11: Birth Molding and Obstetric Trauma - Skull Joint Pathology and The Need For Treatment

. Birth molding is often the most serious head injury that an individual will ever suffer. Birth molding is usually the first injury that an individual will suffer (see Figure 6). Birth attendants usually say these severe subluxations and dislocations of the skull are benign and self-correcting, and no treatment is applied to correct the neonate's traumatized skull - even in severe cases (Ehrenfest (6), Baxter (7), Swartz (8), DeSouza et al. (9), Kriewall et al. (10), Sorbe & Dalhgren (11)). I suggest, however, that treatment of this widely recognized trauma is both logical and prudent.

A few authors have suggested treating birth molding. Swartz (8), in his monumental review of birth injury, including a bibliography with more than 2,000 references, issues an eloquent plea for attention to prevention and treatment of this earliest trauma.

Papers by Clarren et al.(12) and Clarren (13) report the use of a "helmet therapy" to reverse birth molding of the cranial portion of the skull. In this treatment, the skull is forced to conform to a helmet, which the child may wear for several years.

A 1986 editorial in Lancet (14) also advocated the need for development of strategies for treatment of these widespread but unattended injuries to our children.

The Birth Process

We are, with the exception of cesarean birth, born through the pelvises of our mothers. The pelvis is the boney obstacle that the mother presents to the birth. The fetus/neonate presents its head as the major boney obstacle to the birth. It is commonly accepted that impact between these boney structures damages both mother and child. Cephalo-pelvic disproportion severe enough to cause the fetal head to jam in the birth canal necessitates delivery by cesarean birth, with forceps or suction devices, with pitocin induced contractions, and/or by other interventions. Even with intervention, some infant mortality and morbidity can still be attributed to head trauma during delivery.

Hydrostatic pressure differentials between the intrauterine and extrauterine spaces also contribute to birth molding (Swartz (8)).

Children who survive the birth process are not spared head trauma. The . traumatic process that causes death in some cases, when less severe and not life-threatening is considered benign, non-pathological birth molding. This is a serious oversight.

FIGURE 8
from Gregory (18)

"A SPECIAL ADJUSTMENT THAT WILL OFTEN RELIEVE A'HEADACHE"
1910

From the 1950s until his death in 1988, J. R. Stober taught the nasal balloon technique at the Western States Chiropractic College and the National College of Naturopathic Medicine, both in Portland, Oregon. Video tapes and lecture notes of his classes are housed in the Western States Chiropractic College Library. The nasal balloon technique has been variously referred to as: bilateral nasal specific technique, endonasal technique, balloon technique, and Stober technique.

How the Balloon Device Works

The nasal balloon device is very simple. It is constructed from 1)the bulb and valve assembly of a sphygmomanometer and 2)latex finger cots (single finger exam sheaths). Thread, string or a rubber band is used to attach the finger cot to the nipple of the sphygmomanometer valve (see Figure 10).

A flat toothpick is used as a disposable applicator to position the finger cot of the nasal balloon device in one of the six nasal conchae (passageways). The applicator is manually shaped to have a curved end to facilitate entrance into the lower and upper nasal passageways. The applicator is used flat to enter the middle nasal passageway (see Figure 11). The tip of the applicator is always broken off to blunt it and prevent risk to the patients nasal mucosa.

Once the device has been constructed, and with the sphygmomanometer valve open, the finger cot on the nasal balloon device is lubricated with a water soluble lubricant (K-Y type).

The applicator is then used to snag the end of the finger cot, which is gently inserted into the nasal passage. Care must be taken to avoid pressing the applicator against the sensitive and richly vascularized nasal mucous membranes (see Figure 12). Once the finger cot is positioned, the applicator is removed from the nose.

The patient is instructed to inhale and hold his breath. This is to ensure that any mucous or other debris dislodged during the treatment is not aspirated.

The nostril not being treated is occluded by exerting light pressure on its lateral aspect. This acts to stabilize the vomer and other midline structures. The sphygmomanometer bulb is then gently squeezed to "prime" the finger cot balloon and cause it to fill the nasal passageway where it has been positioned. The sphygmomanometer bulb is then squeezed firmly. With practice, the priming and subsequent firm squeeze can be accomplished in one motion.

The operator feels for the initial expansion of the finger cot and applies successive squeezes to the sphygmomanometer bulb, if needed, until a release of pressure is sensed as the balloon starts passing into the naso-oro-pharynx, or a firm resistance to further expansion of the cot is felt . The valve of the sphygmomanometer is then quickly opened and the finger cot is removed from the nasal passageway. Patient tolerance must always be appraised when determining when to release the balloon's pressure (see Figures 13 and 14).

The procedure may then be repeated in successive nasal passageways until all six passageways are treated. Common practice is to treat the lower passages bilaterally, followed by bilateral treatment of the middle passageways

In 1929, the first description of the function and dysfunction in the skull joints was described almost simultaneously by two independent researchers. Nephi Cottam (19), a chiropractor, revealed his treatment in January, followed by William Sutherland (20), an osteopath, in September. Cottam described a system of treatment based upon high-velocity/low-amplitude thrusts. In contrast, Sutherland described a system of treatment based on low-velocity/low-amplitude pressures, tractions, and torques.

