

Snoring and sleep apnea: how it can be prevented in childhood.

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Obstructive sleep apnea (OSA) is a very serious health problem in our society today. Medical consequences are significant, health-care costs high and good treatment options limited. The best treatment is prevention. This article addresses the issue.

The information in this article is too late for those who already have obstructive sleep apnea (OSA), but it may help prevent the condition in future generations.

Anyone with a large body mass (being overweight) or having a large neck size is at risk of having OSA. Other less known risk factors include high palates, narrow dental arches and retruded chins.[1] These features associated with the oral cavity were not very common in prehistoric times and for this reason prehistoric people may not have had the high incidence of sleep apnea as our present population.[2] What is the difference in the two time periods that could account for this greater risk of OSA in today's society? A key difference could be that the only option of feeding/nurturing newborns in prehistoric times was to breastfeed them. Today, bottle-feeding is a very common way of feeding our newborns and infants. The use of pacifiers is also a very common practice. Could bottle-feeding and pacifier use today be contributing to the malocclusions that put humans at risk for OSA? The answer is yes!

Newborns are uniquely designed / created so that they can breathe and swallow immediately without having to go through a learning period. A newborn's tongue is more advanced and the epiglottis is higher than its adult counterpart.[3,4,5] The advanced position of the tongue is designed so an infant can breastfeed immediately after birth. This close proximity of the epiglottis and soft palate helps separate the airway from the tongue and thus helps prevent the tongue from falling back into the airway and causing an obstruction.(Fig. 1) This close proximity may be the reason infants are less prone to die from SIDS during the first month.

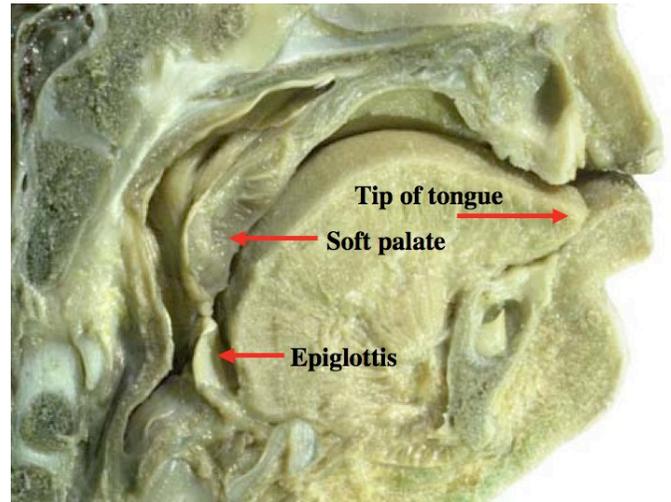


Fig. 1: *Fetus cadaver dissection demonstrating the close proximity of the epiglottis to the soft palate. Also note the advanced position of the tongue over the lower gum pad and that the tongue is located entirely within the oral cavity. This relationship helps prevent the tongue from falling back and obstructing the airway.*

Before the epiglottis naturally starts to descend to the adult position[6], the newborn's neurological system has time to develop and learns how to swallow and breathe properly. The innate front-to-back peristaltic-like wave motion of the tongue used during the swallow while the newborn is breastfeeding then becomes the proper pattern for the adult swallow. (Fig. 2)

During breastfeeding, tongue action can help influence the shape of the palate by rounding and flattening it. During bottle-feeding, pacifier use or digit sucking the tongue cannot reach the palate. The palate's height and width is influenced by the object that is between it and the tongue.[7,8](Fig. 3)

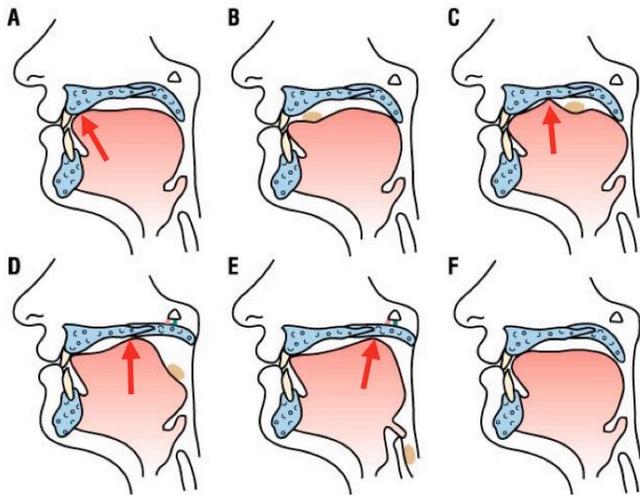


Fig. 2: Illustrates the front-to-back wave motion in the tongue during a correct adult swallow.

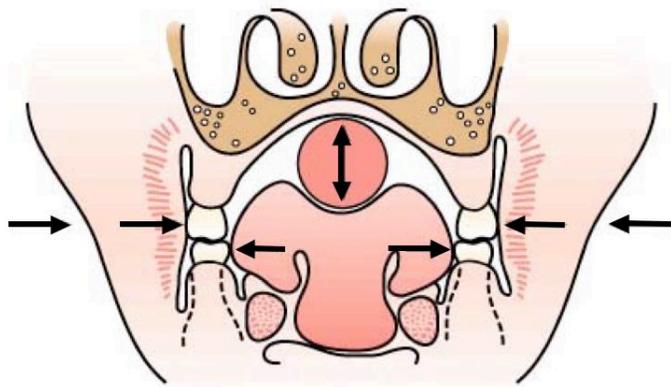


Fig. 3: Illustrates how any object other than the breast, that is placed between the tongue and the roof of the mouth (palate), and sucked on excessively, can impact the shape of the palate.

