

Early Orthodontic Treatment for Children Can Drastically Improve Their Overall Health

Dr. Brock Rondeau, *I.B.O., D.A.B.C.P., D-A.C.S.D.D., D.A.B.C.D.S.M.*

In this article I would like to stress the importance of general dentists learning how to treat the children in their practices with a functional orthopedic philosophy to help open the airway and avoid the extractions of permanent teeth.

When treating patients with crooked teeth there are two basic treatment philosophies; either extract teeth and use fixed braces to align the teeth or fixed or removable functional appliances to expand the arches to create space to align the teeth. Traditional orthodontics often assumes that dental crowding is caused by teeth that are too large for the arches. Functional orthodontics expands narrow arches and makes room for all the permanent teeth without extraction of permanent teeth. From an overall health standpoint, non-extraction arch development orthodontics treatment is far superior to extractions of permanent teeth which causes further constriction of an already narrow constricted arch.¹ The expansion of the upper arch helps create nasal breathers and subsequently opens the nasal airway. The extraction of bicuspid (16 mm tooth structure) routinely results in closing the nasal airway and often creates a mouth breather.

One of the keys to excellent health is to expand the upper arch to make room for the tongue to function properly. During a normal swallow, the tip of the tongue touches the incisive papilla, and the base of the tongue touches the palate. This normal swallow (secondary swallow), prevents an anterior open bite and also keeps expanding the upper arch with each normal swallow. If the patient has a constricted upper arch and is a mouth breather, the tongue assumes a lower position in the mouth and does not expand the upper arch. The tip of the tongue goes between the teeth and can cause an anterior open bite.² This anterior open bite can only be rectified by expanding the upper arch and retraining the tongue to swallow properly. First step is to make room for the tongue, second step, retrain the tongue. The ideal appliance for correcting anterior open bites is an AMCOP Appliance which is an elastomeric appliance that only has to be worn 1 hour during the daytime and all night. Excellent co-operation for younger children in the mixed dentition. All patients want straight teeth and a nice broad smile. Extraction of bicuspid on the upper arch further constricts the maxilla and results in a narrow, unattractive smile. Patients much prefer the non-extraction, arch expansion technique which gives them a beautiful, broad smile.

One of my objectives in writing this article is to convince general dentists that, with proper training, (8-day introductory course in orthodontics), they will be able to diagnose and treat easy cases. In all other specialties in dentistry the general dentists does the simple cases. The specialists, including the endodontist, periodontist, prosthodontist and oral surgeon do the complex cases. Fortunately, in dental school, the other specialists gave the general dentists enough knowledge to be able to treat the simple cases. The orthodontic profession decided not to teach general dentists and encouraged them to refer all orthodontic patients to the orthodontic specialist. When I graduated, over 50 years ago, I had no interest in orthodontics. There was a shortage of dentists and my practice was very busy. The orthodontic instructors that I had did nothing to encourage me to learn more about orthodontics. After about 5 years I was getting frustrated with the fact that over 70% of the children in my practice, age 5-12, had malocclusions and yet when I referred the cases to local orthodontists they said to wait until all the permanent teeth erupt. This seemed wrong to me. Especially later on when the literature reported that most malocclusions get worse over time if left untreated.³ The term "Supervised Neglect" seemed appropriate.

I found when I first started my practice it was not necessary to look for alternative sources of income. Today, as all general dentists know, the situation is very different. There is a shortage of patients and an abundance of general dentists. I believe that the general dentist today should look seriously at adding new services to their practices in order to increase their annual income.

Years ago, general dentists were taught to place braces on patients in dental schools in Ontario. Several years ago, both University of Toronto and University of Western Ontario's dental schools were ordered to stop teaching general dentists how to place orthodontic brackets on patients. Bracket placement is not a difficult procedure. At the request of the orthodontists a few years ago the University of Toronto set up a 2 day program to teach dental assistants and hygienists how to place brackets and arch wires on typodonts. We also teach dentists and hygienists how to place brackets in our course. Parents want straight teeth for their children. We therefore find it necessary to treat our younger patients in 2 stages. Phase one is to treat the malocclusion with functional appliances to correct crowding, posterior crossbites, anterior

crossbites, deep overbites or open bites as early as possible. Often children have some minor crowding on the front teeth after most of the malocclusion has been corrected in Phase one. Phase 2 treatment would be the placement of brackets on the 6 anterior teeth for 3-5 months. Sometimes that corrects 80%-90% of the child's malocclusions before the permanent teeth erupt.