Other chiropractic authors from who have written on aspects of skull joint treatment include Sipes (21), Janse et al. (22), Cottam (23,24,25), Kotheimer (26), Frisbie (27), DeJarnette (28), and Mladenoff (29).

Many osteopathic authors elaborated on Sutherland's theories of skull joint dysfunction and his treatment techniques, notably Lippencott and Lippencott (30), Magoun (31), Brooks (32), Upledger and Vredevoogd (5), Raymond (33), and White (34).

Authors from other diverse disciplines including dentistry who have written on aspects of skull joint treatment include Denton (35), Chaitow (36), Gehin (37), and Liban (38).

Many of these authors are self-published. Many of the writings lack bibliographies. They likely represent rediscoveries without knowledge of prior investigators.

Development of the Nasal Balloon

The nasal balloon is the first effective method for delivering a controlled adjustive force from the inside to the outside of the skull.

The earliest intranasal treatments of skull joint dysfunction were known as "finger techniques". In 1942, Lake (39), a chiropractor and naturopath, described a finger technique where the practitioner works his little finger into the patient's nostrils and nasal passageways.

Janse et al. (22) (see Figure 9) and Finnel (40) also describe intranasal finger techniques.

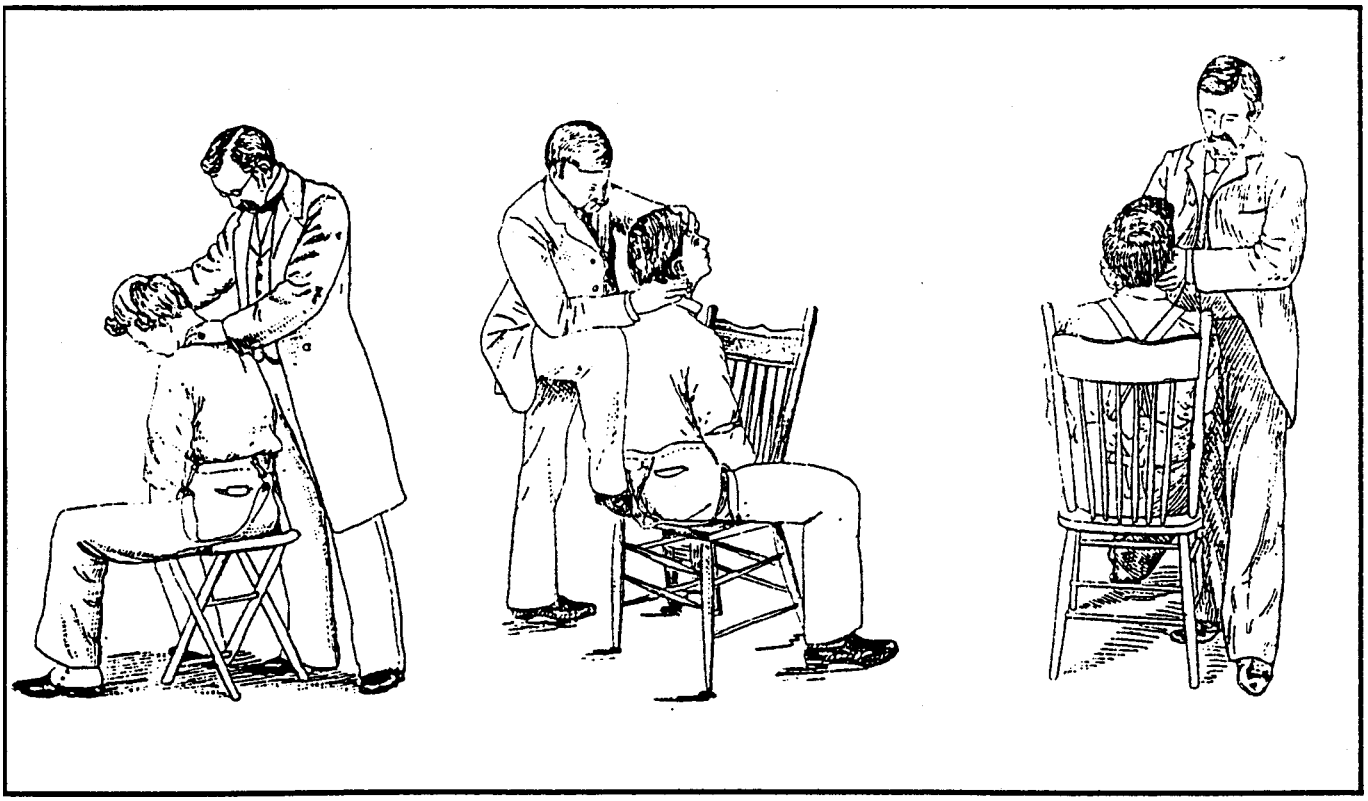
Finger technique is also used in the system of manual therapy popularly known as rolfing.

In 1947, Janse et al.(22) published the first known description of a pressurized nasal balloon. The balloon was used to "open the nasal chambers" and "produce a widening and distention of all the sinus openings into the meatus."

