Chapter 6: Cranial Osteopathy

References:

- www.osteopathyontario.org/about-osteopathy/history-of-osteopathy/
- www.biotensegrity.com
- www.researchgate.net/publication/236146619_Tensegrity-The_New_Biomechanics
- Cranial Base Affecting Facial Development
- Why do Osteopathic Physicians Need to Know About ALF?

Instructional Video:

- Flexion - Extension
Cranial Base Affecting Facial Development

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**MEDICINE AS AN ART RATHER THAN A SCIENCE**

Medicine - with orthodontics as a special branch - in its nature is not a science but an art that uses a complex scientific system.

No two patients are the same and factors well beyond what can be captured in double-blind studies greatly affect the outcome of treatment, one of the most important factors possibly being the personal encounter between patient and his or her practitioner.

If we as dentists opt to ignore the significance of ‘subtle energy fields’ - as have been proven in quantum physics - our understanding of treatment response and health will always be lacking.

Hans Brugeman pointed out: ‘The ratio of photons (particles of energy) to particles of matter is a constant of nature at 9.746 x 10⁸ to 1. This ratio means that a science which solely looks at matter is only covering one-billionth of all the phenomena in the cosmos.’

**DIFFERENT APPROACHES TO ORTHODONTICS**

Since the beginnings of medicine a lot of different treatment philosophies have been taught resulting in a wide variety of treatment approaches. Most of them can be classified either as a ‘Method of Substitution’ or a ‘Method of Stimulation’.

A prime example for substitution is human engineering: the ‘fix-it’ mentality prevails. In orthodontics it means that an external observer collects data that can be measured and repeatedly verified, deduces a treatment plan and executes it on the patient using whatever means required, including surgery.

Opposed to that is ‘stimulation’ which triggers the patient’s self-regulatory mechanisms, which are self-healing in nature. Osteopathic concepts and homeopathy emphasize this principle.

The human being, consisting of so much more than ‘measurable data’, is an ‘open system’ with subtle-energy interactions going on not only within but also with the world around us. Mental attitude and emotions have as much to do with health and treatment response as physical parameters do (see also Bruce H. Lipton The Biology of Belief).

The drawback of working with ‘stimulation’ is that this approach makes treatment much more complex and less predictable. The gain is that we see changes in our patients that go far beyond that which meets the eye.

An example for ‘stimulation’ in orthodontics is the use of Advanced Lightwire Functionals (ALF) as introduced by Dr. Darick Nordstrom of Hollister, CA.

**ALF APPLIANCE**

The ALF appliance was inspired by Crozat and Keront Universal Lightwire appliances. With an Elgiloy yellow body wire of 0.025” or 0.028” thickness (about 0.6 to 0.7 mm) the ALF has a high degree of flexibility. It uses the teeth as handles to affect the alignment of cranial bones and change craniosacral motion … for better or for worse - it all depends on the dentist’s skills when making adjustments.

Though the various ALF designs look simple it takes time and dedication to master the art of ’tweaking’ the appliance just right to achieve the desired outcome, for example making an adjustment using pliers as opposed to finger pressure will result in different effects. Kinesiology and/or cranial palpation are essential tools to verify whether adequate forces are being delivered.
ALF AND CRANIAL STRAINS

A number of excellent articles about cranial strains and malocclusion have been written by Gavin A. James and Dennis Strokon (published in various IJO journals). The authors explain basic strain patterns and the use of ALF appliances to correct them.

Most of our patients do not fall clearly into just one category of strain patterns. Since cranial movement can be restricted between any of the bones each case presents with its own individuality.

ALF therapy cannot successfully be mastered in a cookbook approach. Dr. Nordstrom always emphasizes in his seminars the difference between a cook and a chef: the cook follows recipes whereas the chef understands principles and applies them.

During the course of their ALF treatment our patients will get maximum benefits if they also receive osteopathic adjustments that can help with ascending problems and integration of changes triggered by activation of the ALF.

ALF, cranial motion and health

One goal of an ideal orthoped/orthodontic treatment is to establish the patient’s full potential of occlusal transverse, sagittal and vertical development. If we chose not to ‘muscle’ the teeth towards their new position but instead release strains and tension we see the body reaching out for its full potential. The closer we get to this goal the more health improvements we see in our patients some of which we can understand easily, for example:

• establishing an unobstructed nasal airway improves body posture by allowing the mandible to come forward and clears up chronic sinus infections and allergies
• correcting TMJ dysfunction results in full range of mandibular motion
• cosmetic improvements of the smile increase the patient’s self-esteem

Our dental training does not provide us with an understanding of the wider health implications that originate from good, symmetrical cranial motion. On the contrary: mainstream teaching denies any such motion insisting that the cranial sutures are ossified in adults. It is up to each individual dentist to pursue further studies on his or her own to ascertain the veracity of previous assumptions.

