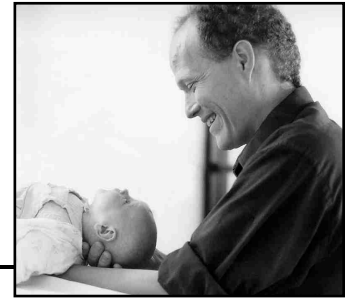


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Applications of CranioSacral Therapy in Newborns and Infants

By John Upledger, DO, OMM

CranioSacral Therapy has proven effective in identifying a number of disorders affecting children, including dyslexia, hyperkinetic behavior and motor-control problems. It's also good at alleviating such conditions when they're caused by restrictions in the dura mater membranes of the craniosacral system. I believe the few minutes necessary to conduct a craniosacral system evaluation in the delivery room, or shortly after birth, is a worthwhile investment in any child's future health and well-being.

In 1977, we did a great deal of clinical work at Michigan State University (MSU) to discover how the newly discovered craniosacral system affected patients. For research purposes, I had to develop a standardized evaluation tool. By that time, I had done enough hands-on work that it was fairly simple to come up with the 19-step protocol, which was used by four different examiners to see whether or not the findings were in agreement. The examiners were unaware of each other's findings until each statistician had completed his work. Using this protocol, we examined 25 nursery-school children and found an 85-percent agreement among the four examiners, which took their individual subjective findings out of the realm of chance. Clearly, we were dealing with a craniosacral system that could be evaluated reliably using only the hands of a trained examiner. Based on this study, I considered the evaluation protocol a valid research tool.

I went on to use this protocol on 203 grade-school children. An independent statistician-psychologist correlated my results with the children's academic and behavioral performances, and with the medical/obstetrical history of each mother and child. Statistical data analysis revealed that the process was capable of identifying children suffering from dyslexia, hyperkinetic behavior, seizures and motor-control problems. It also could identify babies delivered by Caesarean section or forceps, and those who had suffered oxygen deprivation at the time of delivery.

Based on those results, we opened a clinic at MSU for brain-dysfunctional children. We also received funding to research relationships between autism and craniosacral system dysfunction. The clinic opened in late 1977, and the autistic research was carried out from September 1978 through June 1981. All of this work led to the following impressions and conclusions regarding the effects of craniosacral system dysfunctions on central nervous system (CNS) function.

Maternal Illness or Toxicity During Pregnancy

Maternal illness or toxicity during pregnancy usually results in a generalized tightness of the fetal dura mater, which makes the membrane less able to comply with the rhythmic volume changes of cerebrospinal fluid flowing within the craniosacral system. Frequently, this is a consequence of a maternal viral infection during the last six months of pregnancy. (Maternal bacterial infection is a less likely cause.) We've also seen cases in which tight membranes seemed related to the mother's respiratory difficulties, such as asthma, or to toxin problems, whether from a single experience or ongoing exposure. The toxins could be taken in as food, drink, medicines or street drugs, or inhaled as air pollutants or airborne allergies.

Usually, such a generalized tight-membrane syndrome manifests as gross dysfunction of the child's central nervous system: Sensory and motor deficits, while extremely variable, are obvious. Most often, CranioSacral Therapy greatly affects or completely corrects these problems. The treatment is particularly effective when applied during the first few weeks of an infant's life. If allowed to persist, the noncompliant-membrane syndrome may be severe enough to become a strong contributing factor to the development of autism. Other problems, such as maternal injury, emotional upset or fetal malposition in the pelvis over a prolonged period, are more likely to produce specific clinical symptoms related to craniosacral system

dysfunctions that can be discovered quite easily. Proper application of CranioSacral Therapy - the earlier the better - usually is quite effective.

Craniosacral System Dysfunctions Related to the Delivery Process

Delivery of the newborn involves passage of the child through a convoluted birth canal. I believe vaginal delivery represents a child's first CranioSacral treatment, spinal mobilization, myoneural system treatment and sensory-stimulation session. In my opinion, all of these serve to prepare the infant for the rapid transition from life inside the womb to the outside world. Nature seldom makes design errors, and I certainly don't believe the birth canal is one of them.

