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Airway is the Stairway to Health

Today in my blog, I wanted to provide you all with some visuals of a proposed Chronology of events that can lead to a forward head posture, in particular upper cervical spine extension, or as we often refer to as craniocervical extension. For this blog I am reference a forward head posture as indicated below from a prior blog I did entitled:

TECHNICAL NOTES FROM MIKE: THE DETRIMENTAL EFFECTS OF FORWARD HEAD POSTURE ON NECK PAIN, HEADACHES, AND TEMPOROMANDIBULAR DYSFUNCTION

THREE EASY STEPS TO REFERRAL

1. Fill Out Script
2. FAX
   Script, Demographic and Insurance Info to:
   (239) 242-0076
3. Schedule
   Allied staff calls patient to schedule appointment.

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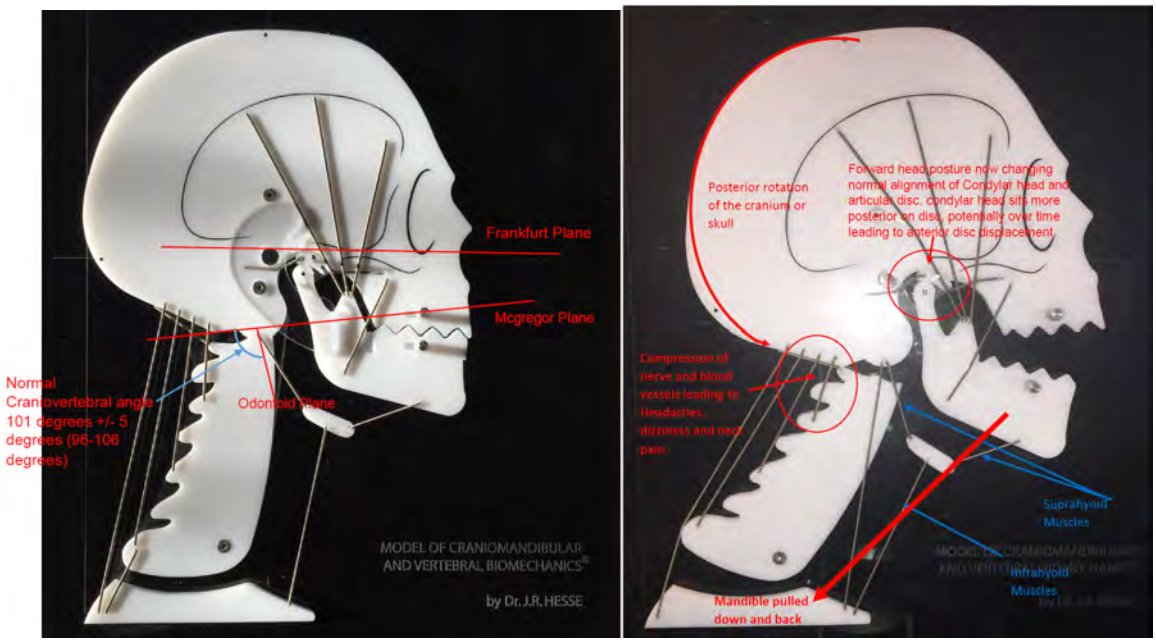

For this particular Blog, we tend to see a pattern with children as well as Adults, that can adopt a forward head posture and upper cervical spine extension due to Airway issues, which can eventually lead to Sleep disordered breathing issues, snoring, sleep apnea, etc. In addition, they could develop temporomandibular disorders and morning headaches, or headaches throughout the day.

Correct nasal breathing facilitates normal growth and development of the craniofacial complex. Important motor functions, such as chewing, and swallowing depend largely on normal craniofacial development. Any restriction to the upper airway passages can cause nasal obstruction possibly resulting in various dentofacial and skeletal alterations.

Airway obstruction, resulting from nasal cavity or pharynx blockage, leads to mouth breathing, which results in postural modifications such as open lips, lowered tongue position, anterior and posteroinferior rotation of the mandible, and a change in head posture. These modifications take place in an effort to stabilize the airway.

Contributing factors in the obstruction of upper airways include: anatomical airway constriction, developmental anomalies, macroglossia (enlarged tongue), enlarged tonsils and adenoids, nasal polyps, and allergic rhinitis.

Children with abnormal nasal resistance and mouth breathing present with enlarged adenoids and or tonsils. Similarly, upper airway allergies, infection, adenoids and enlarged tonsils lead to abnormal nasal resistance.

Hypertrophy of the adenoids, and palatine tonsils, are one of the most frequent causes of upper respiratory obstruction. Philosophies regarding the treatment of adenoid hypertrophy range from dietary control and environmental modifications to dentofacial orthopedics, change of breathing exercises, and surgical procedures.

This excessive adenoidal or tonsil growth usually interferes with normal facial growth and can result in abnormal breathing patterns, congestion, snoring, mouth breathing (as we have mentioned), sleep apnea, eustachian tube dysfunction/otitis media, rhinosinusitis, facial growth abnormalities, swallowing problems, reduced ability to smell and taste, and speech problems.

The first cephalometric x ray image below provides a visual of pretty good postural positioning, the airway highlighted in red, and then the dotted lines to indicate the airway space enlarged tonsils, adenoids or our soft palate can restrict or should I say “constrict” our airway.