Even without an understanding of the dynamic aspects of the cranium we can appreciate the significance of the cranial base: all nerves, blood and lymph vessels enter and exit the brain through foramina in the skull base (illustration 2: skull base with foramina, view from coronal). A distortion here, as seen in many cranial strains, can create tension and stretching of anatomical structures that pass through the foramina. The possible consequences are diminished blood supply to the brain, venous congestion in the brain, and/or chronic irritation of any of the 12 cranial nerves.

If we are willing to look even further beyond the boundaries of Western mainstream medicine we will find that acupuncture physiology offers further explanations of how ALF treatment contributes to improving overall health. While discussing the fundamentals of acupuncture is beyond the scope of this article I want to point out an interesting connection: the premaxilla with the incisors has energetic connections with the kidney meridian. Freeing up the premaxilla is a treatment goal early on in ALF therapy and goes along with seemingly unrelated health improvements.

The kidneys have an anatomical distinctiveness that sets them apart from other internal organs: they are not attached to the peritoneum. That gives them an inherent mobility that shows as a drop of up to two inches depending on whether a person lies down or stands up.

If the ‘kidney energy’ and the connective tissue are weak the physiologic limits can be exceed and the patient develops ‘nephroposis’, which is a hypermobility of the kidneys, resulting in a drop of more than the height of two vertebrae. The German internist and pathologist Kurt Beisch established the significance of this condition in 1982 pointing out that about 60% of his patient population suffered from it and women were affected more often than men. The implications of a floating kidney are far-reaching:

1. UTI infections: Contrary to the kidney the ureter is attached to the peritoneum. A sagging kidney causes a kink in the ureter obstructing urinary flow and resulting in an increase in residual urine content in the kidneys and possibly hypertension.

2. Adrenal fatigue: The adrenal or suprarenal glands are two small, flattened bodies that sit on top of the kidneys. Arterial blood supply comes from the three suprarenal arteries: superior, middle and inferior. In about 80% of the population the main blood supply comes from the inferior suprarenal artery which directly branches off the renal artery. As the kidneys sags excessively they stretch the renal artery decreasing its diameter. Picture a ‘macaroni’ turning into a ‘spaghetti’. The diminished blood circulation affects the kidneys but even more so the adrenal glands: severe hypoxemia, possibly for hours (as long as the person is standing), interferes with hormone and neurotransmitter production.
3. Irritation of the Autonomous Nervous System (ANS): The ANS acts to maintain normal internal functions and consists of three parts: the sympathetic nervous system which controls the ‘fight and flight’ response, the parasympathetic nervous system allowing us to ‘rest and digest’, and the enteric nervous system, our ‘gut-brain’ that causes diarrhea when we are frightened or stomach cramps before an important exam. A network of sympathetic nerve fibers covers the entire arterial circuit where it constricts smooth muscle activity diminishing blood flow to the abdominal viscera. Stretching the renal artery beyond its physiologic limits feeds back afferent irritation signals to the solar or celiac plexus where sympathetic, parasympathetic and sensory visceral fibers intertwine. Depending on the individual’s constitutional weakness any internal organ can become symptomatic caused by a hypermobile kidney.

CONCLUSION

It can therefore be said that ALF treatment offers tremendous opportunities to improve overall health. The more we know about the stomatognathic system and its whole-body connections the more obvious is the need to master the challenge of adjusting the ALF appropriately.

REFERENCES


Why Do Osteopathic Physicians Need to Know about ALF?

Ljuba Lemke, DMD, Feb. 2015

More and more dentists begin to understand how the oro-facial complex affects the whole body. Realizing that they do not have all the tools to address their patients’ needs, dentists seek the help of osteopathic physicians.

Osteopathic physicians regularly encounter patients with headaches, low back pain and other complaints in which temporomandibular (TMJ) and dental occlusal dysfunctions are associated. Frequently, these patients require dental procedures in addition to osteopathic manipulative treatment. It is essential for osteopathic physicians to:
- become aware of issues originating in the dental field which impede treatment success for their patients;
- understand an orthopedic/orthodontic way of addressing TMJ and dental occlusal dysfunction, namely the Advanced Lightwire Functionals approach (ALF);
- establish a strong, interdisciplinary, and well-functioning relationship with a dentist trained in the ALF approach and/or biologic dentistry - all with the goal of helping their patients-in-common.

