AIRWAY FOCUSED ORTHODONTICS

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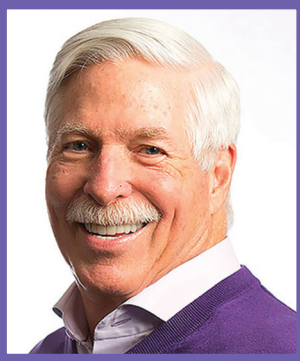
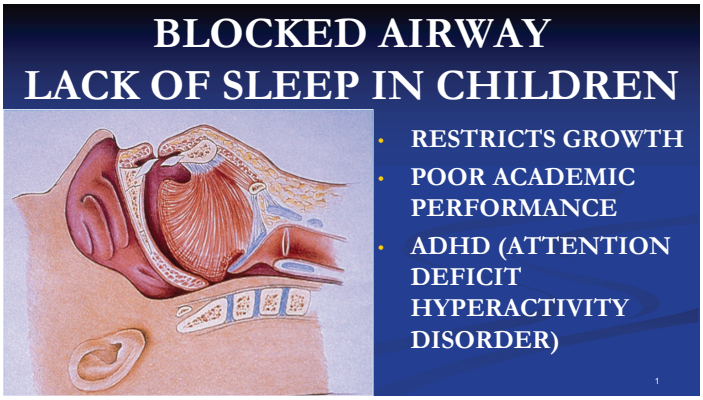


Dr. Rondeau has been treating children's orthodontic orthopedic problems for over 35 years and has taught over 24,000 dentists worldwide. He recommends early orthodontic treatment for children utilizing a functional philosophy which is a non-extraction, non-surgical approach. By developing the arches 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.

Recently the term has emerged "Airway Orthodontics". This used to be known as "Functional Jaw Orthopedics" which I have been practicing and teaching for over 35 years. It basically addresses the need to think about the importance of ensuring a patent airway when treating the patients malocclusion. It also stresses the importance of early orthodontic treatment for children. Unfortunately in most North American undergradute dental programs as well as graduate orthodontic programs the early orthodontic treatment of children is not taught on a consistent basis. Functional jaw orthopedics is basically treating the skeletal problems early to ensure that the patient has a patent airway which is the key to health. Everyone, including children, need to be able to breathe through their nose and an adequate amount of oxygen is again the key to proper growth and health. Airway obstructions which can cause sleep apnea in children prevents the child from obtaining Stage 3 sleep which restricts the production of growth hormones that significantly restricts their growth as well as brain development.



It has been estimated that 70% of children have a malocclusion. Since 90% of the face is developed by age 12 it is extremely important to treat our children early if we want to guide and possibly modify the growth of our younger patients. The key to achieving beautiful broad smiles which all children and adults desire is to develop the arches with functional appliances preferably at an early age. This arch

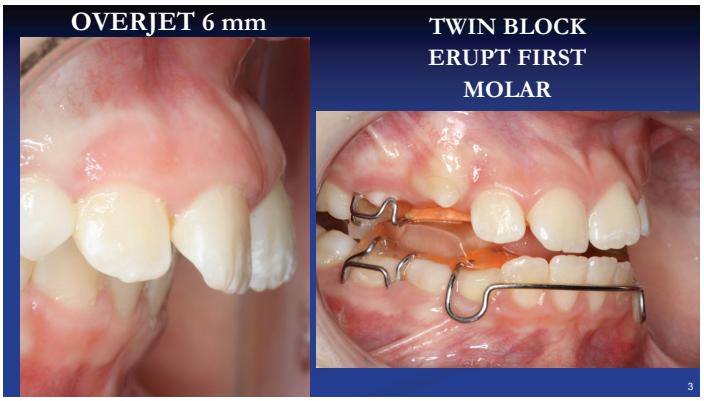
development has a positive effect on the airway. It converts many children from mouthbreathing to nasal breathing which is one important key to good health. Children with crooked teeth, deficient mandibles, protruding upper teeth, etc, are extremely self-conscious. When these problems are solved their self-image improves and they become more positive which helps ensure a better future for them. Parents seek out orthodontic practitioners that can improve the appearance and the health of their children.