A short time later, in 1951 and 1954, Finnel (40), an optometrist and chiropractor, described the operation of a nasal balloon device and coined the term "nasal specific" to describe the technique. He wrote that his new term "will sound much better than if you speak of the 'balloon technique' ." He - recommended using the nasal specific technique for "lymph stasis," "deviation of the septum," "nasal congestion," "ethmoidal irritation causing asthma," and "frontal and maxillary sinusitis."

In 1981, Failor (41), a chiropractor and naturopath, again described a nasal balloon device.

FIGURE 7
from Barber (17)



MANUAL HEADACHE TREATMENT
1898

III: Skull Joint Treatment Using a Nasal Balloon Device

The study of the treatment of skull joint pathology is commonly referred to as "craniopathy." This is a misnomer since the facial bones are also included in this discipline, whereas the cranium describes the bones that enclose the brain and other central nervous system structures. The division into cranial and facial bones is also imprecise because some bones (e.g. the sphenoid, frontal, ethmoid, and temporal bones) link the face and cranium and, therefore, properly belong to both divisions. This author suggests "cephaloarticulopathy," from the Latin for "head-joint-dysfunction," is a more inclusive and descriptive term for this discipline.

The goal of cephaloarticulopathic treatment is the normalization of restricted ranges of motion within the 67 skull joints (see Table 1 and Figures 14). As a consequence, this often normalizes the functions of soft tissue structures within the skull when the underlying dysfunction of these structures is due to pressure, restricted blood, lymph or CSF flow, or nerve irritation due directly or indirectly to the restricted joint movement.

Early Skull Dysfunction Treatments

The history of the diagnosis and treatment of skull joint dysfunction starts with Hippocrates (16). In On Injuries of the Head, written approximately 400 B.C., he describes the skull and its joints and the effects of injuries. He writes, "For the bone is liable to be broken and *slackened (at the suture),* owing to the natural weakness of the bone there, and to its porosity, and from the suture being *readily ruptured and slackened:* that the other bones which surround the suture remain unbroken, because they are *stronger than the suture."* (emphasis added) Hippocractes recommended trephanning for skull treatment.

Other early attempts at skull treatment include the efforts of obstetricians in the 1600s to reposition the bones of newborns' heads. These practitioners used corkscrews and other anchoring devices to attempt to pull the displaced bones into symmetry. The results were usually ineffective, and worse, often proved fatal.(Swartz (8))

In the mid-1890s, Barber (17), an osteopath, published the earliest known pictures and text demonstrating manual manipulations of the skull for the treatment of "headaches and neuralgias" (see Figure 7).

In 1910, Gregory (18), a medical doctor associated with chiropractic founder D. D. Palmer, published a single captioned photograph showing a woman delivering what appears to be a thrusting manipulation in an anteriorposterior, inferior-superior line of drive to the glabellar region of a supine man. There was no accompanying text, but the caption described, "a special adjustment that will often relieve a headache" (see Figure 8).

b) If this eventual deformity affects the temporal bone, the result may be chronic middle ear infections, vestibular dysfunction (poor coordination and balance), TMJ dysfunction, and hearing losses.

c) If the eventual deformities affect the nasal/sinus complexes, the result may be deviated septum, mouth breathing, chronic sinus infection, and olfactory disorders.

~d) If the eventual deformity affects the cranial vault, the result may be central nervous system dysfunctions (e.g. mental retardation, cerebral palsy, coordination problems, perceptual problems, memory problems, and emotional problems).

e) If the eventual deformity affects the sphenoid bone, the housing for the pituitary gland, the result may be neuro-endocrine dysfunctions.

f) If the eventual deformity affects any of the many openings in the skull for arteries, veins, lymphatics, cerebral spinal fluid, and nerves (cranial nerves and spinal cord), the result may be as diverse as hydrocephalus, blindness, and deafness.

g) If the eventual deformity affects the maxilla or mandible, the result may be malocclusion and dental orthodontic deformities.

h) If the eventual deformity affects the articulations of the skull, the result may be chronic or recurrent joint pain of the skull (headache/facial pain o r"skullache").

The above list is extensive, but by no means comprehensive. All functions of the structures within the skull are susceptible to dysfunction once the skeletal housing is damaged. This is not disputed when the skull trauma occurs after birth, but it is generally considered benign when the damage occurs at birth, except in life threatening cases, and even then, little or no intervention currently takes place.

Treatment is Needed

Why **we** are so callous towards this early trauma? I believe that because we do not see our children before birth, we interpret the physical condition of the molded skull as normal. If parents and birth attendants were able to compare the baby before and after labor, this author believes they would be extremely concerned.

O'Doherty's(15) comprehensive color photographic atlas of birth trauma often surprises those who are unfamiliar with the extent of the injury routinely suffered by newborns. Even she labels pictures of significantly molded newborns as normal and suffering "trivial complaints".

This prejudiced view of the so-called normal newborn is tragic. We send our children out into life injured by birth trauma, but untreated, and with the seeds of disability already planted. Some of these disabilities will manifest themselves early in life, others will steadily develop.

