Obstructive Sleep Apnea and Dental Solutions

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Why dentistry?

- Some patients see dentist more regularly than physician
- Medical History taken on every patient
- Airway observation
- Screening
- Referral when appropriate
- Treatment when appropriate
Sleep Disorders

- Insomnia (33%)
- RLS (3-10%)
- Sleep apnea (2-4%)
Sleep apnea & hypopnea

- **Sleep apnea** – breathing stops briefly and repeatedly during sleep
  - **Central** – Brain fails to properly control breathing
  - **Obstructive** – Muscles & tissues in back of the throat fail to keep the airway open – most common
  - **Mixed** – Combination of central & obstructive

- **Sleep hypopnea** – abnormally low or shallow breathing (underbreathing)
Sleep Apnea

- Severely underdiagnosed (50-90%)
- Often not diagnosed until related health condition is apparent
- Health care costs in 10 years previous to diagnosis are double that of matched controls
Classic OSA Sufferer
What’s happening in the sleep of OSA sufferers?

- Soft tissues in airway relax and collapse
- Jaw falls backward, tongue obstructs airway
- Airway becomes smaller in diameter
- Air speed increases (garden hose)
- Tissues vibrate, producing noise (snoring)
- Airway collapses completely & breathing stops
- Gasps for air and/or awakens
During snoring, air flow is partially blocked.

During sleep apnea, air flow is completely blocked.
Signs & Symptoms of OSA

- Loud, heavy snoring
- Gasping for breath
- Dry mouth
- Restless sleep
- Daytime tiredness
- Irritability
- Lack of concentration
- Morning headaches
- Esophageal Reflux (GERD)
Why is apnea/hypopnea so bad for us?

- Pauses in breathing last for 10 seconds to 1 minute or more
- Results in lack of oxygen to our brain & other tissues, causing damage to them
- No Stage III/IV or REM (deep/dreaming) sleep results in tiredness/fatigue
- Hormone levels regulating appetite affected by sleep
Quality of Life - consequences of untreated OSA

- Daytime fatigue
- Difficulty with concentrating/memory
- Anxiety and/or depression, irritability
- Morning headaches
- Hunger & weight control
- Drowsy driving
- Separate bedrooms
- Sexual dysfunction
Snoring & Sleep Apnea affects families
Health Risks Associated with OSA

- High blood pressure
- Stroke
- Heart disease
- Diabetes
- Obesity
- Depression
- Asthma
- Brain Damage
- Increased risk of death
Interesting Statistics

- Reaction times of drowsy driving similar to that of alcohol-impaired driving
- 20% of serious motor vehicle accident injuries attributable to drowsy driving
- Billions of dollars annually in costs from auto accidents due to drowsy driving
- Workers with sleep disorder 2x as likely to die in a work-related accident
Risk Factors for OSA

- Increases with age
- Increases with weight gain
- Allergies & asthma
- Neck size >17”men
- Neck size >15”women
- Large tongue
- Large tonsils and/or adenoids
- Long soft palate/uvula
- Narrow airway anatomy
What can be done?

- Epworth Sleepiness Scale
- Sleep study
- Diagnosis & counseling
- Treatment
Obstructive Sleep Apnea

- **Mild** – 5 to 15 episodes per hour
- **Moderate** – 15 to 25 episodes per hour
- **Severe** – 30+ episodes per hour
OSA treatments available include:

- Weight loss
- Sleep position change
- Avoid alcohol & sedatives before bedtime
- Treat allergies
- Positive Airway Pressure (CPAP)
- Surgery
- Oral appliance
Positive Airway Pressure Therapy

- Continuous flow of air keeps airway from collapsing
- Very effective when used
- Treatment of choice for moderate to severe sleep apnea
- Compliance difficult for some
Surgical Options

- Designed to remove or reposition tissues or jaws and open airway
- Effectiveness varies
- Surgical risks & discomfort
- Irreversible

- Soft palate and uvula surgery
- Tongue suspension or advancement
- Palatal implants
- Maxilla and mandible advancement

Irreversible
Oral Appliances

- Reposition the lower jaw and or tongue base to open the airway
- Recommended by American Academy of Sleep Medicine as first line treatment option for mild to moderate sleep apnea
- Appropriate for patients who fail or are inadequately treated by other treatment attempts such as CPAP, weight loss or sleep-position change or surgery
Oral Airway Appliances

- **Mandibular Advancement Devices** – reposition lower jaw and base of tongue forward and down to open airway

- **Tongue Retaining Devices** – hold tongue down and/or forward to prevent it from falling backward and obstructing airway
A tongue retaining device in place holds the tongue in a forward position, preventing it from falling backward and blocking the airway. (below)

Mandibular repositioning appliances move the mandible and the associated structures (like the tongue) forward, and prevent the tissues from collapsing during sleep. (above)
Oral Appliances – Reposition the tongue and/or lower jaw to open the airway

**Benefits**
- Smaller & more portable than CPAP
- Allows sleeping on side or stomach
- Quiet for bed partner

**Risks**
- TMJ Symptoms or Disorders (10%)
- Changes in bite relationship
- Compliance is 80-90%
What the dentist sees:
Tongue Retaining Devices

Aveo Tongue Stabilizing Device

Full Breath Appliance
Mandibular Advancement Appliances

- Adjustable vs. non-adjustable?
- Custom vs. temporary
- Nighttime clenching or grinding?
Appliance Examples

Klearway Appliance

SUAD Appliance
Advancement appliances

EMA

TAP Appliance
Evaluation

- Dental Exam
- Evaluation of soft tissues in airway
- Imaging
- Nasometer or Rhinometer evaluation
- Trial appliance
Procedure

- Impressions
- Photographs
- Records of jaw position
- Adjustment & Insertion
- Home use & care
Adjustment & Follow up

- Follow up visits at 3 weeks, 3 months, 6 months
- Return to sleep center for follow-up study after appliance is comfortable and symptoms have improved
Oral Appliance Therapy

- Appliance life average 5 years
- Annual inspection/evaluation by dentist
- Periodic adjustment as tissues continue to become more lax with age
- May need to be remade after extensive dental work
- Temporary appliances available
CPAP & Oral appliances
Children & OSA

- Symptoms may differ from adults
- ADHD
- Developmental delays
- Bedwetting
- Mouth breathing
- Snoring, restless sleep
- Frequent upper airway infections
Enlarged tonsils
Treatment of children with OSA

- Surgery/removal of tonsils & adenoids
- Treatment of any allergies
- Orthodontics and/or dental orthopedics to correct any dental and/or skeletal issues
Insurance Coverage?

- Sleep study within past three years required by most insurers
- Rx by sleep physician for appliance
- Some require CPAP trial first
- Now covered by Medicare
Thank you!

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