

Case History No. 2 (at the end of article)

“Is traditional orthodontic treatment just modern day cranial binding?”

Presented by Ian Hedley, NCR therapist and 3rd year dental student



Are we reducing the facial beauty, overall vitality and potential of our children? Is the traditional orthodontic approach wholly inadequate and best described as modern day cranial binding?

Cranial binding, or artificial cranial deformation, is a practice that definitively dates back to the pre-Christian world and speculatively prior to that. The first written recorded history of the practice comes from Hippocrates around 400 BC when he describes microcephalics or “long heads”.

Evidence of the practice of artificial cranial deformation comes from all over the ancient world. In North America the practice was especially known among the Chinookan tribes of the Northwest and the Choctaw of the Southeast. They favoured a technique involving a wooden cradle board to flatten the infant skull at either the forehead or posterior occipital region. The Paracas tribe from Peru would tightly bind the infant skull with material soon after they were born until the age of around 3 whilst the skull was still highly malleable to produce an elongated, conical shaped skull. The Mayan people used various boards, straps and paddles to shape the infant skull. There

is strong archeological evidence to suggest that the practice was intended to delineate the social classes and to emulate the head shapes of each culture's Gods, presumably making the recipient more “God-like”.

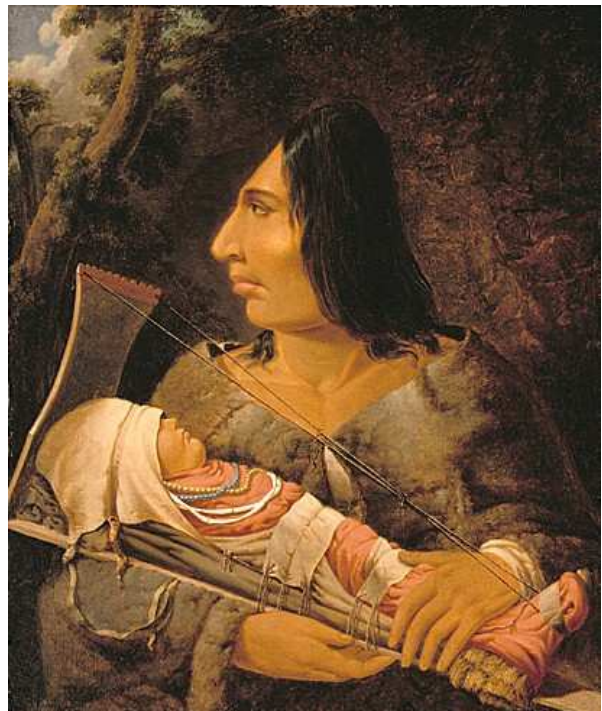


Fig 1. An example of a Chinookan infant having their frontal bone flattened using a cradle board with an adult who clearly underwent the same procedure.



Fig 2. Examples of the various methods the Mayans used to change the infant skull shape.



Fig 3. The Peruvian Paracas used material to tightly bind infant skulls to produce the elongated, conical shapes.

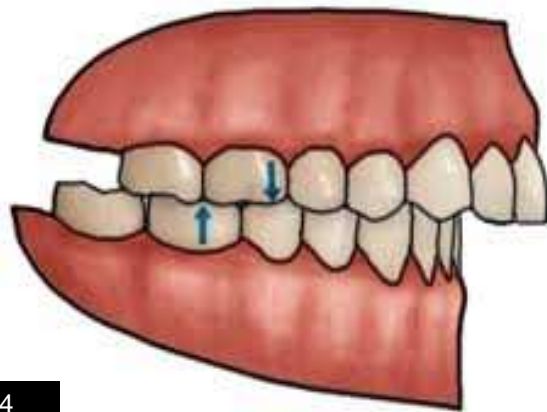
Whichever method that was used each culture was exploiting the soft malleability of the infant skull with its open fontanelles to produce what they believed to be aesthetically beautiful heads. But were these heads functional? Was the recipient healthy and pain free or did this bizarre and unnatural practice set that child up for a life time of headaches,

head pressure, spinal pain, dental malocclusions and other postural and neurological problems?

