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The Big 3 and Me

PART ONE

IN THE PHYSIOLOGIC ORTHODONTICS CLASS AT THE LAS VEGAS INSTITUTE, WE FOCUS HEAVILY ON THE “BIG 3.” ORTHODONTIC TREATMENT AND POST TREATMENT ORTHODONTIC STABILITY NECESSITATE MANAGEMENT AND CORRECTION OF THE “BIG 3.” SO, WHAT IS THE “BIG 3?”

1



Nasal Breathing

2



No Tongue Habits

3



Lip Seal

Corruption of the "Big 3" is the root cause of nearly all malocclusions. That's right. Class I, Class II, and Class III malocclusions, crowding, deficient midfaces, cross bites, impacted teeth, high palatal arches, deep bites, open bites (and the list goes on) can all be explained by Enlow in his textbook, "The Essentials of Facial Growth." That textbook is paramount for understanding normal facial growth and development and should be required reading for every dentist and dental specialist. Malocclusions, so predominant in our society, cannot be explained by genetics alone. Our phenotype, i.e. our genome in addition to environmental influences, is the result of corruption of the "Big 3."

The inability to breathe nasally, habitual mouth breathing, and/or tongue habits lead to altered facial growth patterns which in turn lead to observable dental and orthognathic malocclusions. Orthodontic treatment is utilized to correct these malocclusions, but the underlying pathophysiology must be addressed in order to achieve an optimal physiologic occlusion, balanced facial growth and facial beauty.

Sleep apnea, temporomandibular dysfunction and malocclusion may all be related to the inadequate horizontal growth of the maxilla when the "Big 3" are violated. A more vertical growth pattern occurs whereby the midface is radiographically and clinically deficient and the mandibular growth pattern is resultantly more vertical than horizontal. The clinical appearance of the lower face is a steep mandibular plane angle and a short retruded mandible or even a Class III appearance if the midface is significantly deficient. The underdeveloped midface appears retruded with depressed cheekbones, excess sclera display, a prominent nose with a dorsal hump and a thin upper lip and a gummy smile. A long face with open mouth habitus and strained lip seal is the classic appearance of excess vertical facial growth.

According to Dr. John Mew, maxillary dental crowding is not the result of large teeth or small arches; rather it is the result of lack of forward growth of the nasomaxillary complex. The result is an underdeveloped, retrognathic and less aesthetic facial profile.

Occlusion is the relationship of the upper jaw to the lower jaw. But what if the upper jaw is deficient? What if the lower jaw is deficient? Can we really correct the dental occlusion without correcting those deficiencies? Sure, we can make the teeth

straight and make the upper and lower teeth couple nicely. Unfortunately, the result is a skeletal and physiologic malocclusion with straight teeth, at the expense of the airway, the temporomandibular joints and facial aesthetics.

A Case Study... Me

As a 48 year old male, I had multiple issues: a retruded lower jaw and an unaesthetic gummy smile with retroclined upper anterior teeth. I had considered, but did not pursue, orthognathic surgery, osseous crown elongation and gingivectomy with porcelain veneers and a surgical lip tack procedure, all to improve my smile and facial appearance. When I smiled, I did it cautiously to prevent the display of my gummy smile.

My medical and dental history I fear are, at least in part, all too common. I grew up in a rural area outside of Pittsburgh, Pennsylvania in the 1970's when the steel mills were spewing their plumes of smoke from the factories. I grew up on a pine tree nursery and had poorly controlled environmental allergies, which is no wonder considering the acres of grass, trees and polluted air by which I was surrounded every day of my young life. For 13 years, I endured up to two allergy shots per week (allergy immunotherapy) in an effort to control my allergies. My environmental allergies were so profound, I missed several days of school per year due to severe congestion, facial swelling and uncontrolled episodes of sneezing. At the peak of pollen season in the spring and fall, I was a chronic mouth breather and had difficulty sleeping due to a lack of nasal patency. I was referred twice as a teenager by my primary care physician to otolaryngologists for removal of tonsils and adenoids to improve my airway. Both times the physicians refused on the grounds that there were not enough actual tonsil infections in a one year period.

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To this day, I have enlarged palatine tonsils with large crypts that trap food which becomes foul-smelling tonsiloliths (tonsil stones) which I irrigate to remove daily. A broken nose in middle school only further compromised my nasal patency. After that, retraction orthodontics with headgear likely exacerbated the multitude of airway problems and did not correct the gummy smile and worsened the retroclined incisor appearance. Early into adulthood, chronic sinusitis became a complication that led up to three yearly sinus infections bad enough to cause missed work. By the age of 40, excessive daytime sleepiness and a sudden onset of nocturnal gastroesophageal reflux led to a diagnosis of mild to moderate Obstructive Sleep Apnea following a home sleep study. Remarkably, I self-referred for the sleep study after my primary care physician addressed the reflux by prescribing a proton pump inhibitor and suggested my somnolence was the result of a busy practice and having two small children at home.

Misguided, mistreated and misdiagnosed, my health was on a slow downward spiral. It was a descent that took 40 years to manifest, all as the result of early childhood airway problems. Management of symptoms only resulted in the development of different and more serious consequences. We all have patients that are chronic mouth breathers, have allergic shiners under their eyes, have inadequate nasal patency and have sleep disorders. Through the outline of my personal experience above, you don't need a crystal ball to know what is going to happen next. You have the opportunity to recognize, diagnose and treat the root cause of airway disorders and dramatically improve the quality and the duration of your patients' lives. In part two I will detail how to prevent and treat deficient midfaces that lead to sleep disorders, TMD and malocclusion. These are the foundational principles taught in the Physiologic Orthodontics series at LVI.



nosefacts

Anything that the human nose cannot smell is LETHAL to humans. For example, human noses cannot smell natural gas, carbon monoxide and carbon dioxide.