After birth, the mother who underwent expansive trauma in the form of abrasions and tearing of her birth canal and perineum, as well as stretching of the pelvic joints, is treated by stitching, bracing, adjustment, manipulation, and/or mobilization.

Meanwhile, the neonate, who shows the compressive trauma of the birth in the form of its distorted (sub luxated/dislocated) face and cranium, bruising, caput seccedoneum, cephalohematoma, and abrasions, is routinely left untreated. This injured child is cleaned and swaddled and dismissed as normal and suffering only trivial complaints.

Conventional wisdom at this time is that birth molding spontaneously resolves over the first few days of life without any residua. Often this conventional opinion is expressed by telling the parents that "most" of the birth molding will resolve during the first few days following delivery. This, though, begs the question: "What about that portion that does not resolve in the first few days, and what consequences will it have?"

While it is true that the pull of the meningeal membranes and the internal pressure of the cerebral spinal fluid act to partially reverse the birth molding, the infant skull, formed by 73 ossification centers (many of which are still unfused at birth), is much too complicated and delicate to spontaneously "pop" back into perfect alignment after the significant insult of delivery. Residual displacements (subluxations) of the skull's bones and pressures upon the soft tissues within then cause dysfunctions, many of which have been previously considered of unknown etiology.

The structure-function relationship is a well founded axiom within the health sciences. With the face and cranium housing amongst other structures the central nervous system, the cranial nerves, the neuro-endocrine system, the special senses, the proximal respiratory and gustatory functions (breathing, swallowing, chewing), as well as the many cranial articulations and their associated nerve fibers, it should be evident that it is vital that the skull's jointed relationships be intact for the skull to function normally.

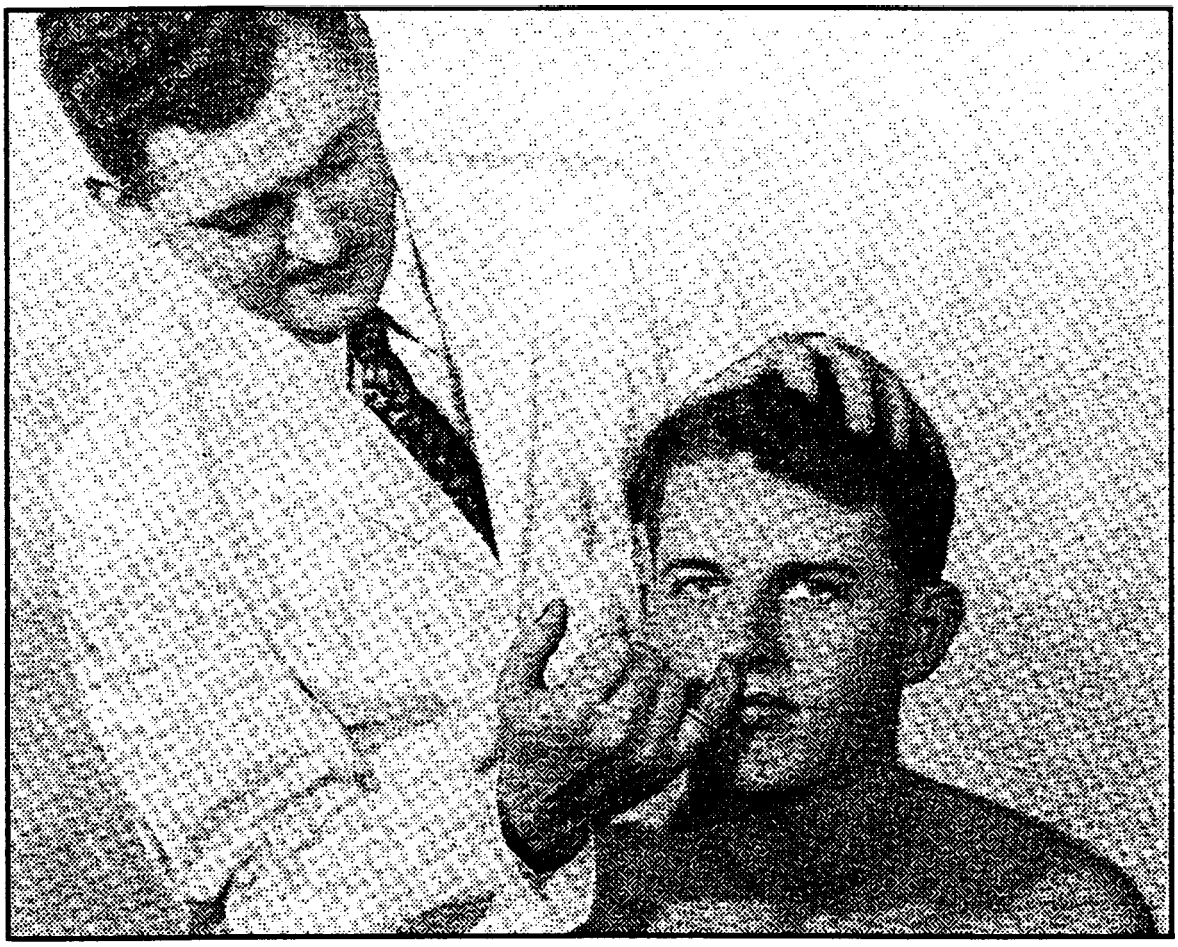
It is generally accepted without question that facial and cranial trauma after birth leads to dysfunction of the housed structures. It is not generally accepted that the same trauma at birth is just as damaging. This is a severe oversight!

