What to look for in patients with Sleep Bruxism, Craniomandibular Dysfunction and Sleep Disordered Breathing

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Airway disturbance during development causes developmental changes, often predisposing to more airway problems later in life. It begins to make sense why Sleep Bruxism (SB), Craniomandibular Dysfunction (CMD) and Sleep Disordered Breathing (SDB) may develop in association. The dental hygienist is a perfectly positioned practitioner who has the requisite knowledge and education to assist in the detection of signs of varying sleep related disturbances.

We can look at a patient with certain characteristics, and often restrict our vision to treatment rather than looking for the root cause of the problem or problems. As a consultant surgeon many years ago, Joseph Bell emphasized the importance of close observation in making a diagnosis. This lead Arthur Conan Doyle to base his character Sherlock Holmes upon, who would often pick a stranger and, by observing him, deduce his occupation and recent activities. I believe we should strive toward this ability.

Normal development is driven by both internal and external factors. If it is believed that form follows function, the adaptive body will respond to both such influences, good and bad. With habitual mouth breathing for instance, a child's tongue will be held low in the mouth to allow such air flow. Failure of the tongue to sit within and develop the palate laterally results in a deeper, narrower palate, which in turn narrows the dental arch. The relatively wider lower dental arch is restricted in forward freedom in the cuspid area, often aggravating and increasing both incisor overjet (horizontal) and overbite (vertical) and may result in posterior cross bites. The development of the nasal cavity and contents (sitting above the palate) are often also affected. The deep palate may therefore not be the cause, but the result of the breathing disorder. We can begin to seek and accept the bidirectional aspects of cause and effect.

Not uncommon in adults, this 'mandibular entrapment' is also the process whereby we see children post orthodontic treatment with TMJ clicking.

Such a low tongue posture, may overlie the molars and result in inadequate vertical molar development. We all see the result of a lack of molar support, just subtler here, as the jaws are closer together when the teeth are in occlusion (over closed). This accentuates the overbite and starts to impede normal forward and downward jaw growth. Since the mandible continues to grow in the adolescent, TMJ compression becomes a possibility as well. Holding back the jaw (and tongue) may increase the likelihood of sleep disordered breathing.

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Signs of SDB/SB/CMD may include;

- Where the lower arch is restricted by the upper arch, crowded and often worn, lower incisors and lingual inclination of lower incisors and molars, as well as abfraction lesions.
- The space posteriorly held by the tongue, may lead to a decrease in maxilla-mandibular separation and a narrow mandibular arch with a drop of occlusal distal to the mandibular cupid.
- A narrow palatal vault is often associated with a distorted (constricted) upper dental arch form and potential crowding in the cuspid area, even in the presence of an increased overjet.
- Chipped and worn upper and lower anterior teeth due to this restriction (or entrapment)
- Deeper overbite and/or pronounced overjet, unexplained gingival hypertrophy and periodontal inflammatory changes.

LEFT: This molar depression (bicuspid drop off) is all too common, yet often misdiagnosed as anterior tooth over-eruption. Wear and abfraction lesions are commonly seen in association.

BELOW & RIGHT: Before and after of the reversible and non-invasive restoration of molar support.

It remains unknown why a high percentage of normal subjects present with SB, a centrally mediated movement disorder during sleep and why this activity is three times more frequent and higher in amplitude in SDB patients. Again it must be stressed that night guards may aggravate pre-existing obstructive sleep apnea. SB torques teeth during para-function and may result in causing enamel prism fracture. This resultant notching at the neck of the tooth (abfraction) frequently leads to recession, tooth sensitivity and repeated loss of class V restorations when placed.

By an understanding of physiology, facial development and potentially pathological factors, the entire dental team has a role in helping with the identification of patients who experience airway disturbances. As always, we work with the goal of providing our patients with the most comprehensive dental care. •