

**The Dentist's Role
in the Diagnosis and Treatment of
Sleep Disordered Breathing**

Hands On Workshop

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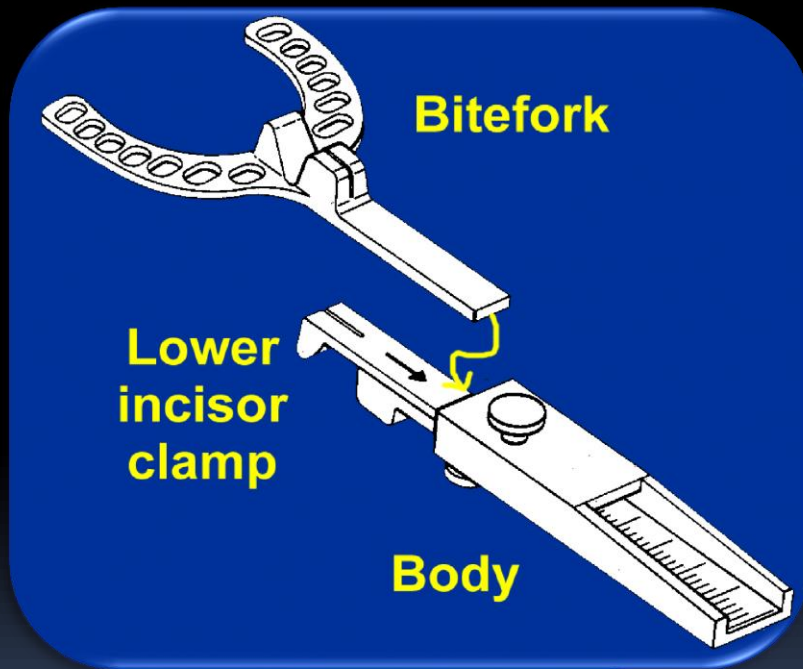
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Today we will cover...

- Bite Registration Techniques
- Custom Oral Appliances
- Temporary Oral Appliances
- The Silent Sleep / Easy Airway
- Bruxism and Sleep Apnea
- Getting Started in Your Practice

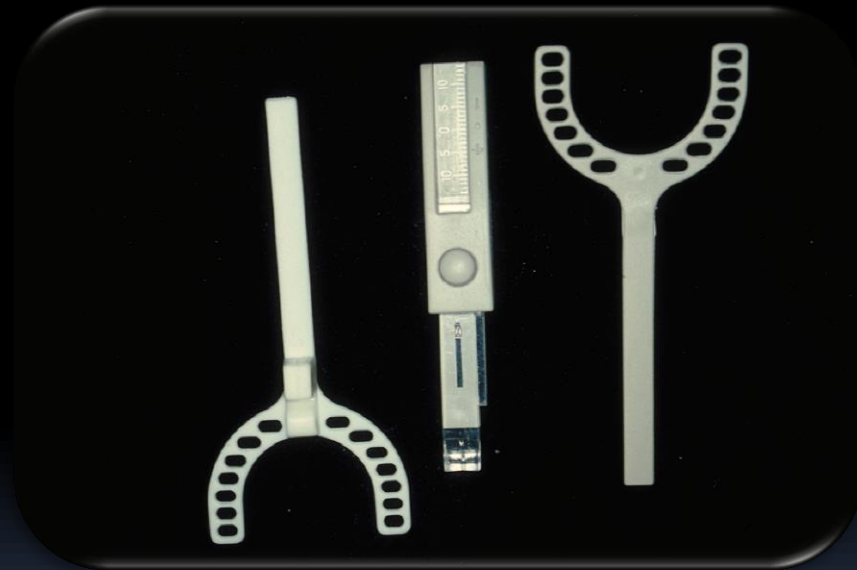
The George Gauge

George Gauge



- Intraoral device used to register correct jaw position for mandibular repositioning appliances
- Measures protrusion and retrusion of the mandible as well

George Gauge

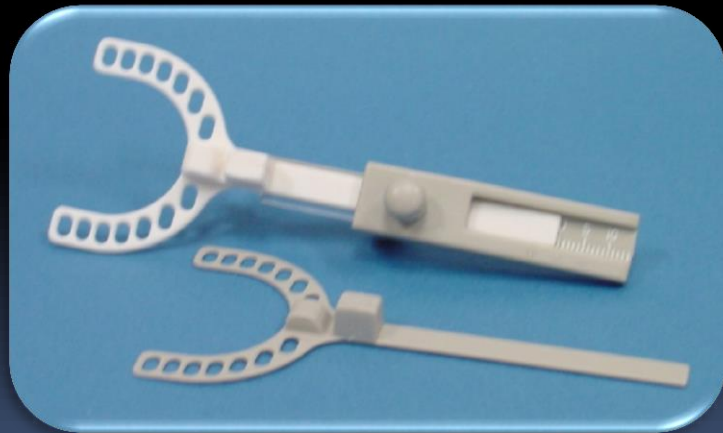


- **Maxillary Bite Forks**
 - 2 mm thick
 - 5 mm thick
- **Use 2 mm in DEEP BITE cases**
- **May use 2 or 5 mm in normal bite cases. Most appliances will be open more than 2 mm interincisal anyway due to the thickness of the material in the anterior.**

George Gauge



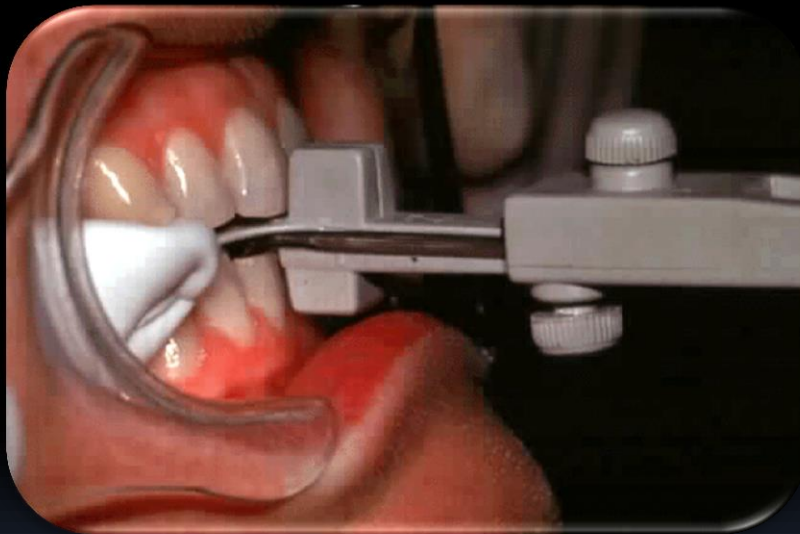
If the vertical of the appliance is critical to you, make sure that the incisal edge of the central incisors touches the bottom of grooves. Adjust (open up) the grooves if necessary.