Researchers commonly find that airway obstruction that causes breathing disorders is associated with a variety of mental challenges. ADHD in children and adults, anxiety depression, irritability, memory deficits, inability to concentrate and decreased alertness. [1,2,3]

Studies have shown that children with obstructed airways have more behavioural problems in school. Dr. David Gozal found that airway obstruction in children such as sleep apnea can reduce a child's IQ by 10 points.[4] Dr. Gozal also found that children with airway obstruction often developed more physiological changes that often lead to heart disease. The good news is that children that have had their enlarged tonsils removed experienced some reversal of this problem.[5]

The first thing a clinician must observe is that is the child a mouth breather or nasal breather. Most nasal breathers have a normal swallow which involves the tongue touching the roof of the mouth each time which expands the maxilla. This does not happen with mouth breathers as the tongue does not expand the maxilla upon swallowing but rather expands the mandibular arch. This leads to a constricted maxillary arch. The constricted maxillary arch often moves the tongue too far back which blocks the airway which leads to snoring and sleep apnea. This constricted upper arch often causes our younger patients to have dental crowding (malocclusion). The ideal treatment is to expand the maxillary arch with functional appliances to eliminate the crowding. This eliminates the crowding and also makes more room for the tongue which helps improve speech and prevents sleep apnea. Narrow maxillary arch can also limits the ability to breathe through the nose. Nasal breathers receive 20% more oxygen then mouth breathers.

I believe the key to a proper airway and indeed optimum health is to first establish a proper size maxillary arch. The roof of the mouth (palate) is the floor of the nose. When the maxillary arch and palate are expanded to normal this expands the nasal cavity both horizontally and vertically which frequently transforms a mouth breather into a nasal breather. This constriction of the maxillary arch often causes the mandible to go posteriorly which causes a skeletal Class II malocclusion. If the mouth breathing causes a constriction of the maxillary arch which causes a Class I crowded malocclusion then the logical treatment plan would be to expand the constricted maxillary arch to normal to make room for all the permanent teeth with fixed or removable functional appliances.[6] Unfortunately many orthodontic clinicians have not been trained to think this way and they choose to extract bicuspids to make room for the permanent teeth. This further constricts the maxillary arch and leads to many health problems including TM Dysfunction and sleep apnea.[7,8]



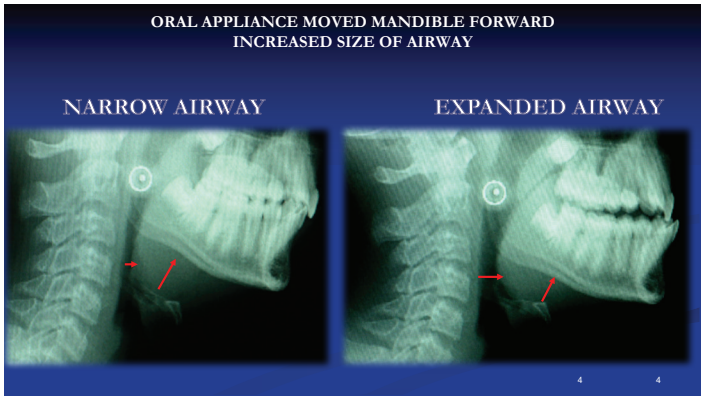
The key to proper treatment of children with airway problems is to first make the correct diagnosis. What is the cause of the airway obstruction? I have included a copy of the Pediatric Sleep Questionnaire that should be given to all children to help diagnose the problem.

BRUXISM

Bruxism is extremely common among children and adolescents with airway obstruction. One in four patients with sleep apnea grind their teeth at night according to research at Baylor University.[9] When there is an airway obstruction children snore, stop breathing (sleep apena) and then brux by moving their lower jaw forward to open the airway.10 The term is called "Sleep Bruxism". The treatment is to place composite buildups on the lower primary molars to open the vertical which will open the airway.

Three ways to open the airway:

1. Expand the maxillary arch with functional appliances. Open the airway horizontally.
2. Advance the mandible with functional appliances. Open the airway anteriorly.
3. Composite buildups lower primary molars open the airway vertically.



