

STRAIGHT TALK about CROOKED TEETH:

Key #4, Healthy TMJ Function

This is fourth in a series of articles by Derek Mahony, BDS, MDS and S. Kent Lauson, DDS, MS (Orthodontists)

Their book was written with the orthodontic consumer in mind. This would typically be a parent of a child with a developing malocclusion, and the family dentist they see. Dental experts have praised the book as a must read. Note the very recent endorsement from CRANIO, Journal of Craniomandibular Practice: *“Straight Talk about Crooked Teeth is a must read for any doctor in our field of Craniofacial disorders. I also believe that it should be mandatory reading for anybody who does orthodontics. The wealth of knowledge Dr. Lauson shares from 26 years of clinical practice and the over 5,000 cases he has treated are brought together masterfully all in one book.”* Cameron A. Kuehne, DMD, Boise, Idaho. (CRANIO July 2012, VOL. 30, NO. 3)

The first three articles, in this series, dealt with the first three of the Nine Keys to Lower Facial Harmony, as presented in the book. Those first three keys were: Key # 1: Fully Developed Upper Jaw, Key # 2 Unobstructed Nasal Breathing, and Key #3 Proper Forward Positioning of the Lower Jaw. We presented the rationale as to why each of these keys are important to having not only a great orthodontic result, but also a much healthier bite for the patient, after orthodontics. The next Key, to Lower Facial Harmony, that will be addressed in this article, is a healthy TMJ function.

Key #4: Healthy TMJ Function

So, why talk about the TMJ in a book written about children's orthodontics? Are not TMJ Dysfunctions (TMD), problems that only adults have? But why be concerned about the TMJ for a child? While it is true that TMD is mainly an adult problem, the origin generally occurs many years before. This is because the jaw joints may have been out of alignment for years, but they have built within them a great ability to accommodate. The developing dysfunction may have been very subtle, in the beginning, as a child. However, the connection of the TMJ to the occlusion is direct and when teeth come into the mouth, how they occlude, influences how the TMJ function. The rule to keep in mind is this: ***“Teeth dominate, muscles and joints accommodate”***. If the jaw joints are forced to accommodate past their tolerance level, TMJ Dysfunction is the result. TMD can start during childhood, even though sometimes the dysfunction is subclinical and subtle. Therefore, the jaw joints need to be evaluated, early, during the initial orthodontic examination, so that if a problem exists, it can be corrected during the time that orthodontic treatment is performed. Measures should also be taken to prevent TMJ Dysfunctions from occurring, during the orthodontic treatment, and afterward.

