STRAIGHT TALK about CROOKED TEETH

This is sixth in a series of articles by

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This information is taken from the new book “STRAIGHT TALK about CROOKED TEETH by Dr. S Kent Lauson, Orthodontist, Aurora, Colorado, USA, with a forward by Dr Derek Mahony, Orthodontist, Sydney, Australia. The book was written for the orthodontic consumer who typically would be a parent of a child with a developing malocclusion, and the family dentist, and orthodontist they see. The first five articles in this series dealt with the first six of the nine Keys to lower Facial Harmony, as presented in the book.

Those first six keys were as follows: Key # 1: Fully Developed upper Jaw, Key # 2 Unobstructed Nasal Breathing, Key #3 Proper Forward Positioning of the lower Jaw, Key # 4: Healthy TMJ Function, Key # 5 ideal Head Posture and Key # 6 Avoidance of Obstructive sleep Apnea. We presented the rationale as to why each of these keys are important in having not only a great orthodontic result, but a much healthier life for the patient, after orthodontics. The next Keys to lower Facial Harmony, that will be addressed in this article, are the last three keys. These keys are as follows: Key #7 Ideal Lower Facial Symmetry, Key #8 Elimination of Adverse Oral Habits and Key #9 Optimal Tooth Positioning. Of note, while the first six keys are not widely accepted as important goals in traditional orthodontics, these last three keys are all considered important by the traditional orthodontic practitioner. However, there are subtle differences in how these orthodontic problems are approached.

Part I Key #7 Ideal Lower Facial Symmetry

The book goes into considerable detail regarding several different analyses of facial symmetry. However, this article will only briefly define facial symmetry and will go more into how typical facial asymmetries develop and how they should be evaluated and treated. What really is symmetry? A definition is: 1. The property of being the same on both sides of a central dividing line. 2. Harmony or beauty of form that results from balanced proportions. Basically, symmetry means one side of an object is the mirror image of the opposite side, resulting in harmony and beauty. Therefore, it is important to understand that everything talked about in our
treatment is consistent for creating the most symmetrical result to the greatest extent possible. It has long been a goal of orthodontics, as well as maxillofacial surgery, to create facial symmetry.

Charles Feng, of Stanford University, discussed the history of facial symmetry by using the example of Helen of Troy (instigator of the Trojan War), who was known for her incredible beauty. She was not celebrated for her kindness or her intellect, but for her physical perfection. Today, it has been scientifically proven that symmetry is inherently attractive to the human eye.

“Facial symmetry is one of a number of traits associated with health, physical attractiveness and beauty of a person.”

—Science Daily

A study in 2007 by a team of researchers at California State University specifically reveals the importance of lower jaw symmetry. It suggests that lower jaw symmetry is the most important aspect of facial symmetry, ranking above all other areas, perhaps because it is by far the most common asymmetry.

FACIAL ASYMMETRY, A TRICKY PROBLEM

Facial asymmetries are among the most challenging problems for an orthodontist to resolve. When a lower-facial asymmetry is observed in a patient, it is commonly thought that it is a result of unequal growth in the right and left halves of the face. This is particularly true of asymmetries in the lower jaw.

Let’s look back to the origin of the problem, and ask the question, “What circumstances were present in the first place?” During the formative years, a common problem that occurs is that the lower jaw shifts off to one side due to a lack of development of the upper jaw, causing the lower jaw to shift to the side causing what is called a unilateral-posterior crossbite. A crossbite is defined as the upper teeth hitting on the inside of the lower teeth. When a crossbite doesn’t allow the back teeth to comfortably come together in order to chew, a person accommodates by habitually shifting their lower jaw to the right or left every time they bite down. The displacement of the jaw to one side results in lower facial asymmetry.

An accepted explanation in traditional orthodontics, for this asymmetry,
especially in an adult, is that the lower jaw has grown less on the side in the direction where the jaw has shifted. This may be true in some cases, but not true in others. Something very subtle can be going on here as well. Because the TMJ is highly flexible, it allows the lower jaw to shift back too much on one or both sides as it grows. This is the most common reason for TMD and explains why the pain in the jaw joint may be experienced on one side but not necessarily on the other. So, when the lower jaw has shifted to one side, it can be perceived as a lower-jaw skeletal asymmetry, when it is actually a displacement of the entire lower jaw.

