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The Potential Impact of Orthodontia on Whole-Body Health

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While the craniosacral system is comprised of the membranes and fluid that surround the brain and spinal cord, its numerous osseous relations can impact the body in far-reaching ways. For instance, I was a professor of biomechanics at Michigan State University in 1976, when I first witnessed the effects of orthodontia on the spinal alignment of the vertebral bones.

The patient was a 16-year-old girl who had begun to develop scoliosis about two years earlier.
Her father, an English professor at the university, told me her orthopedic surgeon wanted to implant corrective rods for the scoliosis, which had been measured at 38 degrees in the thoracic curve. At his request, I began to see his daughter weekly.

Over a period of six weeks, we were able to reduce the curve to 18 degrees using a combination of CranioSacral Therapy, Myofascial Release, osteopathic spinal manipulation and Therapeutic Imagery. At that point, I continued to try to help improve her condition. After four or five unsuccessful attempts, however, I realized that each time I balanced her occipital bone it was off balance the following week.

Clearly, I had not located the underlying cause of the occipital bone problem. The occipital bone had to be relieved of its abnormal transverse tilt and its restriction to motion, which were both compromising craniosacral system function. The sphenoid bone remained transversely tilted in the opposite direction from the occiput.

Ultimately, I discovered the hard palate was preventing the sphenoid bone from maintaining the corrections. Could it be that the orthodontic braces the patient had been wearing for about three years were contributing to her scoliosis? The answer proved to be "yes." At my request, the orthodontist removed the braces from the patient’s mouth. Subsequently, her scoliotic curve was able to correct to less than five degrees and there was no recurrence of scoliosis over the next five years. I continued to see her every six months or so until she married and left home.

Please allow me to explain the biomechanics of how such an event could occur in a 16-year-old girl. The paired maxillary bones are influenced via the pterygoid wings of the sphenoid bone with which they articulate bilaterally. The maxillary bones move in concert with the sphenoid bone via these articulations. Actually, the distance between the second upper molars on each side fluctuates about two millimeters at a rate of 8-12 cycles per minute in accordance with the craniosacral rhythm. The sphenoid bone is one of the prime movers of the craniosacral system. When the bone's mobility is restricted, the craniosacral system tries very hard to compensate for the dysfunction, but it's seldom fully successful.

When an orthodontic appliance is put on the upper teeth and it crosses the midline between the two anteromedially located incisors, the motion of the maxillary bones induced by the sphenoid bone is inhibited and sometimes totally restricted. When they are first applied, the braces also might entrap one of the maxilla in an external position and the other in an internal position. In CranioSacral Therapy, the motions of the maxillae in response to the sphenoid bone are called internal and external rotations, because the maxillae appear to rotate about individual axes generally directed in anterior-posterior directions.

The distance across the hard palate is measured using the biting surfaces of the second molars as reference points. The usual mean distance variation between these teeth in response to internal and external rotations of the maxillae is two millimeters. In the case of my scoliosis patient, the braces locked the left maxilla in external rotation while locking the right maxilla in internal rotation. The abnormal positional locking of the maxillae caused the sphenoid bone to eventually yield to these abnormal forces after attempting to correct the problem and then adapt to it. Having ultimately failed in these attempts, the sphenoid was forced into a transversely oriented tilt, with its left side tilted in a superior direction and its right side in an inferior direction.

Next, the occiput had to compensate for the sphenoid tilt. In order to do this, the occiput had to tilt in the opposite direction, right side superior and left side inferior. This occipital tilt placed an increased traction on the right side of the dural tube as it ran through the sinal/vertebral canal. It also allowed less tension or increased slack on the left side of the dural tube.

We have found over and over again that the sacrum mimics the occiput unless there is a significant restriction of the dural tube somewhere between the occiput and the sacrum. In the case of our patient, the sacrum was mimicking the occiput. The right upper pole of the sacrum was higher; the left was abnormally lower. Hence, the sacral base, which is the upper transverse boundary of the sacrum, presented a tilted foundation for the spinal column to rest upon. Because of this un-level sacral base with the right side high and the left side low, the 5th lumbar vertebra had to angle off to the left, creating a "leaning-tower" dynamic. In order to correct this, the remaining lumbar vertebrae formed a scoliotic curve so the thoracolumbar junction crossed the midline center of gravity.

Now we had the upper lumbar coming diagonally across the midline center of gravity from the left, thus sending the lower thoracic vertebra off diagonally to the right. This curve needed to come back to the midline center of gravity at about the cervico-thoracic juncture in order to maintain body balance. The compensatory lumbar and thoracic spinal curves form the classic "S" curve of scoliosis. In the neck, we also might have a compensatory curve that involves most of the cervical spinal vertebrae. Clearly, the balance for the neck is skewed as the upper thoracic vertebral column comes to the midline center of gravity.

Sometimes this whole compensation in the neck occurs from a sharp displacement of the two lower cervical vertebrae atop the 1st thoracic vertebrae. This acute compensation at the lower cervical vertebrae often is painful and frequently results in brachialgia or dysfunction of the arms and hands, all due to nerve-root compression. It seems reasonable to me that the powerful nerve reflexes that strive to keep the eyes horizontal with the horizon might require this compensation at the cervicothoracic junction.

This is but one example of how orthodontia can affect the craniosacral-neuromusculoskeletal relationship to impact the whole body. To learn more, read "Surviving Orthodontics: A Bodyworker's Exploration into Orthodontics and CranioSacral Therapy," by Nancy Burke, CMT, CST. You can find it at www.upledger.com/news/9803.htm.

Click here for more information about John Upledger, DO, OMM.