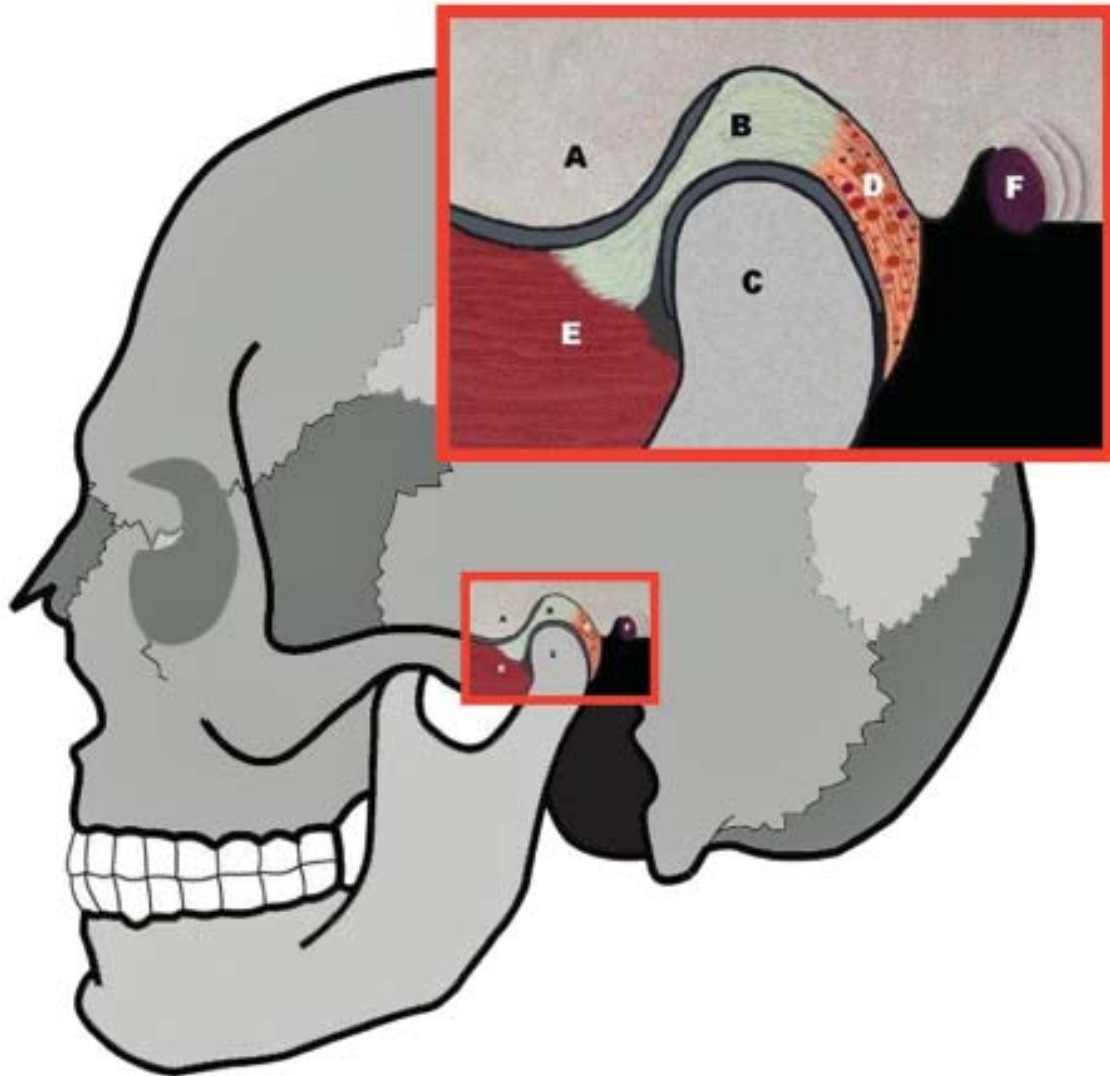
Trapping of the lower jaw:

We talked about the problem of trapping the lower jaw, in our previous article. This may lead to TMJ Dysfunction. This is more common in conditions like div 2 overbites rigidly holding the lower jaw back, while it grows. Ultimately, this leads to posterior

displacement of the condyles and subsequent TMJ Dysfunction. Unfortunately, dentists performing treatment for TMD often see patients who previously had orthodontic treatment and now are seeking help because of a painful TMJ disorder. They report that the clicking jaws and the problem of the dysfunctional TMJ may or may not have been present when the orthodontics was performed, but were not addressed with treatment. One of the common ways orthodontics can negatively affect the TMJ's is the retraction of upper anterior teeth, leading to the trapping of the lower jaw. This typically occurs with the older extraction methods or the use of headgear in some types of traditional orthodontics. In dentistry there continues to be controversy regarding the relationship between orthodontics and TMJ Dysfunction. We have found that orthodontics can affect TMJ function for good and bad. Orthodontics can greatly help to prevent TMJ Dysfunction by applying the principles of The Lauson System. Conversely, improper treatment can contribute to TMJ dysfunctions. Those of us who perform orthodontics should not ignore the consequences of our work.