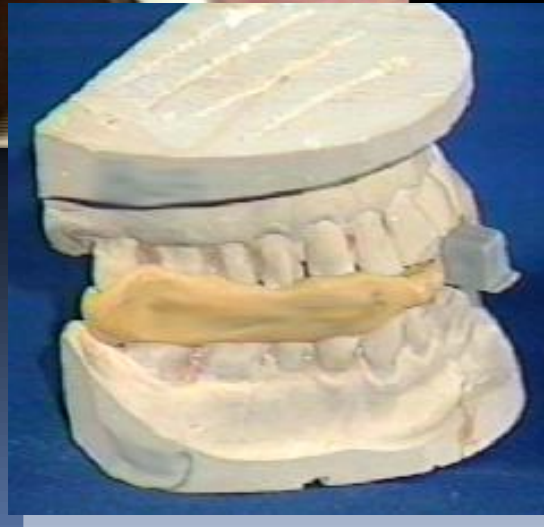
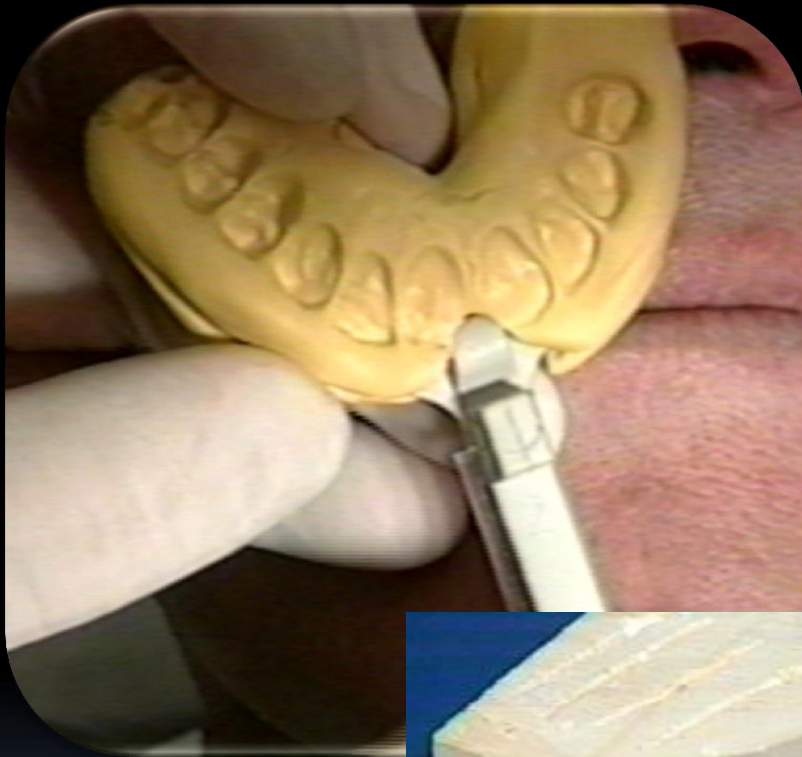
George Gauge

Use a fast setting bite registration material. Make sure the midline is **NOT** shifted by the gauge.



Take the bite registration in a **COMFORTABLY PROTRUDED POSITION!** Don't worry about a percentage of "maximum protrusion." For patients with a normal overjet, this will be at or slightly behind "end to end."

Lab Transfer



- Unscrew and remove upper element
- Pour impressions (alginate) or send PVS impressions to the lab. **KEEP THE PVS IMPRESSIONS OR MODELS FOREVER!!!**

Types of Appliances

- Anterior point stop (TAP, Silencer, MDSA, etc.)
- Push (Herbst, SUAD, etc.)
- Pull (EMA, Silent Night, etc.)
- Adjustable Mono block (Moses, PM Positioner, Klearway, etc.)
- Interlocking (Somnomed, Dorsal, Respire, etc.)
- Temporary/Trial (Boil and Bites, Silent Sleep, etc.)

“Jaw Pain”

Rules of Thumb

- If the patient has muscle pain, reduce the vertical or add posterior support if there wasn't any.
- If the patient has TM joint pain, reduce the protrusion and/or check to see if the midline is being shifted.

Non-Intuitive Exception to the Rules of Thumb

- If the patient's airway is not being kept patent by the oral appliance, they may "fight" the appliance (the brain trying to maintain an airway) and as such may have muscle and/or TMJ pain.
- Ask the patient:
 - Are you still snoring?
 - How do you feel you are sleeping?
- If the patient is still snoring or not sleeping well (unless they aren't sleeping well due to pain), consider taking the appliance farther forward, or adding vertical, in an attempt to open the airway.
- If you do this, ask the patient to set their alarm for 3 or so hours after they go to bed so they can wake up and make sure that their pain isn't worse.
- Also, remember that snoring may be nasal.

Anterior Point Stop



Anterior Point Stop

- Not ideal in deep overbite cases due to the need for at least 5mm of anterior vertical space for the hook mechanism.
- May cause discomfort, or worse, in the front teeth due to forces being concentrated there.
- Ask lab to be sure that they use your bite registration, otherwise the hook mechanism may not hook (if the tray material contacts only in the posterior).

Anterior Point Stop

- If there is masseter muscle pain:
 - And you don't already have posterior support, add it.
 - If you do have posterior support, make sure it's even.
- If there is temporalis muscle pain:
 - And you have posterior support, reduce/remove it (NTI style).
- **HOWEVER...** muscle pain could be due to not being in the correct position to maintain a patent airway.

Anterior Point Stop

- If there is TM joint pain
 - Usually the appliance has been adjusted too far anterior too fast.
 - Adjust the appliance posterior.

Anterior Point Stop

- Tricks
 - With the TAP, If the hook seems to move back on it's own, or you wish to “lock” the appliance so that the patient won't adjust it farther forward, use impression material or blue mousse behind the hook, in front of the hook, or both. Don't use acrylic as this will “void the warranty.”
 - Once you know that the position is effective, you may consider “temporary bonding” the appliance to see if the patient can tolerate a fixed appliance (mono-block). If they can, you may remove the anterior mechanism, giving more tongue space.