This condition has fooled many orthodontists, and oral surgeons alike, as the traditional approach to solving these problems in an adult, has been primarily surgical in nature. Some surgeries have been performed to correct the asymmetrical growth, while the real problem has been the shifting of the jaw to the side. The surgical correction lengthens the lower jaw on the seemingly deficient side and, unfortunately, can leave that side with the jaw joint out of alignment contributing to TMD. X-rays of the jaw joints must be taken to see the whole picture before surgery is performed. This helps to determine the proper alignment of the TMJs and helps to answer the burning question as to whether surgery is warranted. In many cases the lower-jaw asymmetry may be addressed by first correcting the TMJ alignment so that any remaining mandibular asymmetry is manageable, without surgery. In other cases where a true skeletal asymmetry has developed, surgery may be the only viable option. The key here is to attempt to correct the problem as early as possible since delaying corrective treatment may take away the nonsurgical option. Other facial asymmetries, such as in the midface, may be helped with creative FFO treatment, but for many facial asymmetries, surgery may still be the best answer.

The following case illustrates how asymmetrical development of the lower face can occur. The patient’s upper jaw had a severe constriction, causing substantial crowding of the teeth. Because her lower jaw was only mildly constricted, the mismatch of her upper and lower teeth caused her lower jaw to shift to the patient’s left when she bit down.
Although her jaw joints checked out normally, due to the unevenness of the bite, there were sensitive areas in the chewing muscles as they were having to work extra hard by constantly shifting to the side when chewing. An expander was used to gain the necessary expansion on the upper jaw while braces were added to align the front teeth. As the expansion occurred, her jaw gradually shifted back toward centre eliminating most of the asymmetry. Note the improvement in the after pictures.
The treatment performed as an initial phase treatment reached the objective of correcting a deficiency in the upper jaw in order to establish a much better symmetry. Although this initial phase of treatment did not completely correct the asymmetry, the final phase of treatment will ultimately address this. This initial phase correction also eliminated the need for removal of any permanent teeth, and thus minimized treatment challenges in the future.

Section II Key #8 Elimination of Adverse Oral Habits

It is well known in the dental field that adverse oral habits, such as thumb sucking, can have a very negative effect on the facial development of a growing child. This is due to adverse pressures exerted during the execution of the habit. The longer the pressure exists and the more strength that is exerted in the
affected area, the more profound the negative result is. These habits, allowed to continue uncontrolled over a number of years, have far-reaching effects. Each of these habits must be eliminated. Although the book has much more explanation of each of these habits, space in this article does not allow an extensive review. However, the following is a good list of habits to avoid:

1. **Mouth breathing** habit. We talked about this in the second article in this series, and the possible need for an ENT referral.
2. **Improper tongue placements** can cause anterior or posterior open bites.

![Anterior Tongue Thrust](image1.png) ![Lateral or Side Tongue Thrust](image2.png)

3. Bottle-feeding can lead to the adverse tongue posture problems shown above. Breast-feeding is highly recommended over bottle-feeding.
4. Thumb and Finger Sucking

Ultrasound technology has shown that many developing babies have a thumb in their mouth.

5. Swallowing Toothpaste
6. Teeth clenching and grinding can result in extreme attrition.

Other habits discussed in the book are as follows:

7. Chewing on foreign objects
8. Gum Chewing
9. Clicking the Jaw Joints
10. Resting Chin on Palm
11. Ice Chewing

The following case study shows how oral habits can cause a significant malocclusion. Patty came to the office as a fourteen-year-old with
significant crowding and upper arch constriction. She also had an anterior open bite, which means that she only made contact on her back teeth. This created a lot of trauma to the back teeth on function. Patty had the adverse oral habit of an anterior tongue thrust, which was the primary cause of the open bite. She also had a partial nasal obstruction that caused her to be a mouth breather. She exhibited tightness and tenderness of many neck muscles due to a forward head posture, a result of the mouth-breathing habit. The pretreatment pictures show a distortion of the bone structure, of the upper jaw, due to the mouth-breathing habit, and anterior tongue thrust.