“The TMJ is especially worthy of attention due to its versatility and functionality. It is important to know that the TMJ is the most complex and active joint in the human body. Composed of only a few ounces of cartilage, bones, ligaments, and muscles, it springs into action as many as one hundred thousand times a day, completing more repetitions than any other similar body part. When functioning properly, it is capable of performing a myriad of intricate maneuvers within seconds, even shifting, when needed, from one-dimensional plane to another. But, when it's out of place, it causes considerable pain and discomfort, oftentimes affecting the entire body— causing headaches, ear or vision problems, and even backaches, just to name a few. Because of the TMJ's crucial role in the human body, and its intimate connection to the teeth, it is one of the signature components that must be dealt with, in respect to any corrections of the mouth, teeth, or jaws”.

The following illustration shows the anatomy of the healthy TMJ:

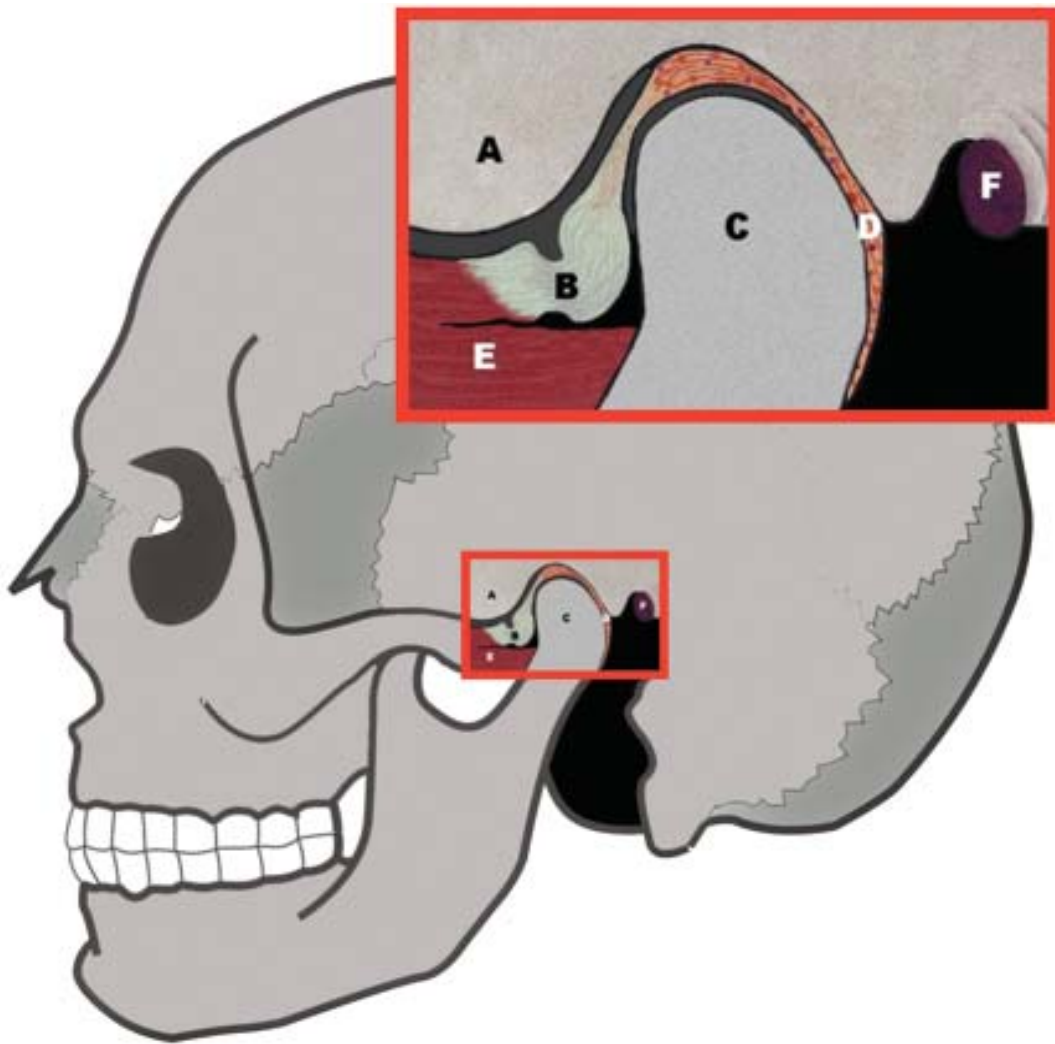


*A=Temporal Bone; B=Articular Disc (or just Disc); C=Condyle;
D=Posterior Ligament (containing nerves and blood vessels); E=Lateral
Pterygoid Muscle; F=Ear Canal*

