Conservative Treatment for Snoring -Sleep Apnea and Breathing Related Sleep Disorders
General, Family and Cosmetic Dentistry

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SnoreSolutions

Breathing Related Sleep Disorders

The Latest News on Airway Orthotic Therapy
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SPECIAL ISSUE: Update on Airway Acoustics

Awake Airway Acoustic Measurements Relate to Sleep Apnea

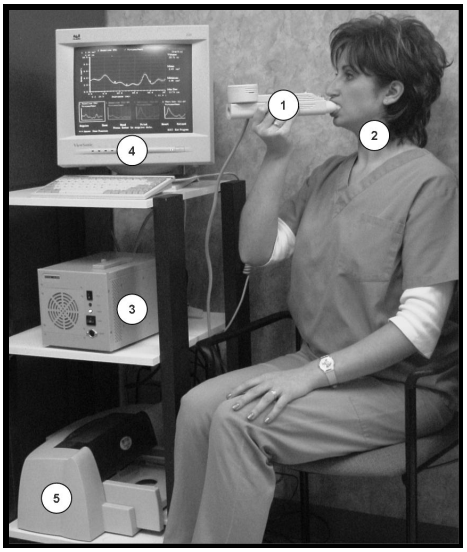
Kamal I. Otolaryngol Head Neck Surg. 2004 Jan; 130(1): 58-66

The literature clearly establishes a relationship between anatomic narrowing of the pharyngeal airway and sleep apnea severity. This anatomic narrowing reduces the relative negative pressure required to cause airway collapse that results in sleep apnea.

Using Airway Acoustics Kamal documented the pharyngeal area in 50 snoring patients both with and without sleep study verified apnea. He also analyzed the different curve patterns obtained from both groups.

For all patients, a linear relationship was found to exist between pharyngeal area and apnea index. The mean apnea index in non-apneic snorers was 4 and mean pharyngeal area was 2.41 cm^2. In the apneic snorers the mean apnea index was 25.9 with a mean pharyngeal area of 1.589 cm^2.

Kamal also suggests that careful study of the pharyngeal cross-sectional area and acoustic curve topography may provide information useful in establishing the site of airway obstruction.



1: Acoustic Pharyngometer 2: Airway 3: CPU 4: Monitor 5: Printer

The Airway Acoustic technique is reproducible, noninvasive and free from potential side effects. It uses sound waves to survey upper airway topography; providing valuable information regarding both airway size and function. The good correlation between apnea index and pharyngeal area suggests that an acoustic examination at varying mandibular postures could provide useful information regarding such factors as "Airway Orthotic Candidacy" and "Airway Orthotic Construction and Titration parameters".

SnoreSolutions Hi-lights

News Flash!

Airway Acoustics Valid

Kamal: Otolaryngol Head Neck Surg 2004 Feb

Airway Acoustic technology documents upper airway structure and function. A recent study by Kamal assessed repeatability of area measurements from 10 normals and 20 snorers.

Following a standard operating protocol the two groups were examined twice on the first day and once 7 to 10 days later. The three areas for the normals were 3.187 cm^2, 3.239 cm^2 and 3.245 cm^2. As expected, the snorers demonstrated a reduced area but a similar consistency; 2.244 cm^2, 2.237 cm^2 and 2.238 cm^2.

These results demonstrate a reduced airway in snorers and that repeatability of Airway Acoustic results can be achieved by following a standard operating protocol.

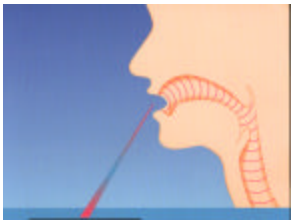
Pharyngeal Collapsibility Relates to Sleep Apnea in Children

Gozal D Am J Respir Crit Care Med. 2004 Jan 15; 169(2): 163-7

Increased upper airway collapsibility is associated with sleep apnea. Although airway acoustics provides a measure of this collapsibility, during wakefulness, active neural processes preserve upper airway patency. In this study of 247 children referred for evaluation of suspected sleep apnea, a topical anesthetic spray was used to inhibit this compensatory mechanism, with the hope that measurement of airway dynamics using acoustic pharyngometry could contribute to diagnostic accuracy in snoring children.

Acoustic measurements of the upper airway area was assessed both before and after application of topical anesthetic spray. Collapsibility was determined from the percentage change in cross-sectional area after topical anesthesia. Measurements were reproducible 1 week apart in both patients and controls.

Airway collapsibility less than or equal to -30% exhibited high sensitivity and specificity in identification of all children with apnea-hypopnea index greater than 5.



These results suggest that acoustic dynamic testing of the upper airway during wakefulness may provide a useful clinical adjunct to the evaluation of snoring children, with more accurate identification of those children with apnea.

Although Airway Acoustics has been the subject of much research for well over 2 decades, it is only with our relatively recent increased understanding of upper airway dynamics that its true potential is being realized.

Pharyngeal Cross-section Relates to Sleep Apnea in Children

Monahan KJ. Am J Respir Crit Care Med. 2002 Jun 1;165(11):1499-503

Airway Acoustics has been successfully used to evaluate the pharyngeal airway in adults but application in children has been limited. This study documented the pharyngeal dimensions of 203 children age 8-11 years in order to evaluate the feasibility and utility of airway acoustics in pre-adolescent children. The study included assessment of variation of pharyngeal measurements with height, sex, ethnicity, prematurity, and indices of sleep disordered breathing.

The coefficient of variation of minimum and mean pharyngeal cross-sectional area were similar to those established in adults (8.0 and 11.1%, respectively). The minimum but not mean cross-sectional area was significantly reduced in preterm children, habitual snorers, and children with sleep disordered breathing relative to unaffected children; suggestive that minimum cross-sectional area is a useful measure for evaluating sleep disordered breathing risk factors in preadolescent children.

John S. Viviano B.Sc. DDS ***obtained his credentials from the University of Toronto and has maintained a private practice of General, Family and Cosmetic Dentistry in Ontario, Canada since 1983. He maintains a special interest in the conservative treatment of Sleep-Disordered Breathing. A member of various sleep organizations, he is Credentialed by the Certifying Board of the Academy of Dental Sleep Medicine, and has lectured internationally on the treatment of Sleep-Disordered Breathing and the use of Acoustic Reflection. He has authored articles reviewing Acoustic Reflection and establishing protocols for its utility in assessing Airway Normalization.***

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to Learn More About
Airway Acoustics
and the Role it Plays in
Airway Orthotic Therapy

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