The bones of the vault of the fetal/newborn skull are hard places in the membrane. There is ample room between their edges for overriding and changing of the head's shape so it can pass through the birth canal. This passage represents a "manipulation" of the skull bones by the birth-canal walls; it ensures their proper mobility, so that after delivery, the bones are able to comply with the motion of the craniosacral system.

Cases of skull-bone overriding usually self-correct as the child's head expands and reshapes after exiting the birth canal. Should this not occur within minutes, a CranioSacral therapist can correct these situations easily. Left uncorrected, override problems can contribute to seizure tendencies. We often find a persistent override between the parietal and frontal bones in spastic conditions such as cerebral palsy. When corrected, these conditions usually improve or disappear entirely.

The squeezing of the child's head during delivery also may act as a circular wringer that encourages the permeation of cerebrospinal fluid into and throughout the brain tissue, down the spinal canal and throughout the subdural spaces. This squeezing motion helps the venous blood drain from the skull vault, so that as soon as the head is delivered from the birth canal, fresh arterial blood can enter the vault and further activate the circulatory systems of the brain. It also offers the first scalp massage.

Most infants are delivered face-down, with the mother in the supine position and the child's occiput coming out under her pubic bones. Many well-meaning delivery attendants feel a need to speed up the process. Obstetrical lore contends that when the head comes out, we must hasten to complete the delivery, since the birth canal may be squeezing the umbilical cord against the infant's body. This cord compression is thought to potentially occlude

blood flow to the infant, which may result in brain damage due to hypoxia. In other words, the attendant's good intention translates into grasping the child's head and pulling; in doing so, the head can be hyperextended, which may create a "jamming" of the skull's occipital bone forward into the V-shaped receiving-joint surfaces, located on the superior surface of the 1st cervical vertebra (atlas).

When there is danger of injury, the soft tissues of the body contract or splint. If splinting occurs with the child's occiput jammed in this forward position, it will stay that way. In that case, the contracture of soft tissues at the juncture of the skull base and the top of the neck may compromise areas of the jugular foramina on the right side, the left side or both. If the jamming is more severe, it may compromise the foramen magnum.

The jugular foramina allow several important structures to pass out of the skull, including the jugular veins that drain most of the venous blood from the head into the neck. The foramina also afford passage to the IXth, Xth and XIth cranial nerves. The glossopharyngeal (IXth) and vagus (Xth) cranial nerves work jointly to help control swallowing, airway function, and the larynx, pharynx and esophagus. The glossopharyngeal nerve also works along with the hypoglossal (XIIth) cranial nerve to control the tongue and oropharynx. Additionally, the vagus nerve helps maintain a normal heart rate and is involved in stomach and bowel function. When dysfunctional, the vagus nerve can contribute to a sense of dizziness.

The hypoglossal (XIIth) nerve exits from the skull through the hypoglossal canals, located beside and beneath the joint surfaces of the occiput as it articulates with the atlas. Consequently, jamming can easily result in tongue control problems, such as tongue thrust. The spinal accessory (XIth) cranial nerve innervates some of the major muscles of the neck; when dysfunctional, it may create spasm of the sternocleidomastoideus and/or the portion of the trapezius muscle in the neck. This may continue after birth due to ongoing compression/irritation of the nerve as it exits the jugular foramen, which may then produce a torticollis.

We call this type of craniosacral system dysfunction "occipital base compression." If both sides of the occipital base are severely compressed, it's common to see colic; food regurgitation; esophageal reflux; respiratory difficulties; rapid heart rate; and compromised bowel function (constipation or diarrhea). There also may be spasm of the neck muscles. If left uncorrected, the situation may result in hyperactive child syndrome and attention deficit disorder. When the occipital base jamming is less severe, or only on the right or left side, any combination of these symptoms may be present.