There are frequent occurrences of insufficient maxillary and mid-facial development in our patient population. Rigid orthodontic appliances as well as braces (due to their mechanics) have a restrictive component which contributes and sometimes exacerbates the problem. A narrow, posteriorly and downward positioned maxilla keeps the mandible in a retruded position, jams the cranial mechanism, and reduces the overall vitality of the patient. It can also change the conformation of the cranial base as the temporal bones are thrown into external rotation. This can alter the occipital bone into a position that favors flexion, moving the occipital condyles anteriorly and creating a head-forward posture.

Meanwhile the airway is obstructed by a diminished volume of the maxillary sinuses, a high arched palate, the tongue being closer to the pharyngeal wall, all of which leading to mouth breathing. A small maxilla, a retruded mandible, mouth breathing and reduced vitality are all too common findings in our society.

To address this we need dental appliances that develop the maxillary dental arch in a horizontal rather than vertical direction without restricting cranial motion. The Advanced Lightwire Functional (ALF) appliance, created by Darick Nordstrom, DDS, is able to do this. It is a wire-appliance, worn behind the teeth, which uses the teeth as handles to help release cranial strains. It is first and foremost meant as a supportive device (rather than a mechanical one to move teeth). This is achieved by using very light forces that are in the physiologic range and mimicking nature by encouraging a functional tongue rest position and swallowing pattern, as well as nasal breathing. During this process the teeth move to a new position, mostly anteriorly and laterally, allowing the mandible to reposition forward. This in return improves TMJ health and airway. It alleviates a common finding in which the mandibular condyle is placed posteriorly in the glenoid fossa, with or without displacement of the TMJ disk. This ‘internal derangement’ of the TMJ is associated with a number of symptoms.
Subjective symptoms can encompass amongst others:
- TMJ pain
- breathing and swallowing difficulties
- headaches
- vision disturbances
- neck pain

Objective symptoms can be:
- restricted range of mandibular motion
- TMJ clicking and popping
- deviations on opening and closing
- facial and masticatory muscle tenderness.

Causes for TMJ and dental occlusal dysfunctions are manifold, such as traumata, whiplash and head injuries to nutritional deficiencies, oral posture (tongue and lip position, breathing habits), genetic make-up and more.

Unless dental dysfunctions are properly addressed, many people have ongoing symptoms despite adequate osteopathic manipulative treatment (OMT). Wearing orthotics for the feet, proper optical prescriptions, and dental appliances all can positively affect the balance in the patient’s body, facilitating the osteopathic physician’s work.

Patients with scoliosis demonstrate distortions of mandibulo-maxillary symmetry. Some scoliosis patients respond to OMT better when the distortions of the cranium, including the TMJ, are properly addressed. Including the jaw in the treatment plan makes sense because so many muscles that operate the jaw can act asymmetrically, thus, distorting the face and the entire skull and spine. There are instances in which an injury to the lower extremity or pelvis is reflected in asymmetry of the jaw, and unless the jaw is included in the treatment, the lower extremity or pelvis will not fully stabilize from OMT.

Asymmetric patterns of function, if left over time, will not reverse themselves, unless they are specifically rebalanced. Occlusal surfaces drive the masticatory functions, which drive the muscular attachments and the shape of the skull. These misshapen parts will affect distant regions of the anatomy.

The following skills are necessary for any osteopathic physician who wishes to work with an ALF dentist for the benefit of their patients-in-common:
- assessing the patient’s vitality and how the ALF appliance changes it;
- using the primary respiratory mechanism (PRM) as the central focus in assisting and guiding the dentist in adjusting the ALF appliance through the course of treatment to enhance the patient’s mechanism;
knowledge to answer questions like:
- Does the appliance alter the patient’s PRM in amplitude, in direction?
- What influence does an old injury have on the patient’s dysfunction?
- What needs does the patient’s structure demonstrate and should these structural distortions be corrected before the dentist takes an impression of the patient’s teeth?
- How does the dental work-up reflect the structural findings of the osteopathic physician?
- How do the dental and cranial findings determine the appliance design? Should the osteopathic physician and dentist see the patient simultaneously or separately? At what point should collaboration start?

There are courses available that will prepare osteopathic physicians for the complex task at hand which will be a considerable benefit to their patients.