The advantage of adding early orthodontic treatment to your practice is that 70% of your children need the treatment. The children are already in your practice waiting to be treated. One of the main advantages of incorporating early treatment is that the parents, once they are properly educated, are extremely interested in their children receiving the necessary treatment as soon as the malocclusion is evident. I have also found adding early treatment for children increased my practice referrals especially if other orthodontist practices in the area wait until all the permanent teeth erupt to begin orthodontic treatment. I cannot stress enough the importance of including your team to help motivate and educate the parents and children about the overall health and esthetic advantages of treating malocclusions as early as possible.

When treating children, lack of cooperation is not a problem because all the different functional appliances can be either removable or fixed. I ask the parent what the level of cooperating is with their child and select the appropriate appliance. Most functional clinicians agree that it is easier to motivate a child in mixed dentition rather than to try and motivate a teenager to cooperate with extractions and fixed braces. Most of my patients have achieved an 80%-90% improvement in the malocclusion by the time the permanent teeth erupt. The majority of my early treatment patients do not have to wear fixed braces for more than 6 months in high school. This is an important factor for parents and teenagers to consider. When treatment is started in mixed dentition the treatment plan can be done in stages to lessen the cost to the parent and frequently the overall cost is less than if the treatment was delayed until all the permanent teeth erupt.

When I started using functional jaw repositioning appliances to treat Class II, Div 1 skeletal patients with normally positioned maxillas and retrognathic (underdeveloped) mandibles I was mainly concerned about the fact that the profiles were significantly better than when the upper

bicuspid were extracted. Years later I learned that bicuspid extraction in some cases can cause serious health problems for patients.⁴

DETRIMENTAL AFFECTS OF BICUSPID EXTRACTION

Bicuspid extractions on the maxilla can significantly close the airway which adversely effects the utilization of oral appliance to open the airway. The treatment of choice for oral appliances is to advance the mandible to keep open the airway at night. The use of functional jaw repositioning appliances that advance the mandible may help prevent snoring and sleep apnea in children and adults in the future. Orthodontic clinicians who do not believe in early treatment using functional appliances prefer to treat with extraction of bicuspids in the permanent dentition using fixed braces. This technique is often referred to as the retractive technique. The majority of Class II, Div 1 malocclusions have a normally positioned maxilla and a retrognathic mandible with a moderate to large overjet. The overjet is corrected by extracting the upper bicuspids and retracting the 6 anterior teeth into the extraction spaces. Most Class II, Div 1 malocclusions have a very narrow upper arch which is one of the reasons for dental crowding. This solution seems completely illogical since they make the existing maxilla even smaller when they remove 16 mm of tooth structure. If the maxilla was determined to be in the correct position and the mandible retruded, why would orthodontic clinicians decide to treat the normally positioned mandibles and by extracting the upper bicuspids making the maxilla more retruded? The results are a decrease in upper lip support which makes the nose appear larger, a flattened facial profile, narrow smile and the patient left with an unattractive retrognathic maxilla and mandible.

The other major problem with extraction of bicuspids on the maxilla and the retraction of the 6 anterior teeth is that this causes constriction of the maxilla, prevents the underdeveloped mandible from coming forward and effectively closes the airway which can be very detrimental to the health of the patient. The extraction of lower bicuspids in children or adults constricts the width of the mandible which forces the tongue to assume a more posterior position in the mouth. At night, when the patients sleeps supine, the tongue goes back and obstructs the pharyngeal airway and increases the risk of snoring and sleep apnea.