Push



Push

- Difficult for people with poor manual dexterity to use.
- May cause discomfort in the lower anterior teeth due to forces being concentrated there.
- Have the lab place posterior stops if they don't automatically, and use your bite registration so that you have prescribed the initial vertical.
- May need to use elastics and hooks to keep the mouth relatively closed, because the mandible will fall back a little when the mouth opens.

Push

- If muscle pain
 - Adjust vertical, typically reducing it.
 - Make sure the posterior pads are hitting evenly.
- If TMJ pain
 - Reduce protrusion, unless patient is still snoring (AND it's not nasal snoring).
 - Make sure the posterior pads are hitting evenly, and that the midline is not being shifted.

Pull



Pull

- May cause discomfort in the upper anterior teeth, due to forces being concentrated there.
- Have the lab place posterior stops if they don't automatically and have them use your bite registration so that you have prescribed the initial vertical.

Pull

- If muscle pain
 - Adjust vertical, typically reducing it.
 - Make sure the posterior pads are hitting evenly.
 - With the EMA, experiment with softer or harder bands.
- If TMJ pain
 - Reduce protrusion, unless patient is still snoring (AND it's not nasal snoring).
 - Make sure the posterior pads are hitting evenly, and that the midline is not being shifted.
 - With the EMA, experiment with softer or harder bands.

Pull

- Tricks
 - If the patient is having an issue with bands stretching out too quickly, you can “block” the appliance. You may also “temporary bond” the appliance, and if tolerated, make one piece and remove the bands.

Adjustable Mono Block



Adjustable Mono Block

- Biggest issue is extremely limited, or no, ability to move the mandible (in any direction).
- Some people have no problem with this, others can't stand it...good luck figuring out in advance who won't like it (you might try the Silent Sleep, but it's so soft that it's not "apples to apples").
- Little or no ability to adjust vertical, without basically rebuilding the appliance from scratch.
- CRITICAL that the bite registration is PERFECT and that the lab fabricates the appliance EXACTLY in the bite registration position.
- If the initial bite registration position is posterior, and the patient has a steep articular eminence, the bite will want to open as you adjust the appliance forward.
- May have an advantage of having a lot of tongue space (Moses appliance).
- May be a good choice for people with less retentive features as the appliance WILL dislodge when they open, but when they close again it will seat.

Adjustable Mono Block

- If muscle pain
 - HOPE that it is due to not being in the correct position yet, and get there as soon as you can.
 - If the airway is open (based on lack of snoring, feeling more rested, or ideally follow up objective study) then there isn't much you can do, other than treat the muscle pain and hope things improve.
- If TMJ pain
 - Reduce anterior protrusion, unless you suspect the airway is not being protected.
 - See if the midline is being shifted...if it is, you'll have to start over...should have been more careful with your bite registration!

Interlocking



Interlocking

- A good choice for:
 - Patients who “sleep with their mouth open.”
 - Patients with minimal retentive features (because other appliances that are connected together will dislodge).
 - Patients with anterior periodontal issues, as the forces are concentrated in the pre-molars and molars.
- Most do not allow much lateral movement.
- Can adjust the vertical (more vertical...easily; less vertical...with difficulty).
- (Warning) Adding acrylic or grinding off a lot of acrylic does void the warranty on some appliances.
- My #1 choice for fitting over dentures.

Interlocking

- If muscle pain:
 - Adjust the vertical, if you can.
 - Check that the patient is hitting evenly posteriorly.
- If TMJ pain:
 - Reduce anterior protrusion, unless you suspect the airway is not being protected.
 - Check that the midline is not being shifted.

Temporary/Trial



Temporary/Trial

- Pretty much all boil and bites are terrible
 - Terrible = difficult/painful to fit, poor retention, bulky, lack of tongue space, poor retention gets worse over time, patient compares to what they see on TV.
 - Boil and bites are difficult, if not impossible, to adjust anything other than protrusion.
- Temporary/Trial appliance can be useful for:
 - Treating a patient immediately.
 - Protecting a patient while they wait for a custom appliance.
 - Fitting someone who needs restorative work prior to fabrication of a custom appliance.
 - As a trial to see if they'll be able to tolerate an appliance or to see if mandibular advancement will help them.
 - Patients in orthodontics (Silent Sleep only).
 - Children (Silent Sleep only with input from an orthodontist).
 - As a spare appliance (for travel).

Temporary/Trial

- If muscle pain
 - Patient is probably “chewing” the appliance...check for efficacy.
 - If possible, reduce the vertical (Silent Sleep only).
- If TMJ pain
 - Reduce anterior protrusion, unless you suspect the airway is not being protected.
 - Check that the midline is not being shifted.

Temporary/Trial

- Tricks
 - With the Silent Sleep:
 - Sometimes, if the patient is “chewing” the appliance due to the softness of the GC Reline you can try relining with a harder material, like thermal plastic.
 - To fit the Silent Sleep over braces, block out the apical aspects of the brackets with wax.
 - With boil and bites:
 - Try to reduce as much plastic, especially on the lingual, as you possibly can.
 - Try to allow for a lip seal (appropriate for any appliance...just harder with a bulky, one size fits all, boil and bite).

Clinical Thoughts

- In many cases you can continue to use the oral appliance while you treat the TMJ/muscle pain.
- Look for potential causes for the TMJ/muscle pain coming from the appliance and make appropriate adjustments.
- Have the patient set their alarm for 2-3 hours after they go to bed, at which time they will check to see if the adjustments to the appliance have helped. If so, they go back to sleep with the appliance in. If not, they take the appliance out.
- In some cases, you will need to have the patient go without the appliance to resolve the TMJ/muscle pain. In some cases, you can go right back to the position you were in when the pain started and it won't return (personal experience).

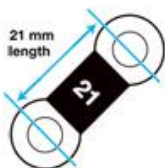
My Favorite Appliances

Elastic Mandibular Advancement (EMA) Appliance

Each EMA elastic strap comes in four different strengths, indicated by color.



The shorter the EMA elastic strap, the farther the mandible is advanced.



EMA® STRAP LENGTH	DISTANCE BETWEEN EMA BUTTONS	
	27 mm	25 mm
21 mm	6 mm	4 mm
20 mm	7 mm	5 mm
19 mm	8 mm	6 mm
18 mm	9 mm	7 mm
17 mm	10 mm	8 mm
16 mm	11 mm	9 mm
15 mm	12 mm	10 mm
14 mm	13 mm	
13 mm	14 mm	

Myerson recommends a button distance of 27 mm unless the patient can only advance 9 mm or fewer in which case 25 mm distance is recommended.