Results of Birth Trauma

When the infant's face and skull are traumatized at birth and the attendant boney displacements (subluxations) left uncorrected, these displacements will later manifest themselves as distortions in the shapes of the bones, due to the action of Wolfe's law, which simply stated, says that bones remodel (change shape) in response to the physical forces upon them. Several possibilities exist:

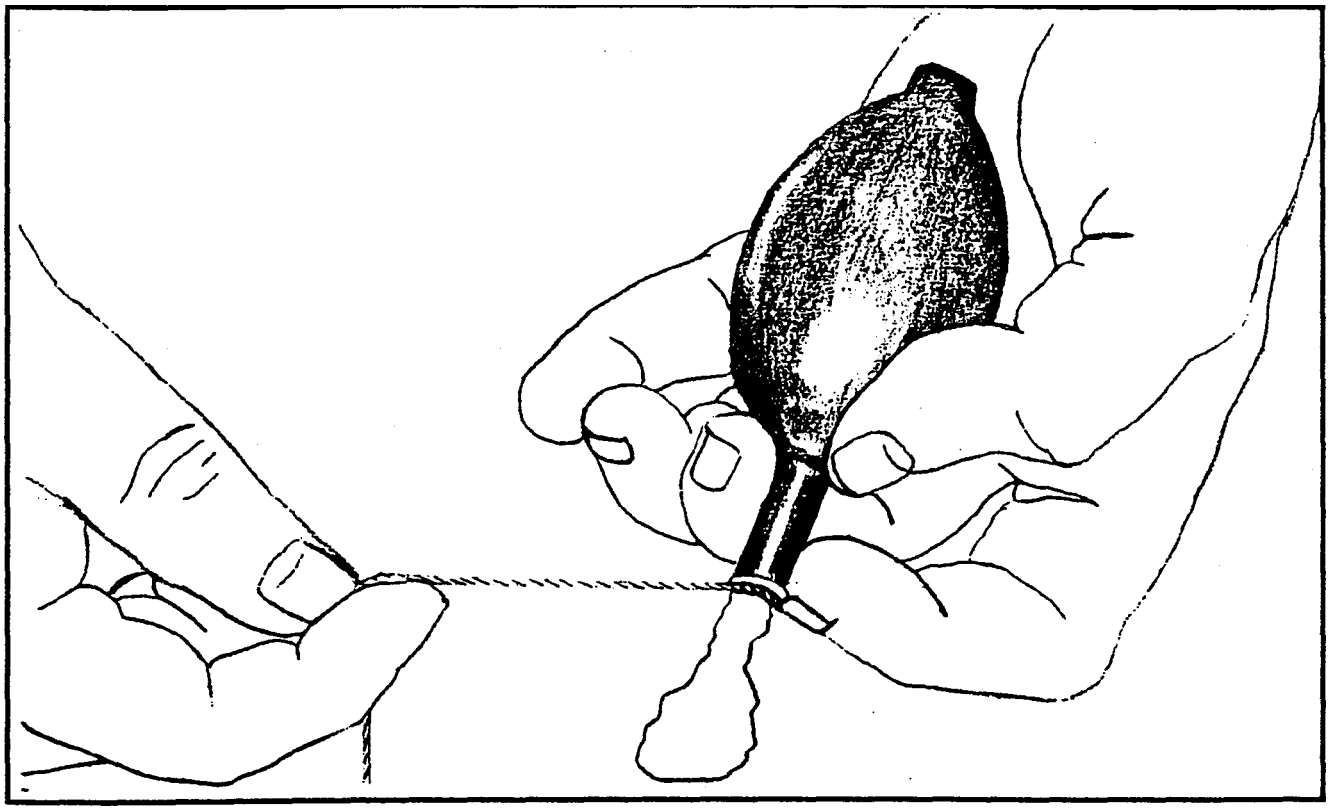
a) If this eventual deformity affects the eye sockets, the result may be refractive errors of vision.

FIGURE 9
from Janse, Houser and Wells (22)



