to be normal, if small, and disappear spontaneously within the first year of life.

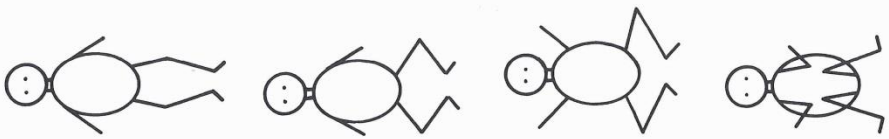
The fontanelles are evaluated in the seated position. The examiner should observe a soft and slight depression. Tense or bulging indicates increase cranial pressure and warrants referral.

Table 5.7. **Dubowitz Neurodevelopmental Protocol**

NAME		DOB/TIME		WEIGHT	STATES	S	C	A
NO.		DATE OF EXAM		HEIGHT	1. Deep sleep, no movement, regular breathing.	T	O	S
RACE	SEX	AGE		HEAD CIRC.	2. Light sleep, eyes shut, some movement.	A	M	Y
					3. Dozing, eyes opening and closing.	T	M	M
		GESTATIONAL SCORE WEEKS			4. Awake, eyes open, minimal movement.	E	E	M
		ASSESSMENT			5. Wide awake, vigorous movement.		N	E
					6. Crying.		T	T
								R
								Y

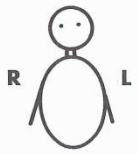
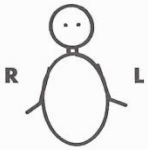
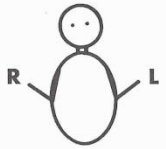
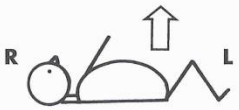
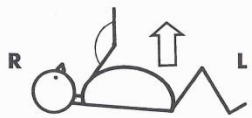
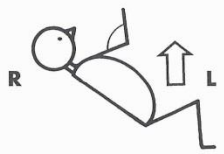
HABITUATION (<state 3)

LIGHT Repetitive flashlight stimuli (10) with 5-sec gap Shutdown = 2 consecutive negative responses	No response.	A. Blink response to first stimulus only. B. Tonic blink response. C. Variable response.	A. Shutdown of movement but blink persists 2–5 stimuli. B. Complete shutdown 2–5 stimuli.	A. Shutdown of movement but blink persists 6–10 stimuli. B. Complete shutdown 6–10 stimuli.	A. Equal response to 10 stimuli. B. Infant comes to fully alert state. C. Startles + major responses throughout.
RATTLE Response stimuli (10) with 5-sec gap	No response.	A. Slight movement to first stimuli. B. Variable response.	Startle or movement 2–5 stimuli, then shutdown.	Startle or movement 6–10 stimuli, then shutdown.	A B} Grading as above. C
MOVEMENT AND TONE	Undress infant.				
POSTURE (At rest–predominant)	*				Abnormal postures: A. Opisthotonus. B. Unusual leg extension. C. Asymm. tonic neck reflex.



(hips abducted) (hips adducted)

Table 5.7. *(continued)* **Dubowitz Neurodevelopmental Protocol**

					S C A
ARM RECOIL Infant supine. Take both hands, extend parallel to the body; hold approx. 2 sec. and release.	No flexion within 5 sec. 	Partial flexion at elbow >100° within 4–5 sec. 	Arms flex at elbow to <100° within 2–3 sec. 	Sudden jerky flexion at elbow immediately after release to <60°. 	Difficult to extend; arm snaps back forcefully.
ARM TRACTION Infant supine; head midline; grasp wrist, slowly pull arm to vertical. Angle of arm scored and resistance noted at moment infant is initially lifted off and watched until shoulder off mattress. Do other arm.	Arm remains fully extended. 	Weak flexion maintained only momentarily. 	Arm flexed at elbow to 140° and maintained 5 sec. 	Arm flexed at approx. 100° and maintained. 	Strong flexion of arm <100° and maintained. 
LEG RECOIL First flex hips for 5 sec. Then extend both legs of infant by traction on ankles; hold down on the bed for 2 secs. and release.	No flexion within 5 sec. 	Incomplete flexion of hips within 5 sec. 	Complete flexion within 5 sec. 	Instantaneous complete flexion. 	Legs cannot be extended; snap back forcefully.