It is impossible to know for sure what kind of life these people experienced but many cranial therapists and doctors hypothesize that they would have endured rather than enjoyed their time on this planet. The reason for this is that the human skull isn't just a box that houses and protects the brain but a functional part of the human anatomy. It isn't one solid piece of bone but 22 interlocking bones joined together by sutures or expansion/contraction joints. These sutures are viable structures with a blood and nerve supply and are therefore capable of producing pain signals. Despite what is written in the old anatomy books that the joints were fused, the interlocking cranial bones are not fused but move rhythmically in cycles around 12 – 14 times per minute in response to the flow of the cerebrospinal fluid (CSF) that bathes the brain and spinal cord; the sutures expand and contract every time we



Fig. 4



bite, chew and swallow. The CSF is responsible for removing toxins from the brain and spinal cord and nourishing them with essential nutrients. This cranial motion is extremely delicate and optimal health depends on its balance. This motion was first observed by osteopath William Sutherland D.O over a hundred years ago. It was proven beyond any doubt by Viola Fryman D.O an osteopathic researcher in 1962 using sensitive motion sensors on the external skull and

again by dentist and researcher Dr Gerald Smith and his team using radiographic analysis to monitor cranial bone motion in 2002. This experiment was published in "Cranio View" in October 2002.

Unfortunately this fundamental aspect of human physiology isn't taught in dental schools or orthodontic programs and therefore most practicing clinicians are unaware of its existence. But why is that relevant to having teeth straightened? Anatomically the 2 halves of the maxilla or upper jaw where the upper teeth are housed form the anterior 1/3rd of the cranial base. And because the cranial bones are all interlocking it is impossible to move the maxilla without moving the other cranial bones or altering the movement at the sutures and potentially torquing the dural membrane (This is a thick, inelastic tissue that wraps around the inside of the skull, passing out through the foramen magnum in the occiput and attaching itself to the C1-C3 vertebrae and finally at the sacrum.

Figure 5 clearly shows how the right and left maxillae together form the anterior 1/3rd of the cranial base. The maxilla articulates with the sphenoid which in turn articulates with the occiput forming the cranial base.

Traditional orthodontics is based on

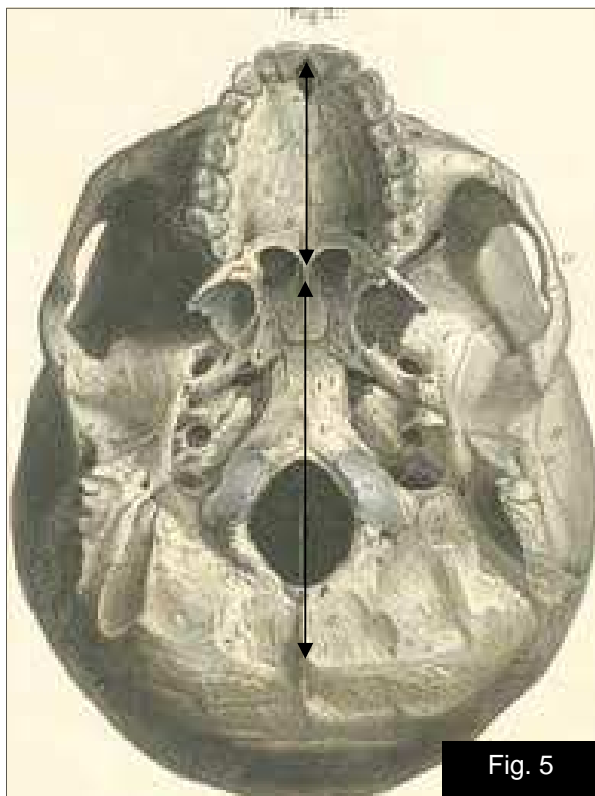


Fig. 5

the erroneous view that all malocclusions are genetic in origin, the size of the jaws is determined at birth and cannot be altered and the only way to correct malocclusions is to extract teeth and use appliances to restrict bone growth. Sounds familiar?