Our treatment took into consideration the adverse habits of mouth breathing and the anterior tongue thrust. We corrected the narrowness of the upper jaw; an upper Schwarz appliance was used for expansion. The appliance included a habit-correction device, as a reminder to Patty to keep her tongue properly positioned at the roof of her mouth.
Pretreatment photos showing the anterior open bite, crowding and forward head posture

In order to give Patty a more stable final result we referred her to an oral myologist, who worked one-on-one with her in order to completely eliminate the tongue habit. The combined efforts were successful and her treatment was completed in twenty-three months with all nine keys to lower facial harmony achieved. The treatment with FFO eliminated any need for premolar extractions or jaw surgery. The result was a broad, beautiful, and healthy smile.
Additional comments are as follows: Many orthodontists and oral surgeons consider a skeletal-open-bite case like this—as well as other skeletal problems—as only treatable with a combined orthodontic and surgical approach. However, once FFO principles are understood, surgery may be avoided. Many thousands of skeletal problems like this have been very successfully treated without surgery. The treatment in this case consisted of two key elements. The first was to correct the orthopedic imbalances present. This required correction of the narrow upper jaw with a functional orthopedic expander and then the use of braces. The second key to success was addressing the adverse tongue and mouth-breathing habits. The combination of the two principles produced a successful and stable result.
Part III Key #9 Optimal Teeth Positioning

What exactly does optimal teeth positioning mean? Since a picture is worth a thousand words, the following illustration shows what we are describing.

Midlines together              Proper Class I molar relationship

So, why is optimal teeth positioning really important? One important aspect is appearance. A great smile is universally accepted as a huge asset to a person in the whole gamut of human endeavors, from business to romance. It is also established that well-fitting teeth are necessary for a healthy bite and healthy jaw joints. This key of optimal tooth positioning really should be the most predictable goal for orthodontic treatment, in that virtually all orthodontists and dentists doing orthodontics, have this as a goal. However, considering the fact that there are many occlusal schemes in dentistry and not all dentists agree, some discussions are beyond the scope of this article.

Traditional orthodontics typically doesn’t take all of the previous keys listed in this book into consideration when treating patients, with the exception of Keys #7 and #8 and the possible exception of Key #2. Straightening teeth without having the other keys as objectives is doing the patient a disservice; ignoring
these principles could pave the way for a life of jaw pain and dysfunction.

Once Keys #1–8 are achieved, Key #9 is far less complicated. In fact, this fixed braces or Invisalign phase consumes much less time and energy for the patient and doctor alike. In many cases this final phase is accomplished in half the time it traditionally takes. Achieving each of the previous keys allows a more physiologic positioning of the teeth, so the braces require less tooth movement. This is also because the expansion creates extra spacing, allowing for rapid alignment of the teeth, saving significant time.

The following case study, although it is not complex, illustrates the ability of Invisalign, used after expansion, to make an average smile into a great one. The result demonstrates an ideal bite, satisfying the ninth key to lower facial harmony. When sixteen-year-old Alicia came to the office, she stated that she just wanted a prettier smile. When looking at her before pictures, it could be perceived that she didn’t need her teeth straightened. After all, her teeth were relatively straight and her posterior occlusion was right on with a Class I relationship. However, Alicia’s dental arch forms were moderately constricted when compared to ideal, and she did have some areas of pain when muscle palpations were performed, showing early developing TMJ and head-posture problems.
Since her main aesthetic problem was that her narrow arch forms accentuated her front teeth, we widened her smile with upper and lower expansion appliances before her Invisalign Teen treatment. Once we were well into the aligners, it became apparent that the use of the expanders had freed up the lower jaw to come slightly forward, causing her teeth to hit first in the front. This is typical in cases where the TMJs have gotten out of position and head posture is forward of normal. We corrected the teeth with a combination of the aligners, and she wore rubber bands so that as the Invisalign correction was taking place, better alignment of the jaw joints was also occurring. After looking at the final pictures, it is evident that an enhancement was accomplished and the result was terrific. Alicia’s result exemplifies the ninth and final key to lower facial harmony.
End of treatment photos

When performing any orthodontic correction, the ultimate objective of The Lauson System is to create a beautiful, full smile, with proper facial balance, along with a bite that functions properly and is stable. This is the final article in this series highlighting information from the book “STRAIGHT TALK about CROOKED TEETH” by S. Kent Lauson, DDS, MS. Dr. Lauson may be contacted by e-mail through his office at info@AOTMJ.com. Dr. Mahony may be contacted by email at info@derekmahony.com