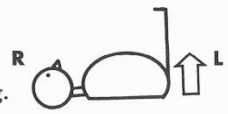
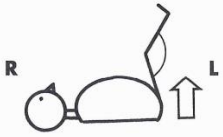
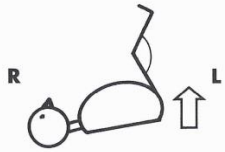
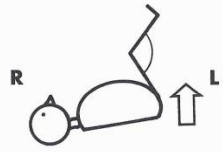
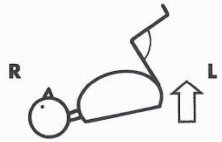
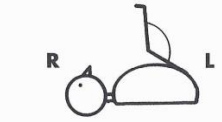
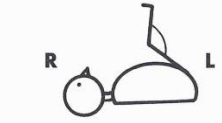
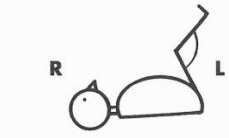
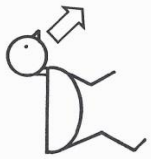
LEG TRACTION Infant supine. Grasp leg near ankle and slowly pull toward vertical until buttocks 1–2″ off. Note resistance at knee and score angle. Do other leg.	No flexion.	Partial flexion, rapidly lost.	Knee flexion. 140–160° and maintained.	Knee flexion 100–140° and maintained.	Strong resistance; flexion <100°.
					
POPLITEAL ANGLE Infant supine. Approximate knee and thigh to abdomen; extend leg by gentle pressure with index finger behind ankle.	 180–160°	 150–140°	 130–120°	 110–90°	 <90°
HEAD CONTROL (post. neck m.) Grasp infant by shoulders and raise to sitting position; allow head to fall forward; wait 30 sec.	No attempt to raise head.	Unsuccessful attempt to raise head upright.	Head raised smoothly to upright in 30 sec. but not maintained.	Head raised smoothly to upright in 30 sec. but maintained.	Head cannot be flexed forward.
					
HEAD CONTROL (ant. neck m.) Allow head to fall backward as you hold shoulders; wait 30 sec.	Grading as above.	Grading as above.	Grading as above.	Grading as above.	
					

Table 5.7. *(continued)* **Dubowitz Neurodevelopmental Protocol**

						S C A
HEAD LAG Pull infant toward sitting posture by traction on both wrists. Also note arm flexion.	* 					
VENTRAL SUSPENSION Hold infant in ventral suspension; observe curvature of back, flexion of limbs and relation of head to trunk.	* 					
HEAD RAISING IN PRONE POSITION Infant in prone position with head in midline.	No response.	Rolls head to one side.	Weak effort to raise head and turns raised head to one side.	Infant lifts head, nose and chin off.	Strong prolonged head lifting.	
ARM RELEASE IN PRONE POSITION Head in midline. Infant in prone position; arms extended alongside body with palms up.	No effort.	Some effort and wriggling.	Flexion effort but neither wrist brought to nipple level.	One or both wrists brought at least to nipple level without excessive body movement.	Strong body movement with both wrists brought to face or "press-ups".	
SPONTANEOUS BODY MOVEMENT During examination (supine). If no spontaneous movement try to induce by cutaneous stimulation.	None or minimal. Induced.	A. Sluggish. B. Random, incoordinated. C. Mainly stretching.	Smooth movements alternating with random, stretching, athetoid or jerky.	Smooth alternating movements of arms and legs with medium speed and intensity.	Mainly: A. Jerky movement. B. Athetoid movement. C. Other abnormal movement.	1 2