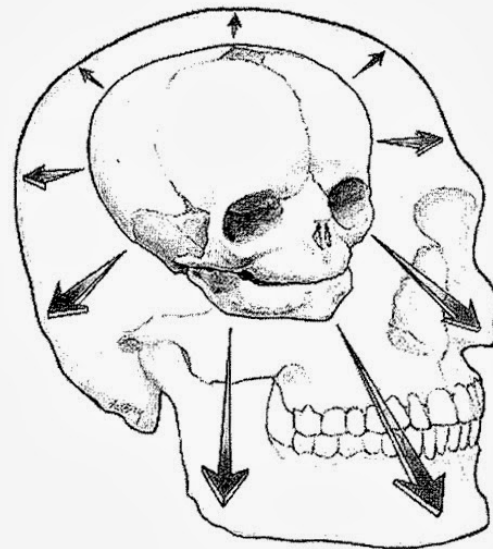
Figure 4. (previous page) Take for example a patient diagnosed with an overjet or protrusion. The traditional approach would be to extract upper bicuspid teeth and put the patient in retractive headgear to restrict the growth of the maxilla allowing the lower jaw to catch up.

This technique not only restricts the genetic potential for maxillary growth but forcibly pulls the maxilla in the wrong direction. The body rarely outgrows itself but the maxilla is commonly too far back and down (retruded) in the first place! Because the maxilla is a cranial bone the force applied to it has to be dissipated elsewhere in accordance with Newton's Laws of Motion. Where does that force go? Into the cranial sutures and dura. So traditional extraction/retraction orthodontics has the potential to literally "bind" the cranial bones. Most orthodontic work is carried out at ages 10 to 14 whilst the child is still growing and developing bone is a living tissue with a blood supply and specialist cells that constantly breakdown and remodel the tissue, so this method can have a huge negative effect on the shape, size and motility of the cranial bones (Figure 6).

Any form of maxillary retraction using headgear or elastics has the potential to jam cranial bones and sutures, restrict cranial bone motion, torque the dural membrane, reduce airway space and push the patient into a chronic pain pattern.

Let's take a physiological look at what happens when the maxilla is forci-

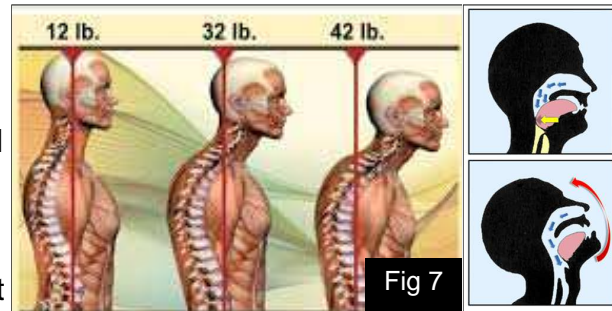
bly retracted. Because the maxilla forms part of the cranial base, when it is retracted the other bones it directly articulates with move backwards too. The most obvious of these are the zygomatic bones or cheekbones. This creates flat, "dished in" almost concave looking faces with inadequate support for the eyes. Functional orthodontists refer to this as the "headgear effect". Not only is this extremely detrimental to the aesthetic balance of the face, creating flatter, less attractive faces it also has more serious potential health consequences. The first is the effect this can have on the autonomic nervous system (ANS). There are two branches of the ANS, the sympathetic and parasympathetic. These control our body's metabolism during "fight or flight" responses. In a "fight" situation we are in a more sympathetic state, with adrenaline pumping and heightened awareness, totally necessary if you are under attack. In a "rest and digest" situa-



The skull of a new-born and the growth into that of an adult

Fig 6. The image shows the growth direction pattern of an infant skull. Retractive orthodontics restricts this natural growth.