Somnomed/Dorsal



Thornton Adjustable Positioner (TAP)



Home Sleep Testing

Ares
Embletta
Medibyte
Remmers
Stardust
Watch-PAT

And many others



“There’s no place like home.”

And nothing is more at home than the Embletta.

Embletta®

The World-Standard Portable Diagnostic Device for Home Sleep Studies. The Embletta has been used in over a half-million sleep studies, and has been designated by the American Sleep Medicine Foundation for use in their landmark study on Portable Monitoring in the Diagnosis and Management of Obstructive Sleep Apnea. Along with its user-friendly software, the Embletta collects industry recommended signals for direct measurement of sleep quality and sets the standard for diagnosing SDB. In addition you will have the backing of our elite technical support team, which is fully staffed 24/7.



Home Testing Indications

- Primary: As a tool to determine if the appliance is titrated appropriately
 - Test one night with the appliance in place.
 - Test a second night without the appliance.
 - May also test consecutive nights to determine if further protrusion is helpful.

Home Testing Indications

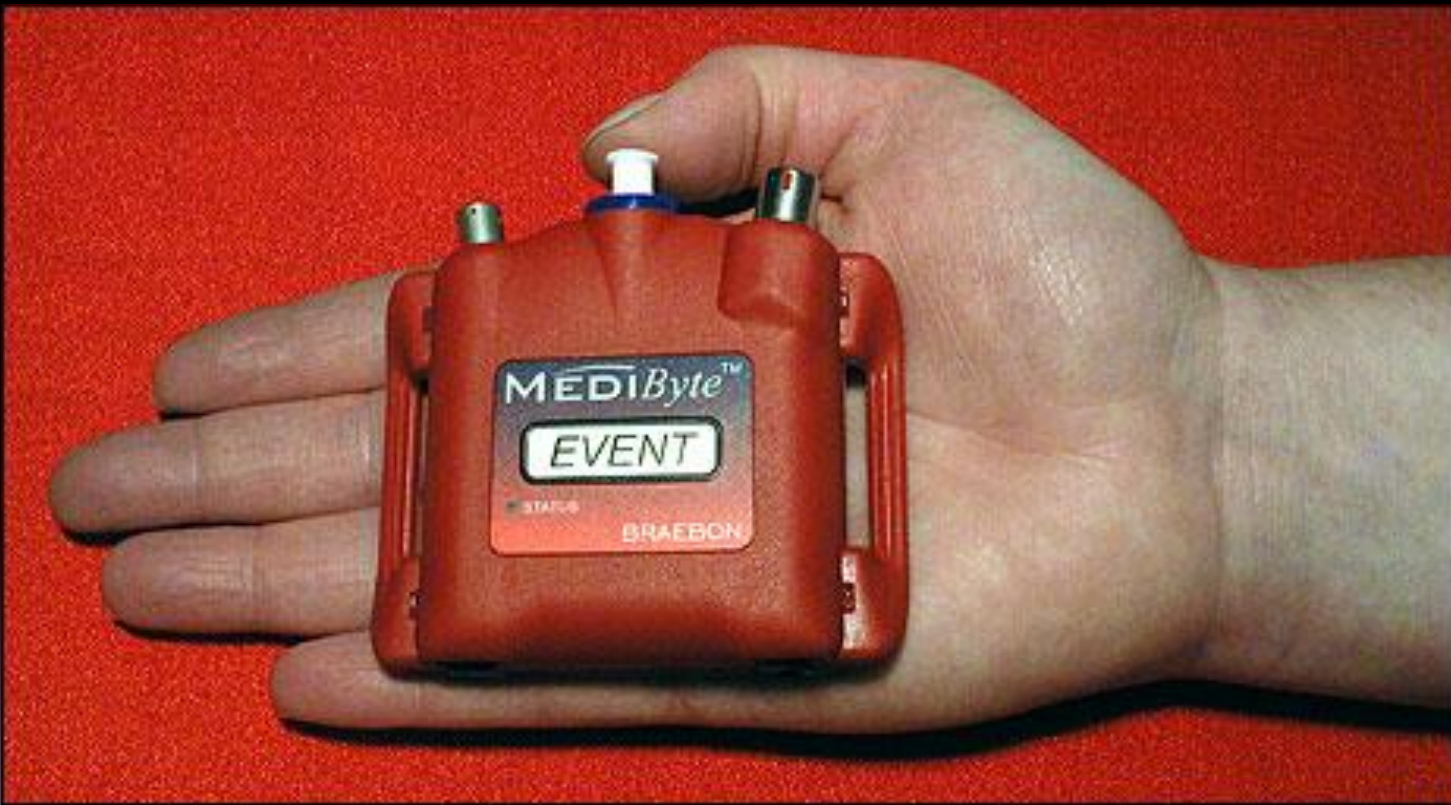
- Secondary: As a screening tool.
 - To help encourage a patient who is not excited about having a full PSG.
 - In conjunction with a physician to determine if full PSG is indicated.
 - You can NOT rule out OSA with a home sleep test.

Watch-PAT



MediByte[®] from BRAEBON

Designed specifically for dental sleep medicine and home use.





Cadwell ApneaTrak

www.Cadwell.com



Follow up PSG with Titration

- Refer patient back to their physician for consideration of follow up PSG with titration of the appliance in the sleep lab.
- Need to provide the sleep lab with written protocols for titration.
- Have the patient return to review results and to determine the next step.
 - Good position—place on long term follow up.
 - New treatment position.
 - OA not effective—combination therapy?

Long Term Follow Up and Care

- Annual follow up
- Replace appliance every 2 to 3 years
- Oral appliance therapy is **LIFETIME** therapy for most patients.

My Standard Protocol

- Referral from physician
- Initial exam
- Records (study models, bite registrations, imaging, other)
- Fitting of custom appliance
- Follow up visits for comfort and efficacy
- Possible follow up objective study (pulse-ox or home sleep test)
- Referral back to physician for consideration of follow up PSG with titration of the appliance in the sleep lab
- Alteration of the appliance for long term success
- Long term follow up with regular maintenance and replacement of the appliance

Dental Sleep Medicine Quick Start

- Start with your own patients by treating their...

Bruxism

Parafunction?

Or

Protective Function?

Parafunction

- Physical behavior that is without functional purpose and may be potentially harmful.



Protective Function?

