The newer style adult orthodontics

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This is the first in a series of articles on adult orthodontics teaching a philosophy of orthodontics as presented in the book "Straight Talk about Crooked Teeth" (Figure 1). This book is written in a common language that can be understood by lay people, namely a patient needing orthodontic treatment, as well as dentists and orthodontists alike.

This is a 'possibility' book that takes orthodontics to an all-new level. There are numerous endorsements, from prominent doctors, as well as testimonials from patients who now have the smile they always wanted. Their stories share how this system has led to the reduction of symptoms associated with snoring, vertigo, TMJ dysfunctions (TMD) and Obstructive Sleep Apnea (OSA). The medical/dental interface written about in the book promises to bring orthodontics to an enlightened and noble new era, i.e. to not only give the adult patient the coveted 'Movie Star Smile', but also to offer them prevention or relief from many adult maladies such as TMD, OSA or even cervical spine misalignments.

Dentists performing orthodontics have a great power to shape not only a person's smile, but positively effect a person's overall health. The Nine Keys to Lower Facial Harmony, written about in the book, have been found to be essential goals in achieving maximum benefit to the patient not only from an aesthetic, but also a total body health standpoint. This first article summarizes these principles as treatment objectives for any patient, young or old.

As a person ages, the objectives become more challenging, for a variety of reasons, but still remain intact for the adult patient. These patients may even have more appreciation for the life changing effects that this newer style of treatment can deliver.

So just what are those nine keys to lower facial harmony?

The nine keys are listed in the order of their importance, considering the health and appearance of the total person. However, it is important to note that the first six are not widely recognized as important by many traditionalists, who may even question what they have to do with orthodontic treatment at all. Some clinicians may even consider these principles controversial. Our hope is to stimulate an open mind to consider this material for what it is intended to be, i.e. an eye opening experience. Each of the keys listed below has entire chapters dedicated to them, so the following will be a brief overview only of each.

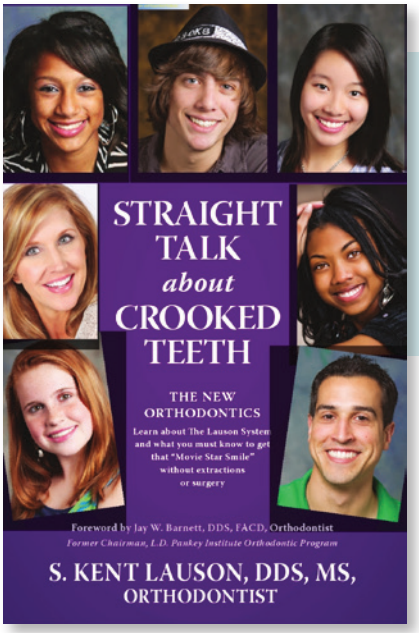


Figure 1. Straight Talk about Crooked Teeth.

"Dentists performing orthodontics have a great power to shape not only a person's smile, but positively effect a person's overall health. The Nine Keys to Lower Facial Harmony, written about in the book, have been found to be essential goals in achieving maximum benefit to the patient not only from an aesthetic, but also a total body health standpoint..."

Key #1. Fully developed maxilla

The upper jaw holds the key to facial beauty and proper function of the lower face and teeth. It should be wide and full to accommodate all normal 14 teeth (excluding third molars). These teeth should be in proper alignment, providing adequate lip support. When the patient is displaying a full smile they should not show an excessive of gum or expose 'dark triangles' between the teeth and the cheeks. This improved smile can be accomplished at any age with slow maxillary expansion (SPE), due to the fact that many of the cranial sutures, including the mid-palatal suture, remain viable throughout life. The book details not only treatment results, but also the science behind it.

The following case study is a good example of the use of full face Functional Facial Orthopedics (FFO) to expand the maxilla in an adult patient. This arch development leads to an ideal shape so as to create a stunning smile. When beginning treatment, Elaine was a 33-year-old Caucasian female (Figures 2a-c). She had a deep overbite (8mm), excessive overjet (6mm) and a full Class II molar relationship bilaterally. She had substantial constriction of her maxillary arch and a moderate constriction of the lower arch. Her tongue had scalloping on its lateral borders, confirming the constriction of the maxillary arch. Her TMJ analysis indicated a normal range of motion (44mm opening, 12mm right and left lateral movement), and no muscle tenderness on palpation, but she did have a slight TMJ click, on the right, which reduced when Elaine protruded her jaw to a Class I molar relationship.

Traditional orthodontics typically would have recommended the removal of two to four bicuspid teeth and then straightening of the remaining teeth with braces. This would be termed orthodontic compensation for the Class 2 pattern due to the above-mentioned misconception about the fusing of the mid-palatal suture, at this age. A recommendation might also have been made to use maxillofacial surgery to achieve the desired result if the aesthetics of widening the maxillary arch was even considered. Usually traditional orthodontics does not consider widening of the maxillary arch unless a posterior crossbite is present.