Fortunately, occipital base compression can usually be corrected by a skilled CranioSacral therapist in a matter of minutes, if the child is treated during the first weeks of life. Treatment is most effective when performed during the first few days of life - or even in the delivery room, after the umbilical cord has been cut and the child has been suctioned and wiped clean. The sooner the child is seen, the less treatment normally is required.

If neck-muscle spasm is allowed to persist, it can cause temporal bone dysfunction in the craniosacral system. This has been shown to be a strong contributing factor in children with dyslexia and other reading problems. Interestingly, correcting these dysfunctions in school-age children often allows them to catch up to normal reading levels in a matter of weeks, unless psychological and/or emotional scars are in the way. If they are, psychoemotional therapeutic modalities must be incorporated into the treatment program.

Forceps and Vacuum Extraction

Once an infant's head is delivered and free from the pressure of the birth canal, we can focus on what occurs as the rest of the child's body is delivered. The trip through the birth canal involves a brilliantly orchestrated series of twists and turns for the child's torso and pelvis, which essentially mobilizes each joint in the spine and pelvis and stretches all the related musculature and soft tissue. Nature intended this to be a process that relies more on pushing from uterine contraction than pulling from externally applied forces.

When those assisting the delivery process apply excessive traction to the child's head to "assist" the body through the birth canal, significant strains of muscles, ligaments, fasciae and joints may occur. The body's response to a strain is tissue contracture. There also may be small amounts of blood extravasated, which act as irritating stimuli that may later induce fibrotic changes in soft tissues. These phenomena may occur within the craniosacral system and in the paraspinal and pelvic tissues.

Wherever strains and extravasations occur, they can interfere directly or indirectly with proper functioning of the craniosacral system. Strains should be released; contracted tissues should be relaxed; fluid exchanges in tissues where extravasated blood has spilled should be encouraged; and all joints should be mobilized as soon as possible after delivery.

If these issues are not addressed, they can cause a wide variety of craniosacral system problems, spinal problems (that I believe can manifest as scoliosis in later life) and

pelvic imbalances (that could easily interfere with the proper functioning of pelvic organs). It is easy to correct the majority of these problems immediately following delivery, and it is essentially risk-free when the work is done by a competent CranioSacral therapist. It requires only minutes to carry out the evaluation and treatment early in the child's life; it seems a shame not to do so as soon as possible.

Other causes of craniosacral system dysfunction that relate to delivery include abnormal presentations, such as either the face, arm, leg and breech. Each of these presents abnormal stresses, strains and pressures upon the child's body, which may manifest as unique craniosacral system problems. The system must be evaluated to determine the dysfunction, and the natural self-corrective mechanisms must be supported to attain full function and efficient craniosacral system function.

Forceps and vacuum-assisted deliveries often impose the excessive "pulling" forces that induce strain patterns in body tissues. Forceps, which are applied asymmetrically, often result in a misshapen head that is beyond the child's self-corrective abilities. These problems can be resolved by a skilled CranioSacral therapist as soon as possible after delivery.

My own experience with children delivered by vacuum extraction has firmly molded my opinion in opposition to this practice. The vacuum or suction on the child's head creates a negative force inside the head that can result in the suction of abnormal quantities of intracranial fluids into the top of the skull vault. This "edema" may result in long-lasting craniosacral system dysfunctions relating to loss of flexibility of the meningeal membranes, and probably some fibrous changes in tissues that are meant to be pliable and compliant.

The "vacuum-extracted" children we have worked on at our clinic require a great deal of CranioSacral Therapy (CST), even when therapy begins during the first year of life. The problems are correctable, but if another choice of delivery is available, it would be better to avoid the risk imposed by applying such strong vacuum forces to the top of the delicate fetal head.

Cesarean Section

I was surprised during my early work to see the strong positive correlation between the presence of significant craniosacral system dysfunctions and delivery by Cesarean section. It was quite puzzling, until I remembered occasions during C-sections when I saw amniotic fluid spout up into the air a few inches as the incision was made into the

uterus. This suggests the sudden reduction of pressure inside the uterus where the child has been living for the past nine months. Fetal physiology could be severely challenged by this sudden change in pressure. It seems comparable to a scuba diver surfacing too rapidly and suffering the "bends."