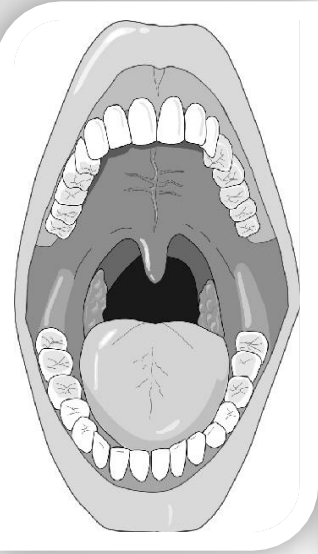
- Physical behavior that is intended, whether conscious or subconscious, to improve survival.



Pharyngeal Patency

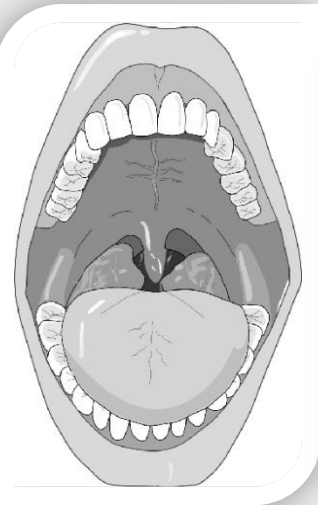
- While awake, the pharynx is always held open except during swallowing.
- This is accomplished by reflexes controlling the activity of pharyngeal muscles.
- During sleep, reflex control of the pharyngeal muscles is lost.
- During sleep, the pharyngeal airway can narrow severely or close completely.

Normal vs. Obstructed Airway



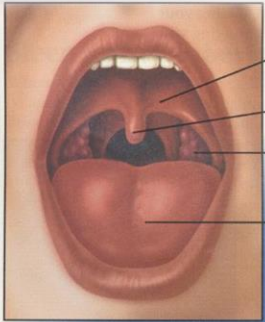
Normal Airway

- Air passes through the nose and flexible structures in the back of the throat (soft palate, uvula and tongue).
- During sleep the muscles relax but, normally, the airway stays open.



Obstructed Airway

- OSA is a situation in which the entire upper airway is blocked causing air flow to stop.
- Snoring is the vibration of the pharyngeal soft tissues as air passes through.

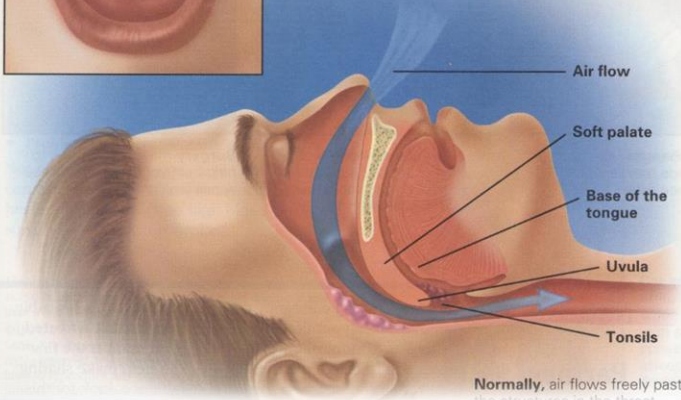


The soft palate is the tissue at the back of the roof of your mouth. It helps block off your nose when you swallow.

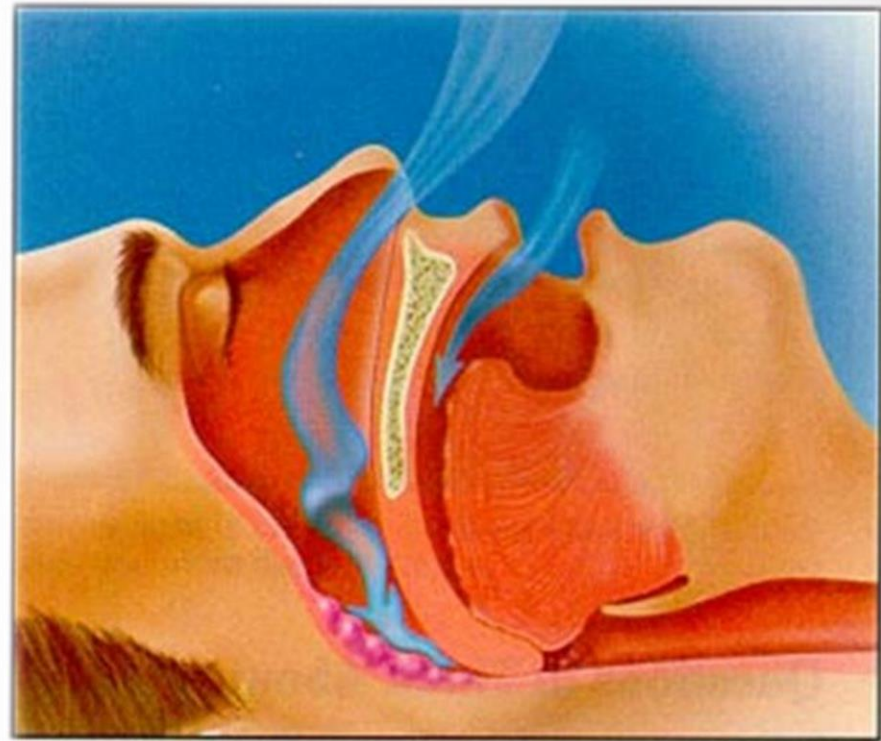
The uvula is a long flap of tissue that hangs from your soft palate.

Tonsils are balls of tissue in the throat. They may play a small role in helping your body defend itself against illness.

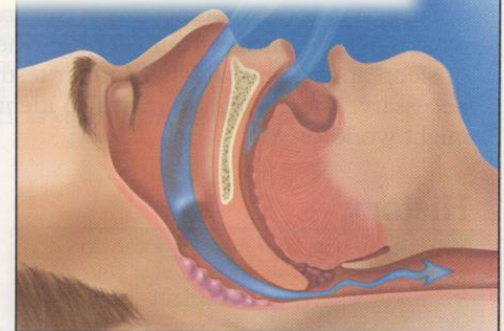
The tongue helps you talk, chew, and swallow.



Normally, air flows freely past the structures in the throat.



During sleep apnea, air flow is completely blocked.



During snoring, air flow is partially blocked.

Nocturnal Bruxism

- Proposed Mechanisms

- Chest. 2008 Aug;134(2):332-7. Epub 2008 May 19.

- A significant increase in breathing amplitude precedes sleep bruxism.

- Khoury S, Rouleau GA, Rompré PH, Mayer P, Montplaisir JY, Lavigne GJ.

- **BACKGROUND:** Sleep bruxism (SB) is a stereotyped movement disorder that is characterized by rhythmic masticatory muscle activity (RMMA) and tooth grinding.