TREMORS Fast (>6/sec.) Mark: or Slow (<6/sec.)	No tremor.	Tremors only in state 5–6.	Tremors only in sleep or after Moro and startles.	Some tremors in state 4.	Tremulousness in all states.
STARTLES	No startles.	Startles to sudden noise. Moro; bang on table only.	Occasional spontaneous startle.	2–5 spontaneous startles.	6+ spontaneous startles.
REFLEXES					
ABNORMAL MOVEMENT OR POSTURE	No abnormal movement.	A. Hands clenched but open intermittently. B. Hands do not open with Moro.	A. Some mouthing movement. B. Intermittent adducted thumb.	A. Persistently adducted thumb. B. Hands clenched all the time.	A. Continuous mouthing movement. B. Convulsive movements.
TENDON REFLEXES Biceps jerk Knee jerk Ankle jerk	Absent.		Present.	Exaggerated.	Clonus.
PALMAR GRASP Head in midline. Put index finger from ulnar side into hand and gently press palmar surface. Never touch dorsal side of hand.	Absent.	Short, weak flexion.	Medium strength and sustained flexion for several secs.	Strong flexion; contraction spreads to forearm.	Very strong grasp. Infant easily lifts off couch.
ROOTING Infant supine, head midline. Touch each corner of the mouth in turn (stroke laterally).	No response.	A. Partial weak head turn but no mouth opening. B. Mouth opening, no head turn.	Mouth opening on stimulated side with partial head turning.	Full head turning, with or without mouth opening.	Mouth opening with very jerky head turning.
SUCKING Infant supine; place index finger (pad towards palate) in infant's mouth; judge power of sucking movement after 5 sec.	No attempt.	Weak sucking movement: A. Regular. B. Irregular.	Strong sucking movement, poor stripping: A. Regular. B. Irregular.	Strong regular sucking movement with continuing sequence of 5 movements. Good stripping.	Clenching but no regular sucking.

Table 5.7. *(continued)* **Dubowitz Neurodevelopmental Protocol**

						S C A
WALKING (state 4, 5) Hold infant upright, feet touching bed, neck held straight with fingers.	Absent.		Some effort but not continuous with both legs.	At least 2 steps with both legs.	A. Stork posture; no movement. B. Automatic walking.	
MORO One hand supports infant's head in midline, the other the back. Raise infant to 45° and when infant is relaxed let his head fall though 10. Note if jerky. Repeat 3 times.	No response, or opening of hands only.	Full abduction at the shoulder and extension of the arm.	Full abduction but only delayed or partial adduction.	Partial abduction at shoulder and extension of arms followed by smooth adduction. A. Abd > Add B. Abd = Add C. Abd < Add	A. No abduction or adduction; extension only. B. Marked adduction only.	J S
NEUROBEHAVIORAL ITEMS						
EYE APPEARANCES	Sunset sign. Nerve play.	Transient nystagmus. Strabismus. Some roving eye movement.	Does not open eyes.	Normal conjugate eye movement.	A. Persistent nystagmus. B. Frequent roving movement. C. Frequent rapid blinks.	
AUDITORY ORIENTATION (state 3, 4) To rattle (Note presence of startle.)	A. No reaction. B. Auditory startle but no true orientation.	Brightens and stills; may turn toward stimuli with eyes closed.	Alerting and shifting of eyes; head may or may not turn to source.	Alerting; prolonged head turns to stimulus; search with eyes.	Turning and alerting to stimulus each time on both sides.	S
VISUAL ORIENTATION (state 4) To red woolen ball.	Does not focus or follow stimulus.	Stills; focuses on stimulus; may follow 30°; jerky; does not find stimulus again spontaneously.	Follows 30–60° horizontally; may lose stimulus but finds it again. Brief vertical glance.	Follows with eyes and head horizontally and to some extent vertically, with frowning.	Sustained fixation; follows vertically, horizontally, and in circle.	