From a craniosacral point of view, this sudden reduction in external pressure might result in a rapid expansion of the fetal head. This, in turn, could easily result in intracranial membranous strain; micro tears in the meningeal membranes; and tiny capillary bleeds. As these extravasated red blood cells degrade, they undergo biochemical changes in which they become bile salts, which are irritants to brain tissue and membranes. This tissue irritation results in fibrous change in the form of gliosis in the brain loss of compliance in membranes; and small but significant intermembranous adhesions. These conditions may cause craniosacral system dysfunctions that could require extensive therapy.

Postpartum Events That May Relate to Craniosacral System Dysfunction

The most common postpartum event we have seen relating causally to dysfunctions of the craniosacral system is the suctioning of the mouth and nose. The newborn's hard and soft palate, and nasal structures are extremely delicate at the time of birth. The suction bulb or tube easily insults the soft tissues, causing them to contract. When it persists, this contracture compromises hard-palate and nasal-bone mobility that, in turn, causes craniosacral system dysfunction.

Hard palate problems usually result in sphenoid and/or temporal-bone dysfunction. These problems can easily lead to eye-motor system dysfunction and severe irritability of the child. Other symptoms are often sensory and very difficult to evaluate since a newborn cannot provide verbal reports of sensation. Therefore, it is up to the astute CranioSacral therapist to locate the system dysfunctions without much feedback besides crying and other signs of discomfort. Occasionally, the suctioning is done rather roughly, and actual bony dysfunction of the hard palate, zygomata and/or mandible can occur. These problems are more flagrant, and therefore more easily discovered during the evaluative process. What is discovered must then be addressed.

Other postpartum craniosacral problems are usually seen as they relate to injuries, like dropping the newborn. These are all individual and unique problems for which each child must be evaluated. The CranioSacral therapist must address what he or she finds.

Craniosacral System Evaluation and Protocol

I have spoken a lot about CST and its uses in the delivery room and during the early stages of the newborn child's life. In closing, I would like to describe the initial evaluation and protocol as I do it in the delivery room or the nursery.

First, I simply hold the skull vault of the child's head in one hand and evaluate for tightness and/or asymmetry over the whole skull-vault surface. Then I insert one finger of the other hand into the child's mouth and try to induce the sucking response. If it occurs, I enhance it in synchrony with the child's own rhythm. This enhancement is done in the form of gentle finger pressure on the roof of the mouth with each suck. If no sucking occurs, I will gently and rhythmically press on the roof of the mouth. As this rhythmical hard-palate pressure is continued, I can feel the skull vault expanding slowly. In this way, and by gently sculpting with the skull-vault hand, skull asymmetries and overriding can usually be corrected.

Next, I release the occipital base by laying one or two fingers under the back of the neck. These fingers support the upper cervical vertebrae in an anterior position while, with the other hand, I very gently urge the occiput to "back off" of the atlas. Once this is accomplished - and it seldom takes a full minute - I keep my occiput hand where it is. I move the other hand down to the pelvis and gently traction between the occiput and pelvis. This technique is used to release strains induced by "pulling" the newborn through the birth canal.

Frequently, I feel a sort of unraveling process along the spine as I do this technique. I believe many cases of scoliosis are headed off right here, just as many cases of hyperactivity and learning disabilities are avoided by the occipital-base release and the skull-vault molding.

I move both hands to the pelvis and, holding one half of the pelvis in each hand, I release and balance this region. I release the shoulders and rib cage by holding one half of the upper torso in each hand and releasing and balancing, just as I did with the pelvis. This total evaluation and protocol should not take more than five to 10 minutes. If specific problem areas do not resolve, the child should be seen again for re-evaluation and therapy within 24 hours.

This rather innocuous session with a newborn may head off problems later in life. It is a worthwhile, minimal-risk investment in a child's future.

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