tion we are in a more parasympathetic state. Ideally the body functions best when we are in this state most of the time, since the body becomes exhausted and our reserves depleted if we are constantly revved up in a sympathetic state. The delicate ANS balance can be severely disrupted if the cranial bones don't develop to their ideal shape or are mal-positioned. When the maxilla is retracted this delicate balance can be affected and the patient forced into a permanent sympathetic state. This can have huge general health ramifications. British osteopath Dr Raymond Perrin D.O has discovered that chronic fatigue syndrome (CFS) or CFS/ME is the result of noxious impulses from poor cranial and spinal posture irritating the ANS and that all CFS/ME patients are sympathetic dominant. The other major health concern of forcibly retruding the maxilla is compromising the airway space. As the maxilla moves further back and down it reduces the airway space in the pharynx. This obviously has huge potential negative effects on overall health as oxygen intake is diminished and all the body's cells literally begin to suffocate. Many patients with forcibly retracted maxillae then begin to posture their heads forward in an attempt to open up their airways. The hu-



man head weighs 10 – 12 pounds, about the same as a bowling ball. There is only one position where the head balances perfectly on the first vertebra of the neck, the atlas. First they tilt their heads backwards to open the airway, similar to CPR, but because this leaves the eyes looking skyward they must posture their heads forward which effectively quadruples the load of the head on the cervical spine and puts a huge strain on the muscles of the neck and back often leading to pain (Figure 7).

The most common dental malocclusion is overcrowding. This occurs when there is insufficient space (arch length) within each jaw for the permanent teeth to be correctly aligned and they begin to overlap. This is an entirely modern phenomenon and was rarely observed in our more primitive ancestors.

Research carried out by dentists Dr Weston Price DDS and latterly Dr John





Mew BDS strongly suggests the cause of dental crowding is a combination of an overly processed too-soft modern diet (which fails to develop adequate muscle tone) and incorrect tongue posture with resultant mouth breathing.

However, traditional orthodontics can't explain the cause of malocclusions but treats just the symptoms by extracting permanent teeth and retracting the upper jaw. This approach is completely nonsensical! It is purely symptom-driven and an example of bad medicine. It is primarily concerned with aesthetics and straight front teeth and not the aesthetics of the face and the function of the mouth, jaw joints, airway space and cranial bone motion. This approach is best described as merely "tooth jiggling". This author has used the phrase "dysfunctional orthodontics" to sum up the wholly inadequate traditional solution that has the potential to damage the faces of patients. It can also jam or bind cranial bones and connective tissues, compromise airway space and push the patient into a chronic pain pattern depending on his or her adaptive range.

Consider these twin girls in figure 8 on the previous page. The twin on the left had permanent teeth extracted and her maxilla pulled backwards by a traditionally trained orthodontist. Her sister on

the right had more functional treatment that aimed to develop sufficient space within her jaws to house all her teeth. Look at the "dished in" profile of the sister on the left, with flattened cheekbones, inadequate support for the eyes, prominent nose with a bump, thin lips and weak chin; her naso-alar angle is increased from 100 to 130°. These are only examples of the aesthetic damage; one wonders whether she has trouble breathing, obstructive sleep apnoea and associated fatigue, headaches, neck and back pain as her posture has degenerated.

The other factor that must be addressed here is the tongue. The tongue is the only muscle in the human body with an origin and no insertion. It always grows to its genetically predetermined size regardless of the size of the mouth. The tongue's size is best described as a 32, as in 32 permanent teeth, so if 4 or even 8 teeth are extracted it has to fit into a size 28 or even 24 mouth. Imagine trying to squeeze your feet into shoes several sizes too small. A certain recipe for chronic pain! The solution is to buy bigger shoes not remove the toes!