ALERTNESS (state 4)	Inattentive; rarely or never responds to direct stimulation.	When alert, periods rather brief; rather variable response to orientation.	When alert, alertness moderately sustained; may use stimulus to come to alert state.	Sustained alertness; orientation frequent, reliable to visual but not auditory stimuli.	Continuous alertness, which does not seem to tire, to both auditory and visual stimuli.
DEFENSIVE REACTION A cloth or hand is placed over the infant's face to partially occlude the nasal airway.	No response.	A. General quieting. B. Non-specific activity with long latency.	Rooting; lateral neck turning; possible neck stretching.	Swipes with arm.	Swipes with arm with rather violent body movement.
PEAK OF EXCITEMENT	Low level arousal to all stimuli; never > state 3.	Infant reaches state 4–5 briefly but predominantly in lower states.	Infant predominantly state 4 or 5; may reach state 6 after stimulation but returns spontaneously to lower state.	Infant reaches state 6 but can be consoled relatively easily.	A. Mainly state 6. Difficult to console, if at all. B. Mainly state 4–5 but if reaches state 6 cannot be consoled.
IRRITABILITY (states 3, 4, 5) Aversive stimuli; Uncover; Ventral susp. Undress; Moro Pull to sit Walking reflex Prone	No irritable crying to any of the stimuli.	Cries to 1–2 stimuli.	Cries to 3–4 stimuli.	Cries to 5–6 stimuli.	Cries to all stimuli.
CONSOLABILITY (state 6)	Never above state 5 during examination, therefore not needed.	Consoling not needed. Consoles spontaneously.	Consoled by talking, hand on belly or wrapping up.	Consoled by picking up and holding; may need finger in mouth.	Not consolable.
CRY	No cry at all.	Only whimpering cry.	Cries to stimuli but normal pitch.	Lusty cry to offensive stimuli; normal pitch.	High-pitched cry, often continuous.

NOTES *If asymmetrical or atypical, draw in on nearest figure.
Record any abnormal signs (e.g., facial palsy, contractures, etc.) Draw if possible.

Record time after feed: _____

EXAMINER: _____

Review in *Pediatric Chiropractic* Chapter 6 by Judy Forrester Pages 289-369

Importance of Re-Examination

We should perform a re-exam every 12th visit on an ongoing child patient or if the child has not been seen in 3 months.

Your form should include:
Complaints per parent or teen

- Possibly how did or does it happen: sleeping incorrectly, backpack wearing, falls or tumbles, sports, etc.
- What aggravates it
- What gives it relief (parents should put in chiropractic if this is true)
- Would you (parent) like the child to continue chiropractic care (have them sign it)

What tests should you perform? ROM, Postural, SEMG, and any orthopedic and neurological exam you clinically determine as important.

SOAPS

The Key is being more inquisitive

- What have you been doing?
- Did you overdo it when you were BLANK?
- Since then how have you been feeling?

Subjective – always ask "since the last time we saw you have there been any falls or strains".

Note per Mother or Father [the incident]. This presents the "cause" of how it happened, then list the complaint, "gait, neck soreness, etc."

Example – "Per Mother her son fell backwards from the arm of the couch and struck his head and back two days ago. She notes that since the injury he has been uncomfortable with his neck and mid-back when touched and has been irritable. He has been up the last two nights every few hours."

Older Child – "Per patient notes that he has been on his laptop increasingly doing homework (4hrs a day) while sitting on the couch hunched over. He is noting neck and shoulder mild ache and stiffness."

Note Quality of Life

- "Mother also notes that since beginning chiropractic care her son's ear infections have resolved."
- Patient states since starting care he has had only one bedwetting episode.

Objective – Findings that support your subluxation findings; ROM, Postural Distortion, Leg Check, Palpation Findings, tenderness or pain.

Assessment – your findings and conclusions.

Plan – What are you going to do to help this patient. It can also include recommendations for home care, but it can also record your treatment goal (improve gait or sleep, decreased pain or improve sitting tolerance).