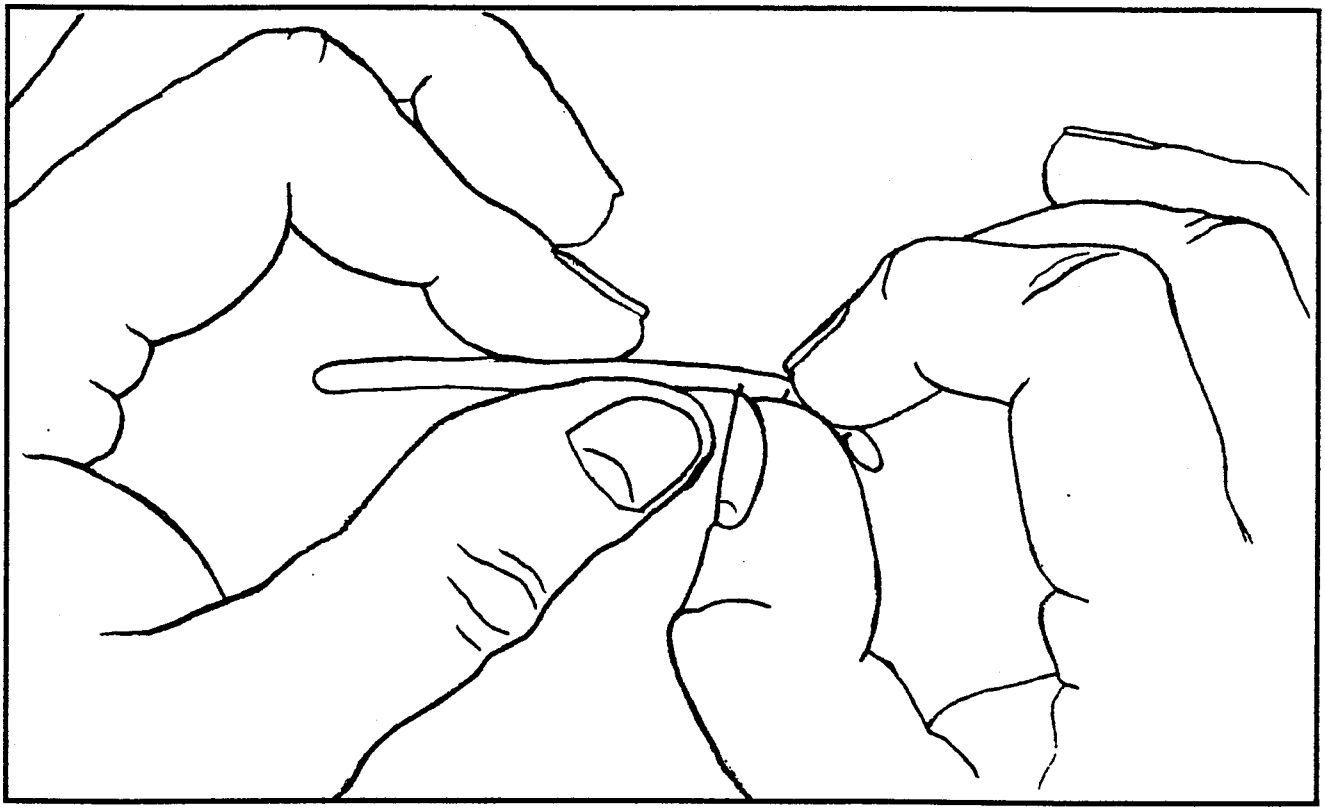
FINGER TECHNIQUE
1947

FIGURE 10
illustrated by Susan Berman



CONSTRUCTING THE NASAL BALLOON DEVICE

FIGURE 13
illustrated by Susan Berman



CONSTRUCTING THE NASAL BALLOON APPLICATOR

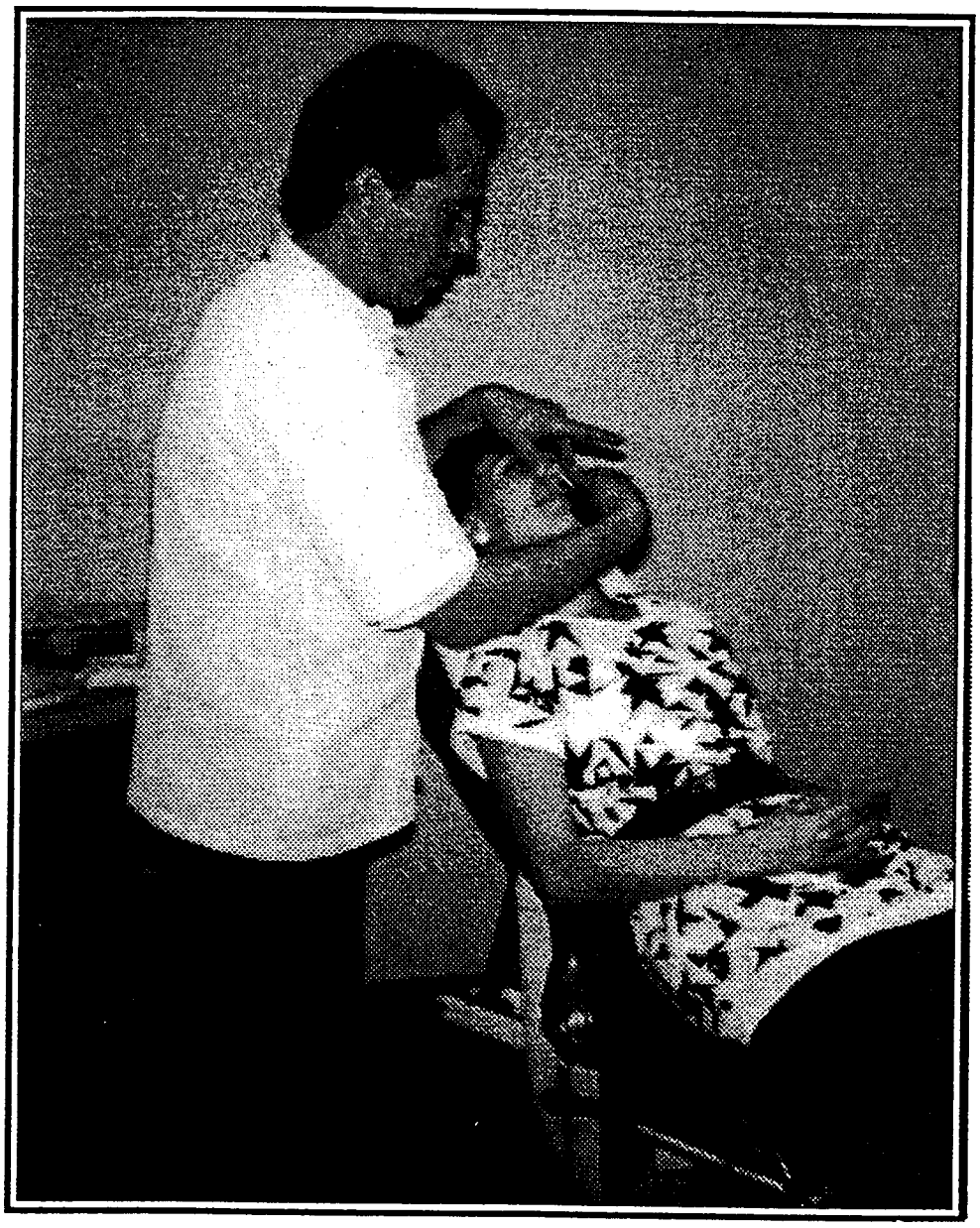
FIGURE 13
illustrated by Susan Berman

POSITIONING OF THE NASAL BALLOON IN THE NASAL PASSAGEWAYS

FIGURE 13
illustrated by Susan Berman

INFLATING THE NASAL BALLOON DEVICE AND PREPARATION
FOR SUBSEQUENT RELEASE OF PRESSURE BY THUMB SCREW

FIGURE 14



DOCTOR -PATIENT POSITIONING AND STABILIZATION OF THE VOMER

and, finally, bilateral treatment of the upper passageways. However, the order of treatment may be varied as clinical situations indicate. Often, the six passages are treated a second time.

J. R. Stober, advocated repeating the treatment of the inferior passageways at the end of each session to ensure that the inferior turbinates are in a-raised position following treatment.

Due to the tendency of the nasal balloon to travel posteriorly into the naso-oro-pharynx, where it bulges and loses pressure, increased lateral pressure cannot be obtained by additional pumps to the sphygmomanometer bulb. Therefore, if additional lateral pressure is desired, a third, fourth, or occasionally a fifth finger cot is "nested" over the primary cot. This will create more lateral pressure within the balloon prior to its posterior movement.

With application of pressure to the nasal balloon, crackling or popping sounds are heard emanating from the skull. The sounds are similar to those produced when high velocity/low amplitude adjustments, manipulations, or mobilizations are applied at joints below the skull. These sounds are not heard with non-balloon techniques. It is therefore felt that the nasal balloon technique represents a major advance in the treatment of skull joint disorders. In a typical patient, subsequent treatments elicit less and less crackling or popping sounds, indicating progressive and lasting changes in the function of the skull's joints. Often, after several nasal balloon treatments, the crackling and popping sounds cease completely.

