

Pediatric Chiropractic Analysis and Technique Review

By: Claudia Anrig, D.C.

Cervical Spine

AS Occiput

Observation– the child has a gaze to the ceiling.

History-the patient may have been in an in-Utero Constraint position (Transverse, Brow or Facial). The older child may have sustained a Brow or Facial trauma from falls. Infants, toddlers, and pre-schoolers, (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 projections. The posterior occiput shelf will be closer than normal to the posterior arch of atlas. A flexion study can confirm the AS listing. The more severe the fixation, the decreased 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.

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-In-Utero constraint may be a possible cause to the 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 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, a 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.

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.

Lower Cervicals

Observation-Hypo and Hyperlordosis 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.

Thoracic Spine

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

History and Physical Manifestations-

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 boggy at the site of segment involvement. The infant can be analyzed in a prone position. The older child in a sitting 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.

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).

Listings-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.

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 is 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 Positioning-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.

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 which is to be contacted, the smaller the doctor contact point must be made (i.e. pisiform or distal length of second digit) on the younger patient.

Reference Textbooks:

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Williams, & Wilkins, 1993, Chapter 14.

Yochum T, Essentials of Skeletal Radiology, Volume 1 & 2, Williams & Wilkins, 1998.