- **METHODS:** Polygraphic sleep recordings of 20 SB subjects without any sleep-related breathing disorders were analyzed for changes in respiration.

- **RESULTS:** A positive and significant correlation was found between the frequencies of RMMA episodes and the amplitude of breath ($R(2) = 0.26$; $p = 0.02$). The amplitude of respiratory changes was 11 times higher when arousal was associated with RMMA in comparison to arousal alone.

- **CONCLUSIONS:** To our knowledge, this is the first report showing that RMMA-SB muscle activity is associated with a rise in respiration within arousal.

- [Arch Oral Biol. 2007 Apr;52\(4\):381-4. Epub 2007 Feb 20.](#)
- [Genesis of sleep bruxism: motor and autonomic-cardiac interactions.](#)
- [Lavigne GJ, Huynh N, Kato T, Okura K, Adachi K, Yao D, Sessle B.](#)

- We showed that RMMA are secondary to a sequence of events in relation to sleep micro-arousals: the heart (increase in autonomic sympathetic activity) and brain are activated in the minutes and seconds, respectively, before the onset of activity in suprahyoid muscles and finally by RMMA in jaw closing masseter or temporalis muscles.

- The above results suggest that the onset of RMMA and SB episodes during sleep are under the influences of brief and transient activity of the brainstem arousal-reticular ascending system contributing to the increase of activity in autonomic-cardiac and motor modulatory networks.

- Sleep. 2003 Jun 15;26(4):461-5.

- Association between sleep bruxism, swallowing-related laryngeal movement, and sleep positions.

- Miyawaki S, Lavigne GJ, Pierre M, Guitard F, Montplaisir JY, Kato T.

- Nine patients with sleep bruxism and 7 normal subjects were matched for age and sex.
- In sleep bruxism patients, although sleeping time did not differ between the 2 sleeping body positions, 74% of rhythmic masticatory muscle activity and swallowing events were scored in the supine position compared to 23% in the lateral decubitus position.

Nocturnal Bruxism

- Relationship to Sleep Apnea

- Chest. 1986 Sep;90(3):424-9.
 - Effect of sleep position on sleep apnea and parafunctional activity.
 - Phillips BA, Okeson J, Paesani D, Gilmore R.
-
- Because sleep apnea leads to sleep arousals, and because sleep arousals are thought to result in increased parafunctional activity, we undertook the present study to determine the relationship between sleep apnea and parafunctional activity.
-
- 24 patients
-
- Nocturnal clenching was slightly higher in patients with sleep apnea than those without (12.2 vs 7.6 clenches/hr, $p = 0.18$), and there was a correlation between the clench index (CI) and apnea plus hypopnea index (A + HI)
-
- There were significant falls in both the A + HI (64.4 +/- 28.8 vs 36.5 +/- 36.7, $p = 0.02$) and CI (12.5 +/- 12.1 vs 7.0 +/- 8.6, $p = 0.04$) in the lateral decubitus vs supine sleeping positions.

- Chest. 1986 Sep;90(3):424-9.
 - Effect of sleep position on sleep apnea and parafunctional activity.
 - Phillips BA, Okeson J, Paesani D, Gilmore R.
-
- We conclude that there is an association between obstructive sleep apnea and parafunctional activity, that sleep position affects the incidence of both sleep disordered breathing and parafunctional activity, and that analysis of apneas and hypopneas in both supine and lateral decubitus sleeping positions may be helpful.

Why do people clench
and grind their teeth?

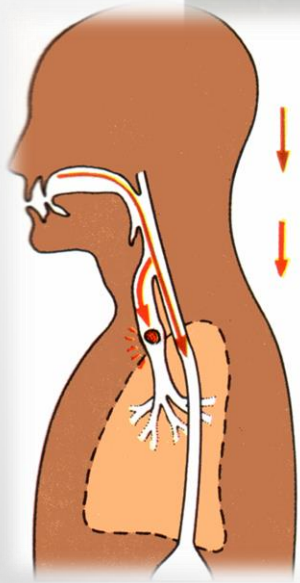


s!!





ss?



Normal passage
of food

Food inhaled
down
windpipe



Bruxism and Sleep Apnea in Children

Bruxism
(Teeth Grinding)



- J Oral Sci. 1999 Sep;41(3):99-103.
- Clinical findings in Japanese children with obstructive sleep apnea syndrome: focus on dental findings.
- Kawashima S, Niikuni N, Lo CH, Kohno M, Nakajima I, Akasaka M.

- Twenty-seven OSA children.
- Apnea index (AI) of 5 or more on polysomnographs.
- Their clinical history was obtained from their mothers, and oral findings were also evaluated. The patient consisted of 15 males (56%) and 12 females (44%).
- Snoring was the most frequently observed finding (100%).
- In terms of dentistry, oral breathing was the most frequently observed finding.

- Med Princ Pract. 2009;18(6):458-65. Epub 2009 Sep 30.
 - Habitual snoring in primary school children: prevalence and association with sleep-related disorders and school performance.
 - Sahin U, Ozturk O, Ozturk M, Songur N, Bircan A, Akkaya A.
-
- 1,605 children (819 boys and 786 girls) aged 7-13 years from 9 randomly selected primary schools located within the city limits of Isparta, Turkey.
 - The overall prevalence of snoring was 38.9%, while HS accounted for 3.5%. The prevalence of HS among boys (25, 3.0%) was higher than among girls
 - Habitual snorers had more daytime and nighttime symptoms. Allergic symptoms, daytime mouth breathing, shaking the child for apnea, restless sleep and hyperactivity were significant and independent risk factors and sleep-related symptoms for HS.
 - A significant and independent association was found between poor school performance and hyperactivity, nocturnal enuresis, tooth grinding

- J Bras Pneumol. 2008 Jun;34(6):356-61.
- Symptoms of obstructive sleep apnea-hypopnea syndrome in children
- Gregório PB, Athanazio RA, Bitencourt AG, Neves FB, Terse R, Hora F.

- Evaluated 38 children consecutively referred to the sleep laboratory with suspicion of OSAHS
- Severe cases of apnea were most common among children under the age of six
- In children with OSAHS, the most common symptoms were snoring and nasal obstruction,
- Excessive sleepiness and bruxism were seen in 29.4 and 34.3%,

- All of the children diagnosed with severe OSAHS also presented snoring and bruxism.