New patients typically describe the initial treatment as mildly unpleasant to somewhat painful. Subsequent treatments tend to be less uncomfortable. After completion of the treatment, the patient typically reports a feeling of exhilaration. Increased nasal and lacrimal discharge is typical and may continue for several hours.

Contraindications. In a minority of patients, surface bleeding from the nasal mucosa is caused by the nasal balloon treatment. The bleeding is painless and spontaneously resolves. Lateral pressure on the nares may be applied as indicated. As a precaution, the patient's history should include questions about bleeding disorders or anticoagulant therapy.

Side Effects Patients commonly report mild side effects of nasal balloon treatment. These include sensations of mild tenderness over the maxillaryzygomatic or intermaxillary articulations, tenderness of the nasal passage regions, a tingling feeling in the central maxillary incisors, and mild soreness of the gums. In some cases, these mild symptoms persist, though diminishing, for up to several days. Infrequently, a patient experiences a headache after treatment.

Complications. With a newborn or young child, there is a risk of respiratory obstruction accompanying nasal balloon treatment. One case is known where a loose finger cot was inhaled during treatment. Failure of the practitioner to quickly retrieve the finger cot proved fatal. In another case, a child

treated in the supine position inhaled mucous causing respiratory obstruction, but was revived by digital clearing of the airway.

Early Application of the Nasal Balloon Technique

Many practitioners of the over 40 year old nasal balloon technique indicate that early application results in improvement in the health of the growing child. The technique is relatively easy to apply, may be applied anytime after birth, and is functionally based in that it presses out upon a skull which has been injured by compression.

Reported improvements include improved symmetry and beauty of the head and face, less need for orthodontic interventions, less disorders of visual refraction, less earaches and ear infections, less mouth breathing, improved balance and coordination, fewer spinal problems, improved mental abilities, and other positive psychological and physiological changes. These improvements appear to be long lasting and affect the long-term health of the individual.