**BICUSPID EXTRACTION CLOSES AIRWAY
RETRACTS ANTERIORS CONCAVE PROFILE**



**BICUSPID EXTRACTION CLOSES AIRWAY
PATIENTS BRUX AT NIGHT TO OPEN AIRWAY**



TONGUE GOES BACK OBSTRUCTS AIRWAY



**BICUSPID EXTRACTIONS LOWER ARCH
NO SPACE FOR THE TONGUE
TONGUE FALLS BACK CAUSES
SNORING, SLEEP APNEA
IMPEDES NORMAL SPEECH**

The extraction of upper or lower bicuspids in order to make room for the crooked teeth can have a devastating effect on the patients profile, reduces the width of the smile and increases the incidence of bruxism, snoring and sleep apnea and TM dysfunction. When the upper bicuspids are extracted this reduces the size of the nasal airway and patients will increase bruxism in order to open the nasal airway so they can breathe better. When the upper bicuspids are extracted and the overjet is corrected by retracting the upper six anterior teeth posteriorly to close the extraction sites this can frequently cause TM dysfunction.⁵ This retraction of upper anterior teeth often results in the condyles being positioned upwards and backwards compressing the nerves and blood vessels in front of the ear canal.

to go retrognathic,⁶ the solution should be to reverse the process as part of the treatment plan. The desired treatment plan would be to solve any functional problems such as airway constriction and then to develop the maxillary arch to its normal size and shape transversely and sagittally. Once we have established a normal arch form and the maxillary incisors have been normalized we can advance the mandible to its correct forward position with a lower jaw repositioning appliance such as AMCOP, Twin Block, Rick-A-Nator or Multi FA Class II appliance. These functional appliances advance the mandible and allow for the eruption of the lower posterior teeth which effectively moves the condyles down and forward to a more physiological, pain free position in the glenoid fossa. Besides the elimination of TM dysfunction, the patient has a significant improvement in facial form. The patient has a full profile, full lips, broad smile and very attractive straight profile.

FUNCTIONAL PHILOSOPHY

It would seem logical that if the airway constriction caused the constriction of the maxillary arch which caused the mandible

Since I started to focus not only on the teeth and gums I have found my practice to be more rewarding. The significant improvement in their breathing, broader smiles, improved profiles, less extractions of permanent teeth and improvement in children's self-esteem and in overall health has been a life changer for me and for many of my patients.

**MALE AGE 8
CONSTRICTED MX ARCH
NARROW SMILE**



**CONSTRICTED MAXILLARY ARCH
POSTERIOR CROSSBITE**



ANTERIOR CROWDING

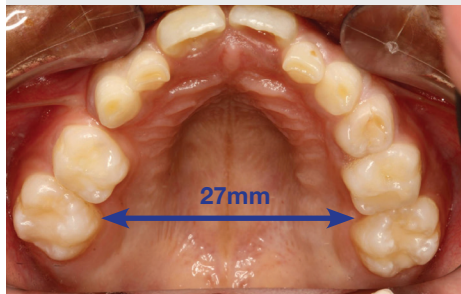


**REASON TO EXPAND MX ARCH
NO ROOM LATERAL INCISORS**

**NORMAL INTERMOLAR WIDTH 37mm
COTTON ROLL 37mm**



**NO ROOM FOR LATERAL INCISORS
INTERMOLAR WIDTH 27mm**



SCHWARZ APPLIANCE



TREATMENT PLAN

EXPAND MX ARCH
SCHWARZ APPLIANCE
1 MIDLINE SCREW
ADAM'S CLASPS FIRST MOLARS

TURN MIDLINE SCREW TWICE
PER WEEK

2 mm PER MONTH EXPANSION
REMOVE FOR SPORTS
REMOVE FOR EATING

SCHWARZ EXPANDED 8mm



SCHWARZ EXPANDED 8mm ROOM FOR LATERALS



27 mm + 8 mm = 35 mm

CROOKED FRONT TEETH

STRAIGHT TEETH



3 MONTHS

ANTERIOR CROSSBITE

STRAIGHT TEETH



AGE 8

AGE 11

PHASE I ORTHODONTIC FEE: \$2,500
FEE FOR RECORDS: \$500

SCHWARZ APPLIANCE
BRACES 6 ANTERIORS

TOTAL FEE: \$3,000

CROOKED TEETH

STRAIGHT TEETH



AGE 8

AGE 12

CROOKED TEETH



AGE 8

STRAIGHT TEETH



AGE 12

extremely sore facial and neck muscles when palpated. The patient is also asked several questions about the signs of TM dysfunction including, limited range of motion, limited jaw opening, clicking upon opening and closing, or intermitted jaw locking.