If the cause of the Class II skeletal malocclusion is the mouth breathing causing the constriction of the maxillary arch and which then causes the mandible to go posteriorly it would seem that the treatment of choice would be as follows:

1. Expand the maxillary arch back to its normal width in order to accommodate the mandible which will then be moved forward to its correct Class I position.
2. The utilization of a functional jaw orthopedic appliance, fixed or removable, to reposition the lower jaw forward to its original Class I skeletal position from the Class II skeletal retrognathic position.

The first priority of any malocclusion involving dental crowding is to address the problem of a constricted upper arch. Ideally the child's jaw should be U-shaped not V-shaped. Narrow V-shaped arches cause crooked teeth and malocclusions. V-shaped arches create a narrow palate which often causes a deviated septum, obstructs the nasal airway and encourages mouthbreathing. To help evaluate the width of the maxillary arch I recommend the placement of a cotton roll between the upper first permanent molars. The length of the cotton roll is 37 mm which is the ideal width of the first molars in permanent detition. If the child is a nasal breather the maxilla will expand approximately ½ mm per year. Girls grow to approximately age 15 and boys to approximately age 17. Mouth breathers will expand more slowly since the tongue does not expand the maxilla upon swallowing. One important key is that is their room for the eruption of the upper and lower lateral incisors. If there is not adequate room for the laterals incisors then the arches must be developed so there is room for the central and lateral incisors in both the maxillary and mandibular arches.

CASE STUDY, MALE AGE 8

Diagnosis:

- Constricted upper arch
- Intermolar width 27 mm.
- No room laterals
- Males will grow until age 17.

Treatment plan:

- Must expand maxillary arch to 35 mm to eliminate crowding when the permanent teeth erupt.
- Maxillary Schwarz Appliance
- Expand arch to 35 mm
- Eliminate crowding

Level I Introduction to Orthodontics

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Course Objective & Content

The purpose of this comprehensive program is to teach general and pediatric dentists how to diagnose and treat simple orthodontic cases. Emphasis will be placed on thorough records and diagnosis. Treatment will involve using a combination of functional appliances, mainly in mixed dentition and fixed orthodontic braces (straight wire technique) in permanent dentition. Dr. Rondeau's systematic approach, organization and marketing tips make incorporating orthodontics into the general practice relatively easy.

Session 1. Early Treatment Mixed Dentition, Functional Appliances, Diagnostic Records, Cephalometrics, Practice Management

Session 2. Straight Wire Mechanics, Class II Treatment, Twin Block™, Rick-A-Nator™, Carriere Motion 2, Bracketing, Banding of Molars, Archwires

Session 3. TMJ in Orthodontics, Sagittal & Tandem Appliance, Class III, Splint Therapy, Joint Vibration Analysis, Carriere Motion Appliance 3, Myofunctional Appliances

Session 4. MARA™ Appliance, Open Bite Cases, Impacted Cuspids, Clear Braces, Case Finishing, Retention, Snoring & Sleep Apnea, Clear Aligners, Molar Distalization

Toronto, ON

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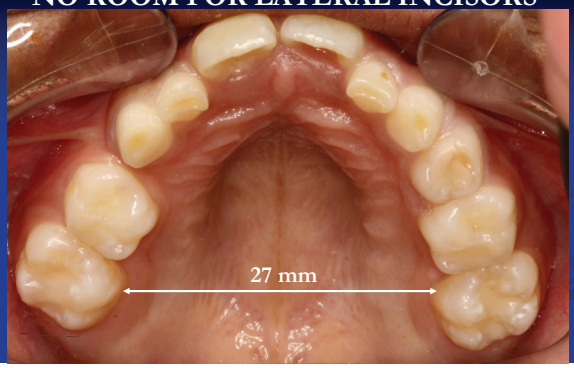
CONSTRICTED MAXILLARY ARCH

SEVERE BRUXISM

CAUSES OF BRUXISM

AIRWAY OBSTRUCTION
PATIENT'S BRUX TO OPEN THE AIRWAY

NO ROOM FOR LATERAL INCISORS



ENLARGED TONSILS CAUSES ANTERIOR TONGUE THRUST

CHRONIC TONSILLITIS PUSH TONGUE FORWARD DUE TO PAIN AND DECREASES IN THE AMOUNT OF SPACE WHICH CAUSES AN ANTERIOR TONGUE THRUST.