The same philosophy applies to the mouth. See how narrow the palate of the patient Figure 10 is after two cuspid extractions. The tongue space has been





Fig 11

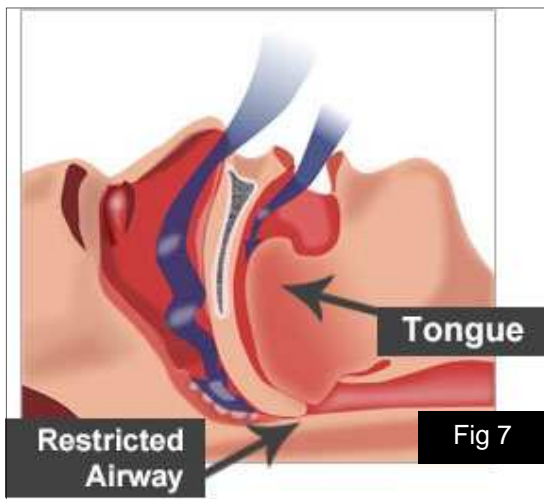
compromised as the maxillary width (transverse) and maxillary length (sagittal) has been reduced.

The tongue therefore has two places to go, thrusting forward through the teeth creating an unattractive open bite (Figure 11) or backwards into the throat potentially blocking the airway and causing obstructive sleep apnoea (OSA) which can be fatal (Figure 12).

The orthodontic profession as a whole has made gross errors of judgment in describing both the cause and treatment of malocclusion. They must accept that their current paradigm based on genetics and extraction/ retraction using headgear is both wrong and potentially dangerous. They must learn the importance of cranial bone motion and adequate airway space in relation to optimum human health and move away from merely jiggling teeth to make them look straight without considering the aesthetics and function of the face and head. The alternative treatment concepts to the erroneous traditional model are a vast topic out-

side the scope of this article that have always included a more functional approach, one of the most advanced of which is Biobloc Orthotropics ('Guided Growth') which aims to achieve, and routinely succeeds, sufficient room for all 32 teeth through jaw expansion, adequate tongue space, an unrestricted airway, balanced faces and good posture.

Orthodontists are in a unique position within the healthcare professions and have the potential to have a significant positive impact on the development of a child. In the light of recent research and a deeper understanding of human health it should become incumbent upon the profession to reject the traditional approach and all its potentially detrimental effects in favour of a more progressive, functional approach. There are now viable alternatives to the extraction/ retraction approach that produce better aesthetic results and leaves the patient fully functional. This article is intended to educate fellow healthcare professionals but also to act as a call to arms to encourage and inspire them to move the profession forward into the 21st century. This could provide cutting edge treatments that have their patients best interests at heart. It would leave the traditional approach behind along with artificial cranial deformation in the ancient world where it belongs!



About the Author

an Hedley is the UK's first fully certified NeuroCranial Restructuring (NCR®) therapist having trained under the developer Dr Dean Howell at the NCR Research Institute in San Diego, California and is currently a third year dental student. He experienced extraction/retraction orthodontics as a teenager to correct mild overcrowding. This approach pushed him into a chronic pain pattern of headaches, neck and low back pain, brain fog and associated fatigue as his maxilla was forcibly retruded and rotated clockwise. (see below)

The orthodontic treatment torqued his cranial bones and dural membranes, setting him up for chronic pain. He was also left with an anterior open bite as his maxilla buckled under the force of retraction. The aesthetic result was also poor. He has successfully reversed this treatment through NCR® and FaceMAX face pulling with Dr Howell and reversal orthodontics with Dr Mohammed Amir and Craniodontics with BSSCMD member Dr Gerald Smith and is now fully functional.



The above photographs are evidence of what is being postulated in this article. On the left is how the author looked prior to extraction/retraction orthodontics at 13 years. Notice the balanced facial features, normal cheekbones and healthy skin tone; the author was healthy. The central photograph is of the author after teeth were extracted and his maxilla retruded. Notice the flattening of the face, facial pallor and stressed look. He was diagnosed as sympathetic dominant, had a jammed cranium, suffered from fatigue and chronic pain. The photograph on the right is of the author during recovery. Notice the improved support for the eyes, healthy skin tone and broader, fuller face. The author was healthy and functional again.



British Society for the Study of Craniomandibular Disorders (BSSCMD)

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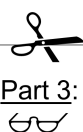
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