Hard evidence of these improvements is not available. Early correction of natal birth trauma to the skull, though, is vital in attempting to ensure the future health of the vital functions of the head. All promising technical strategies for treatment deserve investigation at this early stage in our understanding of these injuries.

Some Conditions For Which The Nasal Balloon May Be Effective

In the adult and growing child, many complaints which have skull or skull housed structures involved appear to respond to the nasal balloon technique. These include most reliably (in this author's experience) headache (skullache), temporomandibular joint dysfunction (TMJ), and chronic nasal passage and sinus, congestions, blockages and infections. Often the response is dramatic and long lasting.

Conclusion

I have presented many theories in this paper. The evidence to support these theories is clinical and anecdotal at this time. These theories cry out for controlled investigation. The potential exists for widespread improvement of the human condition if we pay increased attention to problems of the skull. The relatively low technology needed to correct many of these problems, as seen with the nasal balloon device, gives hope for potentially widespread treatment success in a relatively short time.

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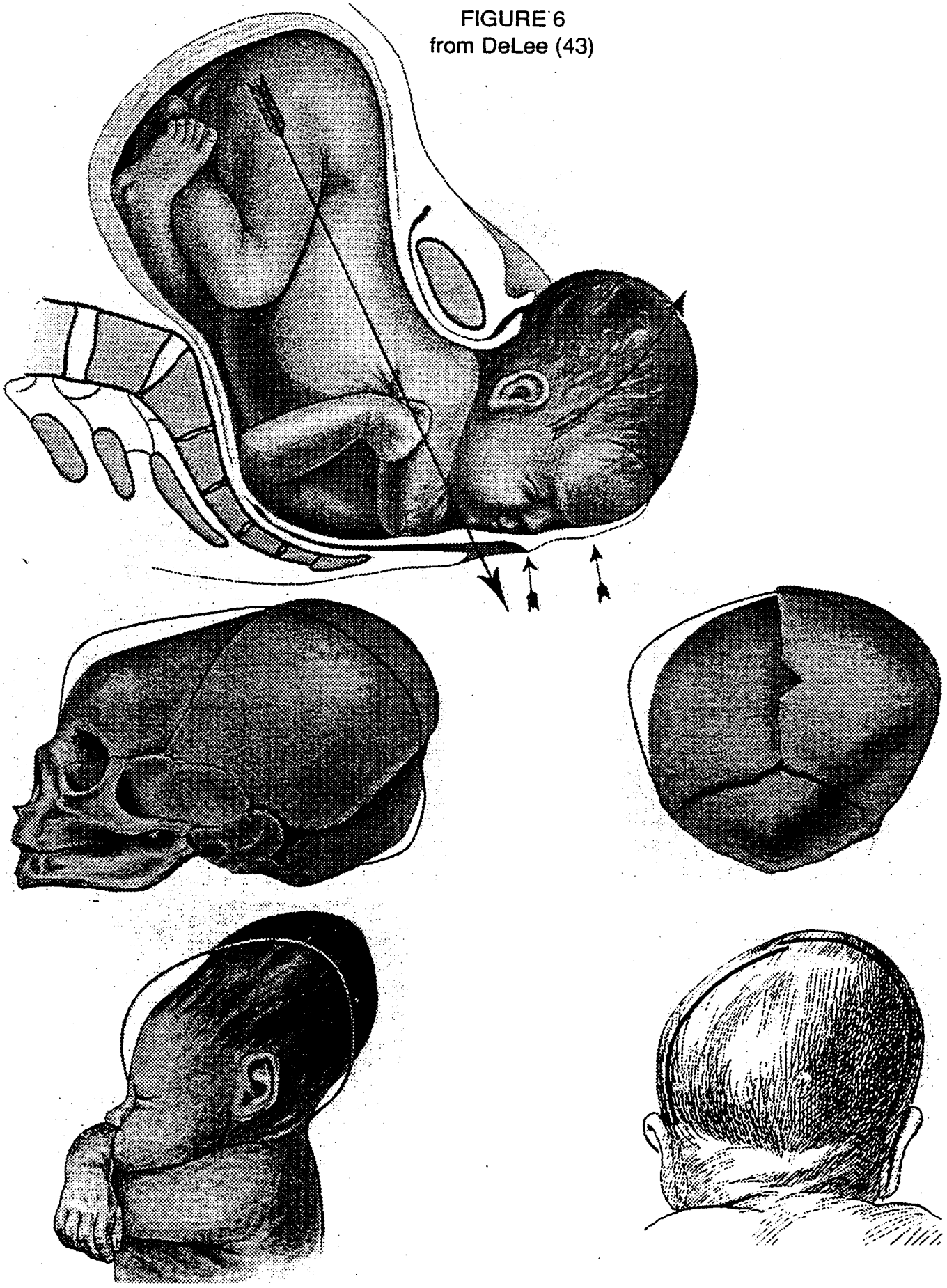
FIGURE 6
from DeLee (43)



CRANIAL BIRTH TRAUMA (BIRTH MOLDING)