TARVADE, SUCHITA MADHUKAR, AND SHEETAL RAMKRISHNA. "TONGUE THRUSTING HABIT: A REVIEW." INT J CONTEMP DENT MED REV 2015 (2015): 1-5.

ANOTHER STUDY SUGGESTS THAT THERE IS A POSITIVE CORRELATION BETWEEN SLEEP DISORDERS AND BRUXISM. THERE WAS AN IMPROVEMENT IN BRUXISM AFTER TONSILS AND ADENOID SURGERY.

DIFRANCESCO, RENATA C., ET AL. "IMPROVEMENT OF BRUXISM AFTER T & A SURGERY." INTERNATIONAL JOURNAL OF PEDIATRIC OTORHINOLARYNGOLOGY 68.4 (2004): 441-445.

TREATMENT PLAN

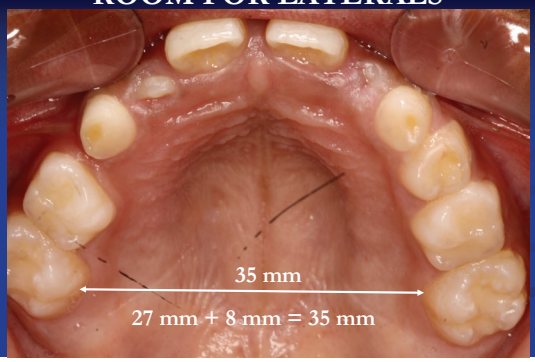
REFER TO EAR NOSE THROAT SPECIALIST FOR EVALUATION AND REMOVAL OF TONSILS

TREATMENT PLAN

EXPAND MAXILLARY ARCH
SCHWARZ APPLIANCE
1 MIDLINE SCREW
ADAM'S CLASPS FIRST MOLARS
ADAM'S CLASPS SECOND PRIMARY MOLARS

SCHWARZ EXPANDED MAXILLA

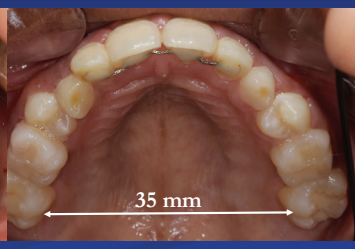
ROOM FOR LATERALS



BRACES FRONT TEETH ONLY 4 MONTHS

CROOKED FRONT TEETH

LINGUAL BONDED RETAINER



CROOKED TEETH

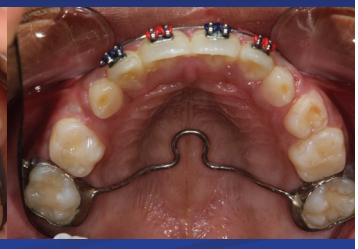
AGE 8

STRAIGHT TEETH

AGE 12

PREVENT RELAPSE

T.P. ARCH PREVENT RELAPSE



EFFECTS ON AIRWAY

ENLARGED TONSILS REDUCE THE SIZE OF THE PHARYNGEAL AIRWAY

SURGICAL REMOVAL OF ENLARGED TONSILS HAS A SIGNIFICANT IMPROVEMENT OF THE AIRWAY
REDUCED BRUXISM

BLOCKED AIRWAY
LACK OF SLEEP IN CHILDREN

1. RESTRICTS GROWTH
2. POOR ACADEMIC PERFORMANCE
3. ADHD (ATTENTION DEFICIT HYPERACTIVITY DISORDER)

21

OBSTRUCTED AIRWAY
SLEEP APNEA
PROBLEMS PAYING ATTENTION IN SCHOOL
OFTEN TIRED
BEHAVIOUR PROBLEMS
MISDIAGNOSED ADHD

WEISSBLUTH M, DAVIS AT, PONCHER J, REIFF J. *SIGNS OF AIRWAY OBSTRUCTION DURING SLEEP AND BEHAVIORAL, DEVELOPMENTAL, AND ACADEMIC PROBLEMS. J DEV BEHAV PEDIATR* 1983;4(2):119-121.

RASKIN S, LIMME M, POIRRIER R. *COULD MOUTH BREATHING LEAD TO OBSTRUCTIVE APNEA SYNDROME. A PRELIMINARY STUDY (ARTICLE IN FRENCH). ORTHOD FR* 2000;71(1):27-35.