Observations of the teeth:

Incidence of excessive tooth wear due to bruxism, abfractions, significant tooth loss.

TM DYSFUNCTION

As I just explained, the extraction of bicuspids in the maxilla in a Class II, Div 1 patient with a normally positioned maxilla and a retrognathic mandible with any signs or symptoms of TM Dysfunction will significantly worsen the situation.⁷

TMJ Health Questionnaire:

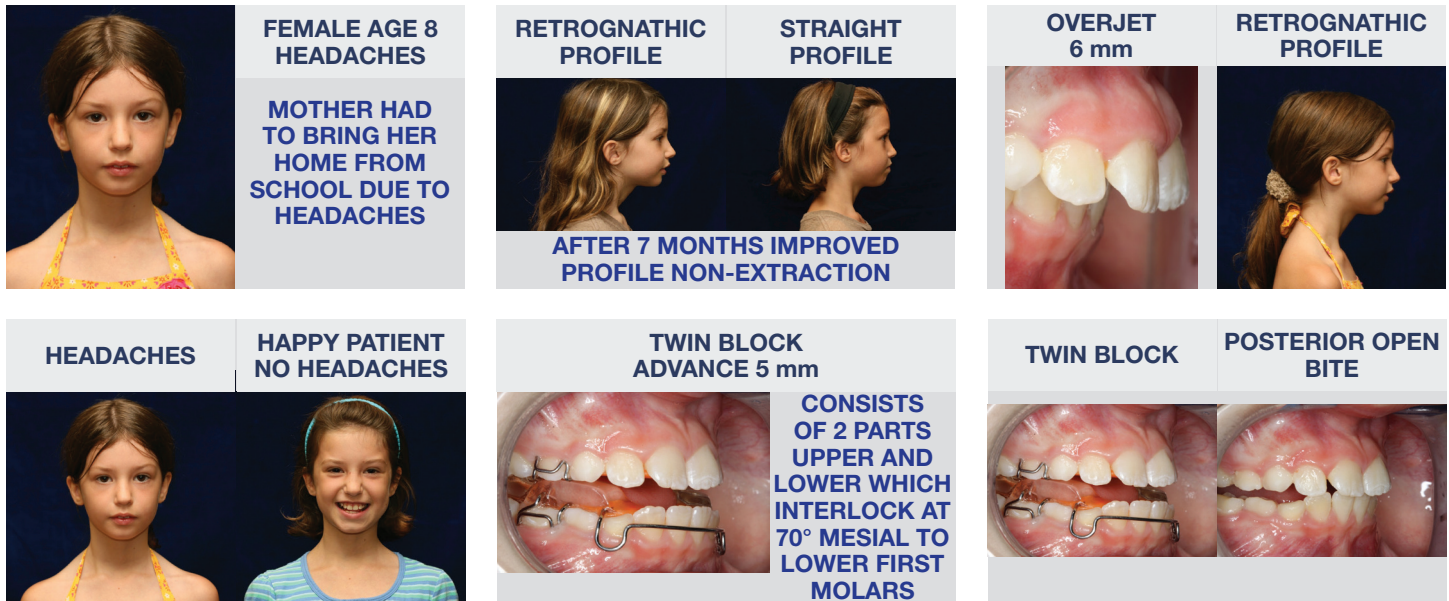
The patient is asked several questions regarding possible symptoms which include headaches, ringing in the ears, earaches, pain on chewing, pain behind the eyes, dizziness and fainting, numbness in hands, shoulders and back or

If the patient has any signs or symptoms of TM dysfunction or evidence of tooth loss due to bruxism then the TM dysfunction must be corrected prior to orthodontics, restorative, cosmetic or oral appliance therapy.