- Int J Pediatr Otorhinolaryngol. 2004 Apr;68(4):441-5.
 - Improvement of bruxism after T & A surgery.
 - DiFrancesco RC, Junqueira PA, Trezza PM, de Faria ME, Frizzarini R, Zerati FE.
-
- Before surgery all the 69 children presented sleep apnea and 45.6% presented bruxism. Malocclusion could be found in 60.71%. Three months after surgery none of the children presented breathing problems and only 11.8% presented bruxism. There was no difference in malocclusion.
 - **CONCLUSIONS:** This study suggests that there is a positive correlation between sleep-disordered breathing and bruxism. There was an important improvement of bruxism after T & A surgery.

- Int J Pediatr Otorhinolaryngol. 2008 Apr;72(4):509-11. Epub 2008 Feb 20.
- Bruxism and adenotonsillectomy.
- Eftekharian A, Raad N, Gholami-Ghasri N.

- 140 children aged between 4 and 12 years with obstructive symptoms due to adenotonsillar hypertrophy were evaluated.

- With a questionnaire existence of bruxism was evaluated before and after adenotonsillectomy and the results were compared with each other.

- **RESULTS:** The prevalence of bruxism was 25.7% before surgery and 7.1% after it.

- **CONCLUSION:** This study suggests that adenotonsillectomy could improve bruxism significantly in children who have obstructive symptoms due to adenotonsillar hypertrophy.

Nocturnal Bruxism

- Effective Treatment

Nocturnal Bruxism

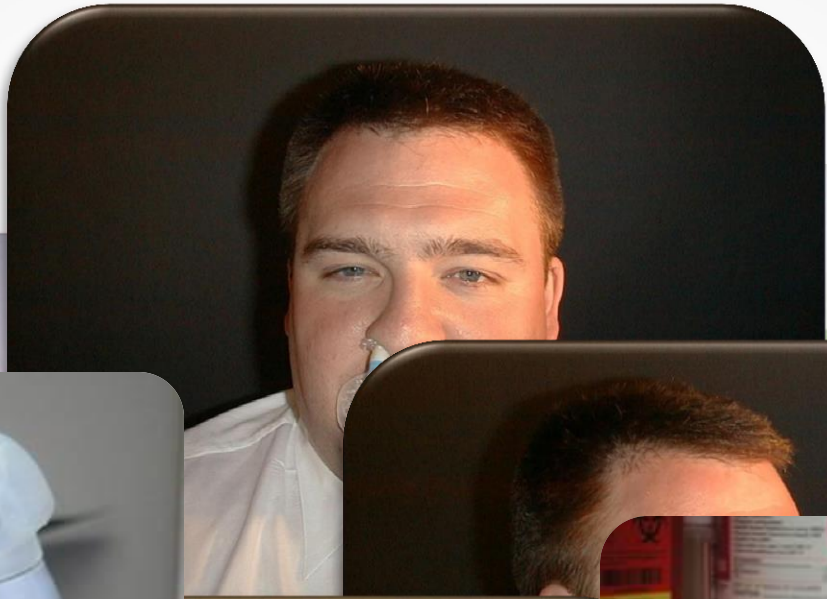
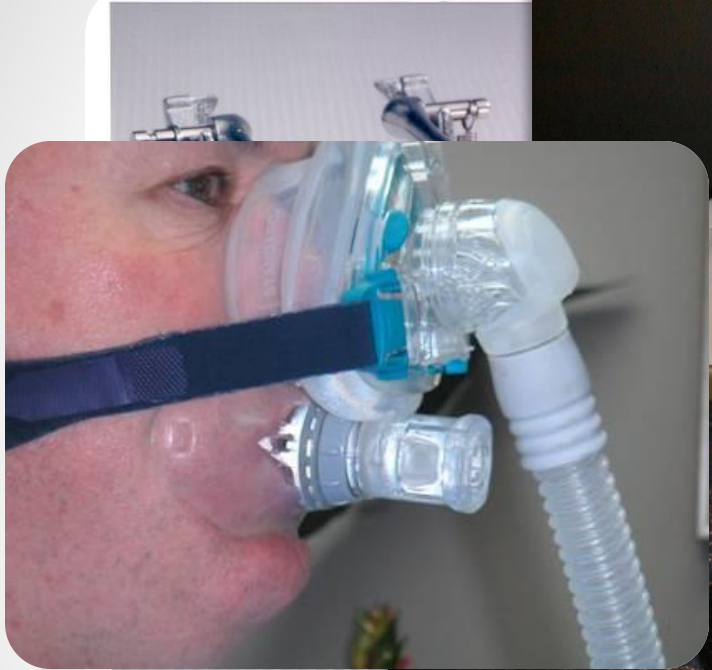
- Effective Treatment
- CPAP



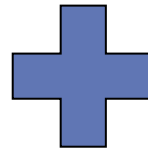
**CONTINUOUS POSITIVE
AIRWAY PRESSURE (CPAP)**

**AIRWAY PRESSURE (CPAP)
CONTINUOUS POSITIVE**

- [Sleep Med. 2002 Nov;3\(6\):513-5.](#)
 - Sleep bruxism related to obstructive sleep apnea: the effect of continuous positive airway pressure.
 - [Oksenberg A, Arons E.](#)
-
- During the CPAP titration night most breathing abnormalities were eliminated and a complete eradication of the tooth grinding events was observed. The results of this study suggest that when sleep bruxism is related to apnea/hypopneas, the successful treatment of these breathing abnormalities may eliminate bruxism during sleep.



The Best Combination Therapy...



Nocturnal Bruxism

- Effective Treatment
- Bite Splints (?)



- Int J Prosthodont. 2004 Jul-Aug;17(4):447-53.

- **Aggravation of respiratory disturbances by the use of an occlusal splint in apneic patients: a pilot study.**

- [Gagnon Y](#), [Mayer P](#), [Morisson F](#), [Rompré PH](#), [Lavigne GJ](#).

- Faculty of Dental Medicine, University of Montreal, Canada.

- **RESULTS:** No statistically significant difference in AHI was noted between baseline and splint nights.

- However, four patients experienced an aggravation in apnea diagnosis category on the night they used the splint. The AHI was increased by more than 50% in 5 of the 10 patients. The RDI showed a 30% increase from baseline to splint nights. The percentage of sleeping time with snoring also increased by 40% with the splint.

Int J Prosthodont. 2004 Jul-Aug;17(4):447-53.

Aggravation of respiratory disturbances by the use of an occlusal splint in apneic patients: a pilot study.

[Gagnon Y](#), [Mayer P](#), [Morisson F](#), [Rompré PH](#), [Lavigne GJ](#).

Faculty of Dental Medicine, University of Montreal, Canada.