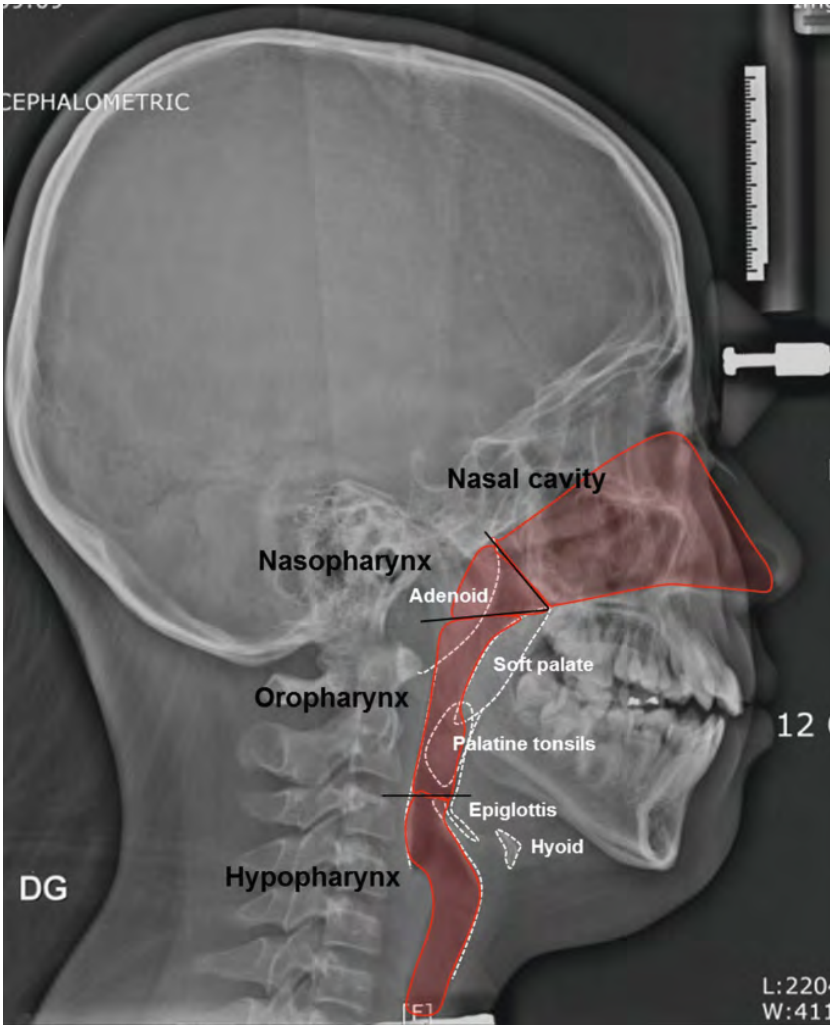

Image from: Kim, SJ., Kim, K.B. (2021). Craniofacial Morphology Related to Obstructive Sleep Apnea: Growth of Craniofacial Bones and the Upper Airway. In: Kim, K.B., Movahed, R., Malhotra, R.K., Stanley, J.J. (eds) Management of Obstructive Sleep Apnea. Springer, Cham.

The next 3 images are from Dr. Christine Whitten, she is an anesthesiologist, educator, author, and videographer dedicated to improving patient care and safety. She is the author of Whitten's Step-by-Step Guides, a series of books teaching airway management, intubation, and respiratory care: Anyone Can Intubate, A Step-by-Step Guide to Intubation and Airway Management 5th edition, and Pediatric Airway Management: A Step-by-Step Guide.

The Airway Jedi

I chose these 3 as she does a great job representing how adopting cervical spine extension can really open up the airway, especially for those whose airway is compromised, for example due to tonsils and adenoids. In the third image below, she is showing full cervical spine extension vs. just upper cervical spine extension, that many mouth breathers tend to adopt so they can open up their superior airway when their nose is restricted for a variety of reasons as mentioned about or due to enlarged lymphatic tissues.

Xray of neck in neutral position. Note how close the trachea and esophagus are. This image shows how the epiglottis works like a trap door to open and close the larynx.

Now let’s look at a lateral Xray of the neck flexed fully forward. When the head is flexed forward, the structures in the posterior pharynx and the tongue tend to obstruct the airway and close the larynx. You can test this by flexing your head forward as far onto your chest as you can. It becomes much harder to take a breath.

Tilt your head back as far as you can. Your airway is now wide open. When we run up a flight of stairs and get out of breath, we tend to tilt our heads back and slightly forward to maximize airway patency and decrease airway resistance. This position is known as the sniffing position. Image also shows with the neck in full extension showing how the relationship of the larynx changes with respect to the rest of the neck structures.

Finally, below is a great Dynamic MRI showing how our airway changes with head movement! I think it is pretty awesome!! I hope the link works for you all.

Compressed Neck Posture opens up Airway

So, to sum up, I hope this provides some written as well as visual imagery as to why someone might adopt a forward head posture. The problem of airway, can be a large problem that if left untreated can lead to changes facial growth, sleep related issues, sleep disordered breathing, early cervical spine degeneration, TMD issues, and headaches to name a few. As I mentioned in the beginning of my blog, click the link to a prior blog I did, to show how forward head posture can play a role in a variety of Musculoskeletal problems.

So, make it a priority for yourself, your loved ones and children and of course our patients, to educate each other on the value of maintain nasal breathing and a great airway.

As Dr. Jon Caufield DDS mentioned at one of his lectures I recently attended!

Airway is the Stairway to Health!

Here's to good health!

Mike