There is also a specific design reason for the elevated position of the epiglottis. This elevated position helps hold the tongue out of the airway. (Fig.1) The tongue drops back into the mouth and the epiglottis descends during the early months of development. The separation of the epiglottis and soft palate is what allows humans to produce a greater variety of sounds than all the other air-breathing forms on earth[3]. The descent of the epiglottis however makes breathing more complicated and potentially dangerous. The posterior (back) one-third of the tongue now becomes the front wall of the oropharynx – which can fall back and obstruct the airway. (Fig 4)

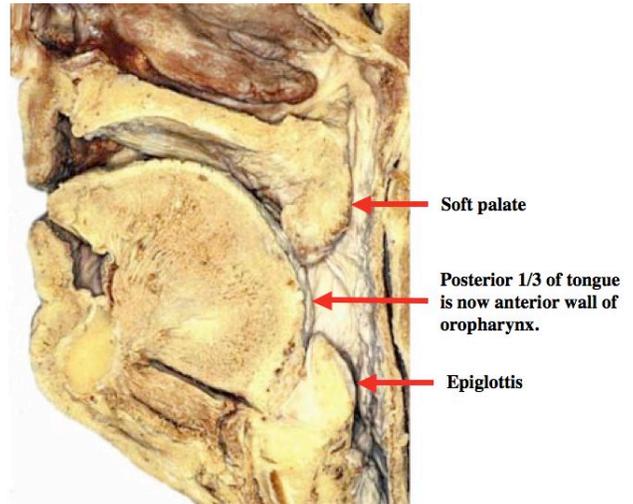


Fig. 4: Adult cadaver dissection. Note the epiglottis is well separated from the soft palate. The distal (back) one-third of the tongue is now the anterior (front) wall of the oropharynx/throat. This separation allows humans to produce a greater variety of sounds than all other air-breathing forms on earth.

Bottle-feeding, pacifier use and excessive oral habits like finger-sucking may interfere and change the correct motion of the tongue during a swallow and cause what can generically be called a tongue-thrust. (Fig 5)



Fig. 5: Illustrates a tongue-thrust with resultant open bite. The individual also had a high palate and narrow dental arches.

Bottle-feeding, pacifier use, excessive oral habits and tongue-thrusting can actually have a negative impact on the shape of the oral cavity by placing abnormal forces on bone and teeth within the oral cavity. (Fig 6) The malocclusions formed rarely go away by themselves. Orthodontics and retraining the tongue to swallow properly are usually needed.

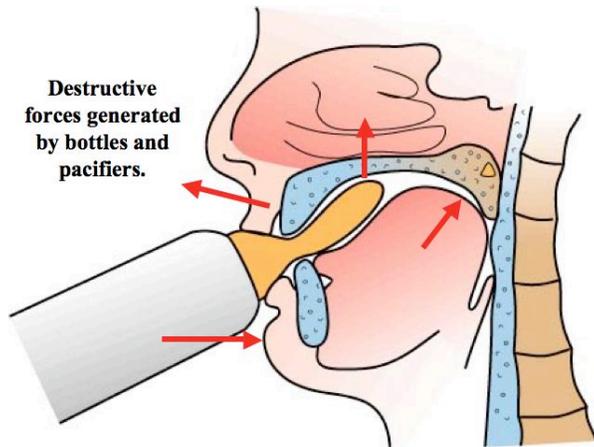


Fig. 6: *The various abnormal forces that can be created during bottle-feeding, pacifier use and excessive digit-sucking or other infant habits. These forces can alter the shape of the mouth, teeth and dental arches permanently.*

These forces create the high palates, narrow dental arches and retruded chins that put individuals at risk for snoring and sleep apnea. The largest increase in craniofacial development occurs within the first 4 years of life and is 90% complete by 12 years of age.[9] This is why early treatment and prevention is important during the younger years. The reason these characteristics are risk factors for OSA is that they infringe on tongue space and force the tongue back into the throat area due to a lack in space.

Since both bottle-feeding and pacifiers (both are artificial nipples of similar shape and size) push the tongue back[10], both bottle and pacifier use could possibly cause a pre-mature separation of the epiglottis and soft palate and reduce the protective

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airway function of this relationship; increasing the risk of SIDS. Pacifiers, bottle-feeding and excessive infant habits can definitely alter the swallowing pattern which can cause the malocclusions that put individuals at risk for snoring and developing obstructive sleep apnea. OSA has significant medical and behavioral consequences for both young and old alike – even deadly consequences like heart attacks and strokes.

Most lactation (breastfeeding) specialists know very little about OSA, and most sleep specialists know very little about the importance of breastfeeding. It is hoped this article will help both specialties understand the importance of each other's fields and researchers will start working together to help study and prevent the very serious medical condition of OSA. Prevention is the best form of treatment, and breastfeeding of our newborns and keeping pacifiers out of the mouths of infants is the best form of prevention.

For those infants who may not be able to get the benefits of breastfeeding, it is important to monitor them closely and treat early if they have high palates, narrow arches or retruded chins/jaws.

Conclusion / Summary: Breastfeeding reduces the risk of the malocclusions (bite relationships) that can put an individual at risk for snoring and OSA. Since OSA can lead to many health problems it can be concluded that breastfeeding is critical for the future health of our children.

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Note: This topic is covered more extensively in presentation form on Dr. Palmer’s website at www.brianpalmerdds.com. The articles authored by Dr. Palmer are also available and downloadable from his website under the section called “Articles”. The website is available to anyone in the world and the information on it is downloadable free of charge as long as it is used for educational purposes.



Dr. Brian Palmer is a dentist in Kansas City who has done extensive research on the development of the oral cavity and airway as well as the importance of breastfeeding as it relates to total health. More information on his research can be found on his website at www.brianpalmerdds.com

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