Elaine's treatment consisted of six months of widening the maxilla with slow palatal expansion (SPE) using a removable Schwarz expansion appliance with a reversed inclined anterior bite plate. This gained the necessary space to finish with fixed appliances (braces) within the next 18 months, giving a total treatment time of 24 months. The bite plate part of the Schwarz allowed the lower jaw to migrate forward, improving the Class II and the right TMJ Click, while helping to correct the overbite. A lower Schwarz appliance was utilized, in tandem with the upper, to upright the lower arch in order to match the expanded/developed upper arch. Please note the change in the arch forms and the elimination of the dark triangles with the fuller smile (Figures 3a-c).

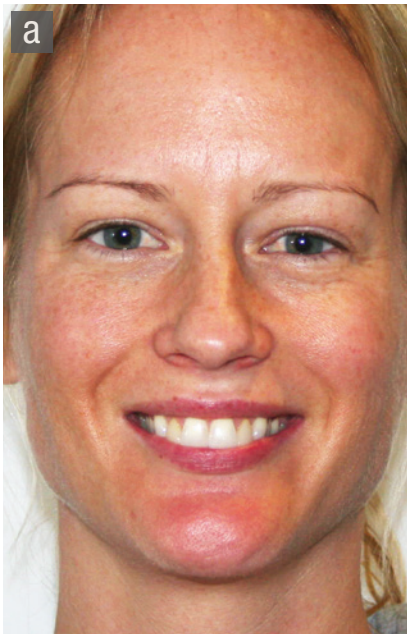
After treatment was completed, Elaine's smile was full and beautiful and her TMJ clicking resolved. This result would not have been possible without the expansion of the arch forms, completed without surgery, all the while eliminating the need for removal of bicuspid teeth. This case has helped to demonstrate the importance of Key #1 - The fully developed maxilla. Other cases will be shown to demonstrate the remaining eight keys to lower facial harmony in future articles. The following is a brief description of each.

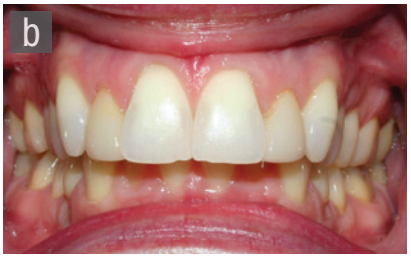
Key #2. Unobstructed nasal breathing

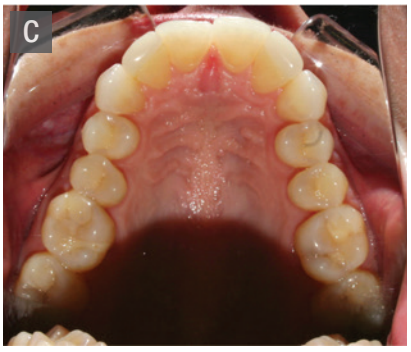
The ability to properly breathe without obstruction through the nose is critical to a person's improved health and vitality. Nasal obstructions, for whatever reason, need be evaluated and eliminated. Without elimination of the obstruction, mouth breathing can result and lead to many unnecessary problems, including poor facial and dental development. If mouth breathing still exists, as an adult, then major structural changes will have taken place and will need correction. An adult also needs the opening of the upper airway in order to maintain stability after any orthodontic correction. This new book covers the primary causes of Nasopharyngeal Obstruction, such as allergic rhinitis, deviated septum and obstructive tonsils or adenoids. The expansion of the upper jaw can help to enlarge the nasal passageway, so correcting Key #1 may also have a positive effect on Key #2.

Key #3. Proper positioning of the mandible

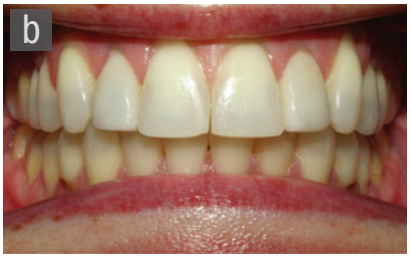
The lower jaw should be in balance with the upper jaw. The most common imbalance is retrusion of the lower jaw created when a narrow upper jaw forces the lower jaw back. This can trap the lower jaw in a

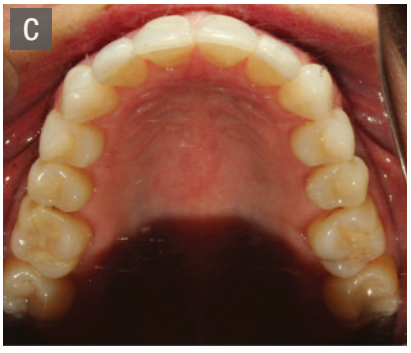






Figures 2a-c. Pre-treatment photos showing deep overbite and narrow arches.