The solutions for a patient with TM dysfunction when the condyles are posteriorly displaced is to use a functional jaw repositioning appliance to move the mandible and subsequently move the condyles downward and forward away from the nerves and blood vessels in the bilaminar zone in front of the ears.⁸

CASE: FEMALE, AGE 8

My question to all general dentists. What would you do if a female, age 8 came to your office with headaches so severe that she had to spend 30% of her time at home due to these headaches?



PHASE I: Twin block brings the lower jaw forward 6 mm in 7 months.

PHASE II: Wait until all the permanent teeth erupt. 90% of the treatment done with the Twin Block. Normal overjet, normal overbite, Class I molar. Sometimes braces utilized 6 months to correct rotations.

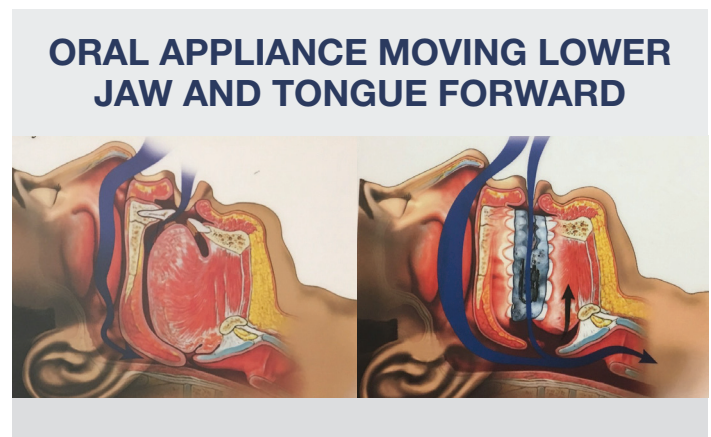
SNORING & SLEEP APNEA

We must diagnose and treat children with airway or breathing problems. Lack of adequate oxygen can lead to many problems including causing a reduction in normal growth. Children with airway obstruction never get to Stage 3 sleep (restorative sleep) and cannot secrete growth hormones. Lack of Stage 3 sleep can also inhibit brain development.⁹ Airway obstruction due to constricted arches, enlarged tonsils or adenoids can also cause children to have ADHD (Attention Deficit Hyperactively Disorder). This is an extremely difficult problem for children, parents and teachers. Children

become hyperactive and aggressive in school. Inability to concentrate, extremely fatigued and generally have learning difficulties in school. They are often prescribed drugs such as Ritalin, Concerta etc, that causes the children to become almost zombies and unable to function normally. The medical problem is basically treating the effects of the problem. Only the dental profession can truly treat the causes of the problem. The child needs to have the airway obstruction removed in order to give them the most important nutrient, oxygen.¹⁰ The first step towards treatment is to use a fixed or removable functional appliance to expand the narrow constricted upper arch to normal. The second step would be to eliminate the enlarged tonsils or adenoids obstructing the airway by referring the child to an ENT specialist.

Prior to the treatment for snoring or sleep apnea we need to:

1. To evaluate the health of the TMJ.
2. Must have a sleep study, either a Home Sleep Study or Hospital or private clinic sleep study.



CONCLUSION

Patients think correctly that general dentists are qualified to treat problems of the teeth and gums. Therefore, their patients or parents would not mention the fact that she has a headache. I believe that all general dentists should ask all patients to complete the TMJ Health Questionnaire which lists numerous possible signs and symptoms of TM dysfunction. Then the general dentist has 2 options. First option, learn how to treat children with TM dysfunction with functional appliances. Second option, refer the patient to a dentist or orthodontist that treats children's malocclusions or TM dysfunction.