Personal Injury Care for the Pregnant and Child Patient

Staff Preparation

Prior to the patient arriving have any accident reports or examination forwarded to your office to review in advance.

Caring for the Pregnant Patient

Consultation – Ask: during the collision…

- How was the seatbelt used?
- What position was her body at the time of the collision, but where was it afterwards.
- Did the airbag engage and where was the point of strongest contact?
- Was there bruising from the airbag or seatbelt?
- What was reported to her from her OB?

Then engage in the traditional personal injury questions.

Be Aware

Due to the increased level of the hormone Relaxin this may cause increased ligament laxity which may cause a more symptomatic picture

- If her arms were on the steering wheel – an increase of cervical and thoracic instability
- Was her right leg extended out on the pedal (gas or brake)
    - She would have had her pelvis in rotation.

The examination must include enough procedures that would allow you to write a report for an attorney or OB if they are co-managing the case:

- Chiropractic
- Orthopedic
- Neurological
- Concussion

For training in how to evaluate for concussion go to cdc.gov/headsup/index.html

Children in Motor Vehicle Collisions

Anthropometric and Positioning Variables for Children

- Head Size
    - Tissue Injury
- Pelvic Height
    - Submarining
- Anterior-Superior Iliac Spine
- Center of Gravity

Consultation Questions:

- Type of restraint system that was used
- Location in vehicle and if an older child would they be able to communicate pre-impact body position
- Position of the child after the injury
- Was there crying, confusion, signs of pain or discomfort?
- Was there an examination, where, by whom?
- Was concussion ruled out?
- What other symptoms besides neck, back pain and headaches?

Per parent they might notice night terrors, nervous, tense, irritable, anxious or clingy, picking eating, low energy for activity, not focusing in school, change in bowel function.

Your Exam

- Infant to age 5 – Static and Motion palpation, ROM, orthopedic, neurological, concussion, and refer out for x-rays if warranted
- Age 5 and older – as above, but include the following possible x-rays: APOM, Lateral & AP Cervical, Flexion & Extension, Lateral & AP Spinal Region of Complaint
- Re-examinations should be performed every 30 days or 12 visits

Be prepared to be challenged

- If damage to the car is minor
- If there are minimal complaints
- If your objective findings cannot support the complaints

Create an alliance with a medical doctor who might be supportive to soft tissue injuries and upon review of your findings concurs that an injury has occurred and warrants chiropractic care.

Have a personal injury attorney that strongly supports the right that all individuals have access to appropriate care. Review Dan Murphy's Chapter 20 in pages 815-845.

PEDIATRIC CHIROPRACTIC ANALYSIS AND TECHNIQUE REVIEW

Cervical Spine

AS Occiput

Observation - the child has a gaze to the ceiling.

History - the patient may have been in an Intra-Uterine Constraint position (Transverse, Brow or Facial). The older child may have sustained a Brow or Facial trauma from falls. Infants, toddlers, and preschoolers, (rarely the pre-adolescent) may present with frontal head banging on the crib or bed prior to sleeping.

Physical Manifestations - Low APGAR score at birth, apnea at night, weak cry, poor thriver. Commonly this listing is seen with the Cerebral Palsy and Autistic patient.

Lateral Radiographs will reveal posteriorly a decreased margin between the Occiput Plane Line and the Atlas Plane Line on projection. The posterior occiput shelf will be closer than normal to the posterior arch of atlas. A cervical flexion study can confirm the AS listing. The more severe the fixation, the decrease ability for the posterior margin to increase between the occiput and atlas.

Motion/Static Palpation - Static palpation on the posterior occiput and between the atlas will reveal tenderness or differential degrees of pain to the muscle group. Motion palpation should be performed by flexing the child's head down. The AS occiput will resist this arching motion during the procedure. The patient may react by squirming, showing discomfort or crying.

Patient, Doctor, Contact Positioning and Line of Correction will be presented during the lecture.

Usages of condyle blocks are mandatory to prevent introduction of unnecessary force into the lower cervical region.