22

CONSTRICTED ARCH | BROAD ARCH

AGE 8 | AGE 12

REMOVAL TONSILS ADENOIDS

IMPROVEMENT IN BEHAVIOR
ATTENTIVENESS IN SCHOOL
INCREASE LEVEL OF ENERGY
INCREASE ACADEMIC PERFORMANCE
INCREASE GROWTH AND DEVELOPMENT
ELIMINATE NOCTURNAL ENURESIS

24

CROOKED TEETH | STRAIGHT TEETH

AGE 8 | AGE 12

FEE PHASE I $3,000
SCHWARZ APPLIANCE
BRACES 6 FRONT TEETH
TP ARCH
LINGUAL BONDED RETAINER

PARENTS HAPPY. NO UPPER AND LOWER BRACES ON PERMANENT TEETH
SAVED $4,000

BROAD SMILE

CHAPTER SCHWARZ APPLIANCE

28

FACT "Ugly teeth do not kill people. Collapsed airways do."

Signs of Airway Obstruction

1. Narrow V-shaped maxillary arch
2. Mouth breathing
3. Open mouth posture
4. Snoring
5. Bed wetting
6. Chronic ear infections (enlarged adenoids)
7. Dark circles under eyes
8. Restless sleep
9. Crooked teeth (constricted arch)
10. Falling asleep at school
11. Hyperactivity
12. Aggressive behavior
13. Undersized, weight
14. Bruxism
15. Chronic allergies
16. Enlarged tonsils
17. Morning headaches
18. Low grades in school

The advantages of expanding the maxilla is that is opens the nasal airway and helps improve nasal breathing. Another benefit of a broad upper arch would be more room for the tongue which would make it easier for the patient to speak. Other advantages include making room for all the permanent teeth thereby eliminating the need for the extraction of permanent teeth. The patient ends up with straight teeth and a beautiful broad smile.

It is extremely important for orthodontic clinicians to learn to treat children's malocclusions early and to develop the upper and lower arches with removable or fixed functional appliances in order to avoid extraction of permanent teeth. We must constantly implement treatment plans for our younger patients that develop arches and not cause constricted arches by extracting permanent teeth. Parents are becoming more educated today and they will seek out orthodontic clinicians who are 'Airway Focused" and not extraction oriented. The long term health our children depends on our treating them with a functional jaw orthopedic approach.

PROPOSED ACTION PLAN

1. Screen all children with the Pediatric Questionnaire included in this article.
2. Educate your entire team to all look for signs of airway obstruction.
3. Educate your entire team about the importance of treating children's malocclusions and airway obstructions early with functional appliances.
4. Evaluate mouthbreathing and nasal breathing.
5. Watch free webinars at www.rondeauseminars.com on early orthodontic treatment.
6. Make a commitment to educate yourself and your team to help improve the overall health of your patients by treating children's malocclusions early.
7. Register yourself and your team to take the Airway Focused Orthodontic course for general dentists and separate courses for team members. All orthodontic courses also available online.

Pediatric Sleep Questionnaire

Date: _____

Patient Name: _____

Date of Birth: _____

WHILE SLEEPING DOES YOUR CHILD….	YES	NO	DON'T KNOW
Snore more than half the time?			
Always snore?			
Snore loudly?			
Have "heavy" or loud breathing?			
Have trouble breathing or struggle to breathe?			
HAVE YOU EVER…			
Seen your child stop breathing during the nights?			
DOES YOUR CHILD…			
Tend to breathe through the mouth during the day?			
Have a dry mouth on waking up in the morning?			
Occasionally wet the bed?			
Wake up feeling un-refreshed in the morning?			
Have a problem with sleepiness during the day?			
Has a teacher or other supervisor commented that your child appears sleepy during the day?			
Is it hard to wake your child up in the morning?			
Did your child stop growing at a normal rate at any time since birth?			
Is your child overweight?			
THIS CHILD OFTEN…			
Does not seem to listen when spoken to directly.			
Has difficultly organizing tasks.			
Is easily distracted by extraneous stimuli.			

Total number of "Yes" responses:

If eight or more statements are answered "yes", consider referring for sleep evaluation.

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