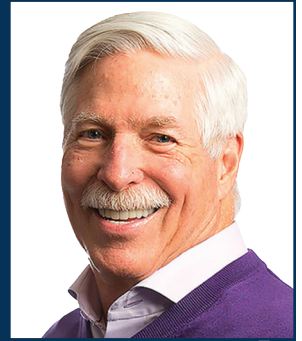
My opinion is that all general dentists have an obligation to screen all patients for ortho problems, TMD signs or symptoms and airway problems that cause snoring, ADHD (Attention Deficient Hyperactivity Disorder) and sleep apnea. If the general dentist feels qualified to treat based on the courses taken after graduation, then diagnose and treat the patient. Otherwise, refer the patient to someone who is qualified to treat them. From a personal standpoint, I felt a great sense of pride when I was able to help this young girl that was missing school due to severe headaches caused by her mandible being too far distally. I know that both my patient and her mother will never forget the positive pain relieving experience that she received in our office.

If you genuinely want to help improve both the appearance as well as the health of the children in your practice I would urge you to register for an Introductory course in Orthodontics that teaches early orthodontic treatment in children.. [So](#)

REFERENCES

1. Elias, K. G., Sivamurthy, G., & Bearn, D. R. (2023). Extraction vs nonextraction orthodontic treatment: A systematic review and meta-analysis. *The Angle Orthodontist*.
2. Jalaly, T., et al. (2009). Effect of Tongue Thrust Swallowing on Position of Anterior Teeth. *Journal of Dentistry*.
3. Dimberg, L., Arnrup, K., & Bondemark, L. (2015). The impact of malocclusion on the quality of life among children and adolescents: A systematic review. *European Journal of Orthodontics*.
4. Ciavarella D, Campobasso A, Conte E, Burlon G, Guida L, Montaruli G, Cassano M, Laurenziello M, Illuzzi G, Tepedino M. Correlation between dental arch form and OSA severity in adult patients: an observational study. *Prog Orthod*. 2023 May 29;24(1):19.
5. Miller JR, Burgess JA, Critchlow CW (2004). "Association between mandibular retrognathia and TMJ disorders in adult females". *Journal of Public Health Dentistry*. 64 (3): 157-63.
6. Franka Stahl,a Tiziano Baccetti,b Lorenzo Franchi,b and James A. McNamara, Jr. Longitudinal growth changes in untreated subjects with Class II Division 1 malocclusion *American Jour of Ortho and Dentofacial Orthopedics* July 2008, Volume 134, Number 1.
7. McNamara, J. A. (1983). Orthodontics and temporomandibular joint disorders. *The Angle Orthodontist*, 53(3), 197-208.
8. Ivorra-Carbonell L, Montiel-Company JM, Almerich-Silla JM, Paredes-Gallardo V, Bellot-Arcis C. Impact of functional mandibular advancement appliances on the temporomandibular joint - a systematic review. *Med Oral Patol Oral Cir Bucal*. 2016 Sep 1;21(5):e565-72.
9. Gelb, M., & Hindin, H. (2016). *GASPI!: Airway Health: The Hidden Path to Wellness*. New York: Gelb Publications.
10. Awadalla TO, Igwe O, Okefor CU, Attarian HP. Improvement of attention deficit disorder symptoms after treatment of obstructive sleep apnea in an adult: a case report and mini review. *J Clin Sleep Med*. 2024;20(5):825-827.

BROCK RONDEAU,
I.B.O., D.A.B.C.P.,
D-A.C.S.D.D.,
D.A.B.C.D.S.M.



Dr. Rondeau has been treating children's orthodontic orthopedic problems for over 35 years and has taught over 24,000 dentists worldwide. He recommends early orthodontic treatment for children utilizing a functional philosophy which is a non-extraction, non-surgical approach. By developing the arches with functional appliances he avoids the extraction of permanent teeth. He utilizes functional appliances to reposition the lower jaw forward which prevents orthognathic surgery and future TMJ and snoring and sleep apnea problems.

Treatment must be implemented to prevent children from mouthbreathing which causes malocclusions and many health problems such as ADHD, aggressive behaviour, poor marks in school, bedwetting, bruxism, snoring and sleep apnea.

Since 75% of children and adults have a malocclusion general dentists need to take courses in order to treat them. Parents are looking for general dentists to help not only improve the appearance of their children but also increase their overall health by creating beautiful, broad smiles, patent airways and healthy TM joints.