Figures 3a-c. Completion of treatment.

retruded position, resulting in undesirable overbite and overjet. This Class 2 malocclusion can lead to TMJ dysfunctions, forward head posture or even Obstructive Sleep Apnea. With proper mandibular positioning, teeth can be positioned ideally and lower facial harmony can be established. Challenges with the adult patient may exist because of previous adaptations within the TMJ, which resulted from 'trapping' of the lower jaw during the patient's growth years. The TMJ is accommodative and the teeth have a profound influence on mandibular positioning, thus trapping can occur. A principle to understand here is that "teeth dominate; muscles and joints accommodate". Even though a lower jaw may appear retruded at first look (in a Class II case), the problem may be within the accommodative TMJ and not due to a short mandibular length. That is why TMJ x-rays should always be used to access the correction of mandibular positioning, especially when orthognathic Surgery is being considered.

Key # 4. Healthy TMJ function

The temporomandibular joint is used for speaking and eating and is the most complex joint in the human body. The TMJ's become dysfunctional when they are strained because the improper positions of the teeth are forcing the lower jaw out of alignment and into a pathologic position. The TMJ's are the cornerstone of a proper bite and must be corrected if they are dysfunctional. If not, a myriad of symptoms, such as headaches, facial pain, clicking jaw joints and problems with the eyes, ears and neck will appear and may worsen over time. In order to establish a healthy balance for the chewing system, proper function of the TMJ must be taken into consideration and range of motion measurements should be recorded for every new orthodontic patient.

Key #5. Ideal head posture

Proper head posture is very important and is linked to a person's neck and back health. Teeth and jaw positions profoundly influence head posture. If proper balance is achieved, by the first four keys above, then head posture can be positively influenced. Further care, from a neck and back doctor, or therapist, may also be of additional benefit.

Key #6. Avoidance of OSA

Obstructive Sleep Apnea (OSA) is a serious medical problem affecting as much as 20% of the population. It can lead to heart disease and even to premature death via strokes and heart attacks. Recent studies have even shown a link to cancer. OSA is a cutting off of the airflow while a person is sleeping. This causes a person to stop breathing during an aponea event. A common cause of OSA is when the lower jaw is retruded and the tongue drops too far back. Another common contributor to this problem is a narrow upper jaw. By properly following the first six Keys listed, the likelihood of OSA can be reduced.

Key #7. Ideal lower facial symmetry

Facial asymmetries can develop because of a mismatch of the upper and lower jaws with malocclusions causing the lower jaw to shift to one side or the other. A narrow upper jaw is almost always the source of this type of asymmetry. A correction should be made, early in life, or complications such as a TMJ Dysfunction may

occur. The chapter on this important key shows how easy it is to misdiagnose this problem, which may result in unnecessary surgeries to correct a facial asymmetry.

Key #8. Elimination of adverse oral habits

Youthful habits such as thumb- or finger-sucking, nail or pencil biting or anything putting adverse pressures to the structures in the mouth need to be eliminated. These can not only lead to adverse tooth movements requiring orthodontic treatment, but can have other health consequences. Adults may still exhibit anterior tongue thrusts due to a previous digit habit from childhood.

Key #9. Optimal teeth positioning

Crowding or spacing of front teeth is the most obvious orthodontic problem that an untrained eye can easily see. For the trained orthodontist, or dentist, orthodontic problems that are less obvious also need to be addressed. These include crossbites, overbites and underbites, in addition to the crowding or spacing previously mentioned. Proper positioning of the teeth and jaws, through orthodontic/orthopedic treatment, if necessary, can assure that the first 8 keys are achieved and maintained. Decades ago, Andrew's "6 Keys to Normal Occlusion" established a guideline for dental specialists to use. This is assuming the full complement of 28 teeth is maintained and that permanent teeth are not extracted during orthodontic treatment.

A final word regarding the nine keys to lower facial harmony: By following these goals, it is our belief that the most healthy, beautiful and stable orthodontic results can be achieved, while sparing the patient unnecessary permanent teeth extractions and/or jaw surgery.

About the authors

Dr Derek Mahony is a Sydney-based specialist orthodontist who has been actively involved in research that links constricted maxillary archforms to nasal breathing problems, adverse facial growth and systemic health problems such as nocturnal enuresis. He has presented over 400 lectures on orthodontic topics in more than 50 countries. As a practising clinician, Dr Mahony's research interests are in the aetiology of malocclusion and the guidance of facial growth. Please contact info@derekmahony.com for further information or clinical questions.

Dr Kent Lauson's distinguished career as a specialist in orthodontics, dentofacial orthopedics and temporomandibular dysfunction (TMJ) has spanned over 30 years. He graduated from the University of Iowa with his Doctorate of Dental Surgery Degree in 1971 and spent two years in the USAF Dental Corps where he studied Periodontics and was the Preventive Dentistry officer of his base. He then completed his orthodontic residency in 1975 at St. Louis University Medical Center and has been in private practice in Metro Denver ever since. During this time he helped develop the techniques for completing orthodontic treatment resulting in full beautiful smiles without the removal of any permanent teeth.