THE TMJ UNDER STRESS

So, how did the jaws get out of alignment in the first place? When a person bites down to chew his or her food, the TMJ, and surrounding muscles, always seek a position to accommodate the best fit of the teeth. As stated before, the rule is: ***“Teeth dominate, muscles and joints accommodate”***, so it stands to reason that the jaw joint will accommodate as well as it can. If the jaw joints and teeth work together in harmony, then the actions of the jaws will operate smoothly, and without incident, for years. (even a lifetime).

Conversely, when the act of chewing forces the jaws out of a healthy position, repeated stress occurs within the joint and the surrounding muscles and nerves. The following anatomical illustration shows the pinching of the nerves, and blood vessels, that have to pass through the posterior aspect of the jaw joint. These nerves and blood vessels go to the eyes, ears and even the brain, so that is why TMD can be so devastatingly painful to the patient.



Dysfunctional TMJ shown in this illustration

***A=Temporal Bone; B=Disk (showing degeneration); C=Condyle;
D=Posterior Ligament (showing pinched nerves and blood vessels);
E=Lateral Pterygoid Muscle in Spasm; F=Ear Canal***

In addition to the compression of the nerves and blood vessels, there is a disc of cartilage within the joint that takes a great deal of abuse as the dysfunction continues. When the lower jaw opens and closes, a clicking or popping sound occurs when the condyle goes on and off the disc. This is by far the most classic sign of TMD. ***Clicking jaws are not normal!*** As the condyle migrates back and the disc migrates forward, the condyle can get stuck behind the disc, limiting the person's ability to open his or her mouth. The clicking stops at this point because the condyle is stuck behind the disc. This condition is known as a "closed-lock" and can make eating a real pain. Over time, and if left untreated, this cartilage disc gets stretched further away from its normal position and becomes worn and deformed. Even though the disc's condition has deteriorated, the clicking and popping sounds may diminish over time as the disc gets smaller and smaller and more deformed. In more advanced stages, crepitus, or grating sounds, begin to occur when the condyle finally wears through the ligament, resulting in bone-to-bone contact. Over time, this progressive deterioration of the TMJ makes the condition more debilitating and more difficult to treat.

The purpose of this article is not to give a dentist an education on how to treat a TMJ Dysfunction, but to give an awareness of how important the early recognition of TMD is. The book goes into considerably more detail, regarding TMD, which includes a case history. The book has important information about recent research linking TMD to neurologic disorders such as Parkinson's disease and Tourette's syndrome. Those doing orthodontics need to become well versed in the treatment of TMD, and understand the effect that tooth movement has on the function of the TMJ's.

In the last article we wrote about the proper forward positioning of the lower jaw. This key is very important in gaining healthy functioning jaw joints. To review, this article discusses the "trapping of the lower jaw" and how it can lead to TMJ Dysfunctions. This is because the primary reason for TMJ Dysfunction is a bite that forces the lower jaw to be retruded, causing the condyles of the mandible to move posteriorly. Other negative influences on the TMJ's, include a narrow maxilla which also can trap the lower jaw (article #1), and nasal obstructions which can lead to mouth breathing causing mandibular retrusion (article #2). Another major result of the mandibular retrusion/TMD problem is that an accommodation will occur resulting in the head to go into what is called a forward head posture. This may lead to many spinal problems which will be addressed in the next article, since it is the next Key to Lower Facial Harmony: Key #5 Ideal Head Posture.

Copies of this new orthodontic hand book may be ordered from EODO via Brenda@eodo.com.



