THE HYGIENIST'S ROLE IN DISORDERS OF BREATHING DURING SLEEP.

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The dental hygienist is an integral part of the dental team, bringing knowledge, skill and insight. In regards to sleep disordered breathing this includes disease awareness, screening and primary care advice and referral where appropriate.

Sleep disordered breathing (SDB) represents a group of disorders often considered to be a continuum ranging from snoring, through to mild, moderate and severe obstructive sleep apnea (OSA). While there may be other disorders, associations and causalities, as dental professionals, we are primarily interested in the management of SDB and its dental association and consequences.

In patients with OSA, airway soft tissues collapse to differing degrees and in different areas. Airway protection is fundamental and critical in anesthesia, immediate life support and recovery, therefore protection of such loss is clearly paramount. Yet despite this, this disease of pandemic proportion remains largely unrecognized nor diagnosed.

Essentially, when the patient breathes in, an obstruction to air flow causes the airway to be sucked in, causing collapse, not just front to back, but side to side as well. When there is only a very small opening left (hypopnea), airway turbulence and pressure changes cause vibration and snoring noises may result, as the airway restriction worsens airflow ceases completely (apnea). To all intents and purposes the individual is now suffocating and without return of airway patency, will die.

Airway loss causes hypoxia. The brain recognizes this 'fight or flight' emergency and using the sympathetic nervous system releases adrenalin, cortisol and other means to "arouse" the sufferer from their fate. This disruption results in overall sleep deprivation to which the patient may be completely oblivious.

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SDB represents a significant public health burden with a prevalence of OSA in men ranging from 10%-26%. Snoring is a major symptom of OSA and affects 40% of males and 20% of females. It is often the only reported symptom and has been proposed as an independent contributor to the development of carotid calcifications (CC). OSA has been linked to systemic hypertension, myocardial infarction, stroke, congestive heart failure, atrial fibrillation, carotid artery atherosclerosis, diabetes, excessive daytime sleepiness, impaired quality of life, increased car and work place accidents and increased medical mortality. Airway disturbance in children may detrimentally affect facial and dental development as well as social and intellectual development.

The dental team routinely provide a medical screening for head, neck and oral cancer, yet many more of our patients will suffer and/or die from undetected SDB. Why is this? We need to investigate potential benefits for those in our care from a broad perspective, not just another stand-alone productive dental service. The treatment of SDB should be viewed from a medical requirement perspective, yet with significant dental benefits.

Surgery has always been the option until the invention of Continuous Positive Airway Pressure (CPAP) by Sullivan in 1981 by "pneumatically stenting" the airway open by increased intraluminal pressure. This usually works effectively and although compliance issues have plagued the approach, many lives have been improved or saved using it. The history of dental appliances through mechanical 'stenting' of the open airway during sleep is a fascinating one.

Ultimately the objective goal of any OSA management is to prevent the occurrence of complete or partial upper airway collapse during sleep. Oral Appliance Therapy (OAT) has been associated with a reduction of the apnea hypopnea index (AHI) to normal levels (< 5/h) in 36% to 50% of patients, therefore the potential efficacy of OAT for the effective management of snoring and/or OSA is no longer in question. Only their correct use, management, testing and supervision require clarification. Unfortunately, aggressive marketing of specific appliances and systems of treatment, along with an over

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simplification of the process have slowed down the acceptance of this modality by physicians as a meaningful one, it is up to our profession to change this.

Screening either by written questionnaire or by verbal interview can reveal much. The STOP/BANG questionnaire provides a quick and convenient first look into some major potential areas of concern associated with SDB. As diagnostic testing may not be performed without medical prescription the first step is referral to their physician for a prescription to test or have tested. Well trained dentists with adequate test facilities may perform them under prescription, but cannot legally interpret such results. This must be done through a Sleep Physician.

A few points to note;

1. All diagnostic testing must be prescribed by a physician to be covered by MSP, and with sleep physician interpretation. Only a physician can diagnose OSA. It is lawful for a dentist to interpret interim, but not initial diagnostic data.
2. The management of OSA is medical - appliances must be by medical prescription and are considered to be Durable Medical Equipment (DME).
3. Recognize the difference between sleepiness and fatigue (tired). Insomnia is frequently associated with SDB and may have a bi-directional relationship as are chronic pain syndromes such as fibromyalgia.
4. Recognize appliance limitations in effectiveness - they don't always work and without objective and effective investigation you don't always know that they don't. Predictive testing (MATRx) to foretell such effectiveness (or not) is available at some Medical Sleep Clinics.
5. Sleep Bruxism (SB) and temporomandibular dysfunction (TMD) are associated with SDB. Associated gastro-esophageal reflux (GERD) may acidify the saliva and complicate wear with erosion. SB may result in worn, broken and cracked teeth and/or dental restorations which may provide clues to SDB.
6. Multiple studies have shown that the provision of bruxism guards frequently worsens SDB. Patients suspected of SDB should be investigated prior to such 'night guard' provision, not afterwards.
7. No particular fully adjustable appliance has been shown to be superior to others nor any one appliance ideal for everyone but boil and bite or non-adjustable appliances have been shown to be inferior.
8. Not everyone who snores has OSA, not everyone who has OSA snores.
9. Recognize there are many other issues involved in SDB, such as upper airway resistance syndrome (UARS), neuromuscular, psychiatric disorders, fibromyalgia, etc. SDB is not the only sleep disorder!
10. Orthodontic treatment may be detrimentally affected by airway disorders. Tooth movement from OAT may be exaggerated following orthodontics.
11. Sleepy adults fall asleep, sleepy children often become hyperactive (as those with children will know!) Children may have SDB too.
12. Children's issues should be reviewed. Early intervention may assist - although dental sleep appliances are contra-indicated.

While the process may often be lengthy and complicated, it can provide a life changing service. Those interested in learning more are encouraged to pursue further education. •