PS Occiput

Observation - this listing is more common than the AS listing. The patient may be observed with a lower gaze to the floor.

History and Physical Manifestations - Intra-Uterine constraint may be a possible cause to this occiput listing, specifically transverse lie. Suspect a possible PS occiput when a child's head was in flexion during the occurrence of the fall or injury. Occasionally these patients will posteriorly head bang themselves prior to sleep. The infant may present with some of the similar manifestations as the AS listing, but with a lesser degree of severity.

Lateral Radiographs will reveal that the Occiput Plane Line in reference to the Atlas Plane Line will have an increased margin space posteriorly. To confirm this finding, an extension cervical radiograph will reveal an inability to close the margin.

Static/Motion Palpation - Static palpation on the posterior occiput and between the atlas will reveal tenderness or varying degrees of discomfort or pain with touch. The introduction of an extension glide will reveal pain, discomfort and restricted range of motion.

Patient, Doctor, Contact Positioning and Line of Correction will be presented during the lecture.

Atlas

Observation is more difficult to assess the patient. If posterior rotation is present the head will rotate to the same side. Anterior atlas rotation will manifest head rotation to the opposite side.

History and Physical Manifestations - Any trauma that introduces rotation (ex. birthing procedures, stomach sleeping etc.) traction, flexion and extension forces can result in an atlas subluxation. The clinical symptomatic picture may be similar to the AS or PS occiput and has been clinically seen to be the causation of numerous abnormal disorders.

AP and Lateral Radiographs can be analyzed to support other findings.

Static/Motion Palpation - should be performed in the sitting neutral position. The atlas should not be analyzed and given a listing from only a static procedure. The doctor should take into consideration bone malformation and the common occurrence of compensation of the upper cervical region for a lower cervical subluxation. To palpate, use the second or fifth digit and contact the anterior-lateral aspect of the transverse process of atlas. Lateral flexion and rotation into the segment should ascertain the side of laterality and if the presence of rotation exists.

Patient, Doctor, Contact Positioning and Line of Correction will be discussed in the lecture.

Lower Cervicals

Observation-Hypo and Hyper lordosis in the older child may manifest itself with anterior glide from the center of gravity.

History and Physical Manifestation - Micro and macro trauma during the developing years will typically be the causative factor for the subluxation.

The most common subluxation listing for the C2-C7 region is Posteriority. Research (i.e. Jirout), Lateral and AP radiographs on the toddler through pre-adolescent confirm the most common manifestation is Vertebral Subluxation Simplex (i.e. Posteriority). If V.S.S. is not detected, corrected and maintained, the occurrence of Vertebral Subluxation Complex is more likely.

Pre and Post radiographs from clinical practice and review of biomechanical function, derives the above comment. It is extremely important that each chiropractor evaluate their personal technique acquired over the years in an adult practice. It is not uncommon that the techniques that may have been taught while the Doctor of Chiropractic was in college were typically addressing the adult spine or the instructor may have lacked in the field of pediatric experience. This is of no fault of a college or instructor but should challenge each Doctor of Chiropractic to review his or her approach to adjusting the pediatric spine and alter their method to benefit the younger patient.

AP and Lateral radiographs should be reviewed.

Static/Motion Palpation - The patient should be examined in a sitting position. The use of the distal end of the second or fifth digit will contact the distal end of the spinous process. The introduction of a posterior reduction motion will allow for assessment of the listing of Posteriority in the involved segment.

Patient, Doctor, Contact Positioning and Line of Correction will be discussed during the lecture.

Thoracic Spine

Observation - the older child may manifest postural distortion (i.e. shoulder tilt, slumping or rounding shoulders).

History and Physical Manifestations - will be discussed in the lecture.

AP and Lateral Radiographs - The Vertebral Subluxation Simplex or Posteriority of the segment is the most common occurrence. This can be observed on radiographic review.

Static/Motion Palpation - Static palpation may reveal edema or bogginess at the site of segment involvement. The infant can be analyzed in a prone position. The older child in a seated position, the distal end of the second or fifth digit should be placed on the spinous process. Motion is introduced in a posterior to anterior direction. Restriction of motion may indicate the region of involvement.

Patient, Doctor, Contact Positioning and Line of Correction is discussed in the lecture.

It should be noted that due to the development of the anatomical segments of the spine and the thoracic cage, and the inability to specifically contact a segment, it is the author's opinion that anterior adjusting be considered a contraindication of the pediatric spine.

The Doctor of Chiropractic should concern himself or herself with addressing the Vertebral Subluxation while it is in the position of posteriority (simplex). It is with rare exception that the listing becomes complex (i.e. PR/PL, PRS/PLS, PRI-T/PLI-T) unless the pediatric patient has not received early spinal care.

Lumbar Spine

Observation - the older child may manifest postural distortion (i.e. height of hip tilt or loss of lumbar lordosis).

History and Physical Manifestations will be discussed during lecture. The most common subluxation listing in the younger patient is posteriority of the involved segment. More complex listings (i.e. PR/PL, PRS/PLS, PRI-M/PLI-M) unless the pediatric patient who is older and may not have received prior spinal care.

AP and Lateral radiographs should be reviewed. It should be noted that the lateral radiograph is recommended in ruling out a spondylo to the fifth lumbar particularly when a trauma has been sustained on the buttocks.

Static/Motion Palpation - Static palpation may reveal edema to the involved segment. The infant may be motion palpated in the prone position or the sitting position. The child may be analyzed in the sitting or standing position.

The younger spine should be analyzed to detect reduction in the posterior to anterior range of motion. Reduction in the range of motion in the involved segment would indicate posterior listing. All listings should be confirmed with radiographs whenever it is possible with new patient evaluation or after a significant trauma.

Patient, Doctor, Contact Positioning and Line of Correction will be discussed during the lecture.

It should be noted that in performing any side posture maneuver, that it is considered a contraindication to place the patient in a rotational position (pre-patient placement or during the thrust phase).

Sacrum

Observation - with the toddler a posterior segment may manifest itself with a pigeon toe stance.

History and Physical Manifestations - the subluxation S2 and S3 are commonly overlooked in the evaluation process. It is not uncommon to find a sacral subluxation by the time the infant is learning to walk. Repetitive falls to the buttocks are the typical mechanism of injury.

AP and Lateral radiographic evaluation may assist the doctor in confirming his or her finding from other examinations. The lateral radiographic can be used to confirm the location of the posterior segment. The AP film can be analyzed to confirm sacral rotation.

Static/Motion Palpation - The younger child may be more easily assessed by locating edema over the segment of involvement. The infant and toddler can be evaluated for range of motion (posterior reduction restriction in a sacral subluxation) in a prone position. The older child can be evaluated in the seated position.

Patient, Doctor, Contact Positioning and Line of Correction will be discussed during lecture. The infant and toddler can be adjusted in the prone position and the older child in a side posture table. The lumbar patient set up recommendation should also be respected in adjusting the sacrum.

Pelvis

During the lecture the pelvis will be discussed; observation, static/motion palpation, and set-ups.

Contraindications for Pediatric Adjustments

Adjusting any other segment of listing when other than your findings. Normal range of motion of segmental unit is present or hypermobility of instability is detected. If destruction of the involved segment is suspected or detected. Pathologic or non-pathologic fracture is present. Infection to the contact bone.

Special Considerations Prior to the Pediatric Adjustment

In pre-patient set up or during the thrust phase, unnecessary rotation, flexion, extension, lateral flexion or traction into the segment to be adjusted or regions involved above or below the area of involvement.

The pediatric patient should never be forced to receive an adjustment if they are uncooperative.

Adaptation of the Doctor's Contact Hand

The smaller the segment that is contacted, the smaller the doctor contact point must be made (i.e. distal second or fifth digit). Avoid using the traditional contact points (i.e. pisiform or distal length of second digit) on the younger patient.