- **CONCLUSION:** This open study suggested that the use of an occlusal splint is associated with a risk of aggravation of respiratory disturbances. It may therefore be relevant for clinicians to question patients about snoring and sleep apnea when recommending an occlusal splint.

Nocturnal Bruxism

- Effective Treatment
- Mandibular Advancement

CPAP and OA Treatment



CPAP Treatment



OA Treatment

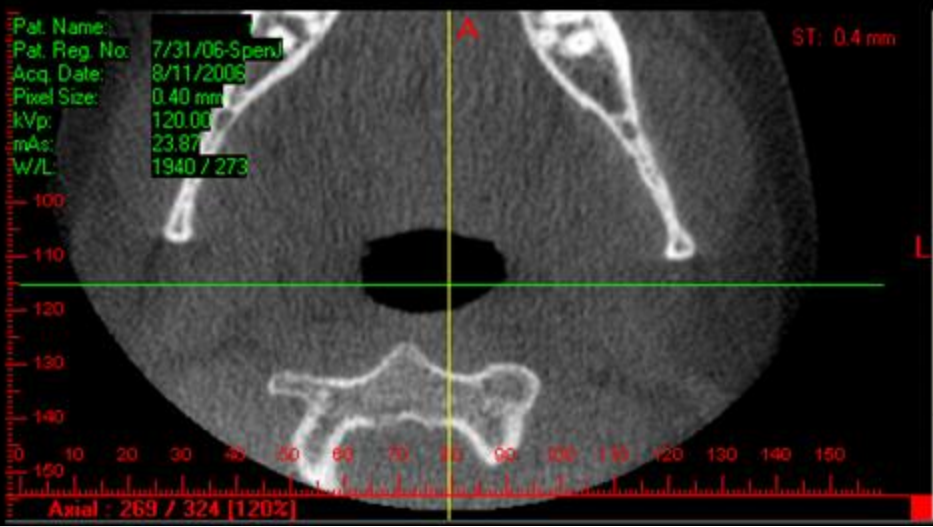
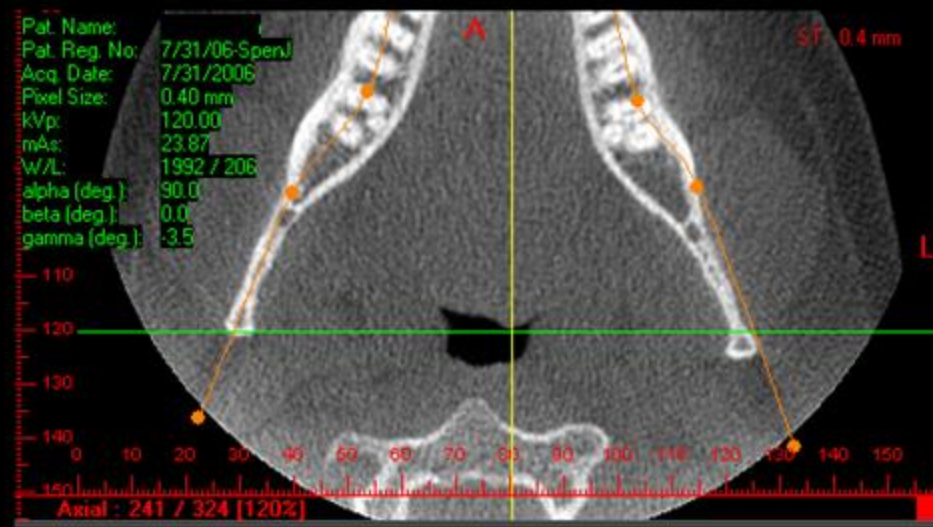


SOURCE: Copyright. American Heart Association. *Instructor's Manual for Basic Life Support*. Dallas: American Heart Association, 1987.

★ *Figure 2-5. Head-tilt/chin-lift technique of opening airway.*

★ *Figure 2-5. Head-tilt/chin-lift technique of opening airway.*

★ *Figure 2-5. Head-tilt/chin-lift technique of opening airway.*



Cone Beam CT show mandible with TAP II in place

Pure Sleep



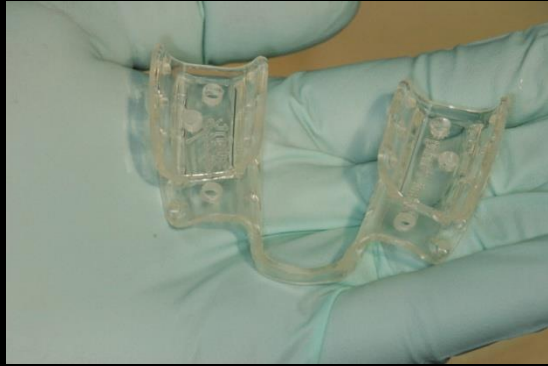
Only 2 payments of
\$29.95
(PLUS \$7.95 Shipping
and Handling)

Only 2 payments of
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(PLUS \$7.95 Shipping
and Handling)

\$67.85

The Silent Sleep

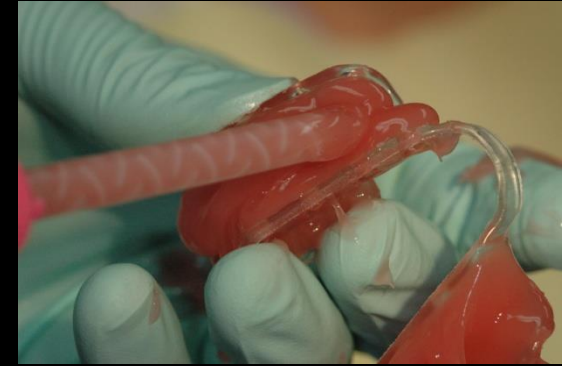
Customizable pre-fabricated oral appliance



The Prefabricated Tray



Filling the Tray with Lining Material



Filling the Tray, Continued



The Lined Tray in the Mouth



Using the Silent Sleep "Bite Gauge" to establish the mandibular position



The Finished Silent Sleep Oral Appliance

Fitting of the Easy Airway

- For patients who **HAVE EVIDENCE OF BRUXISM** and are committed to having a sleep study.
- In such a case, the Easy Airway is being fit **FOR BRUXISM**, and is billed out as a

Easy Airway™
CADWELL
Therapeutics

2



The Easy Airway Tray

4



Mixing the Putty

6



Fitting the Tray on the Teeth

8



Intra Oral Set Time of
Approximately 2 Minutes

1



Jaw position determined
using disposable gauge

3



Catalyst and Base Putty

5



Placing the Putty in the Tray

7

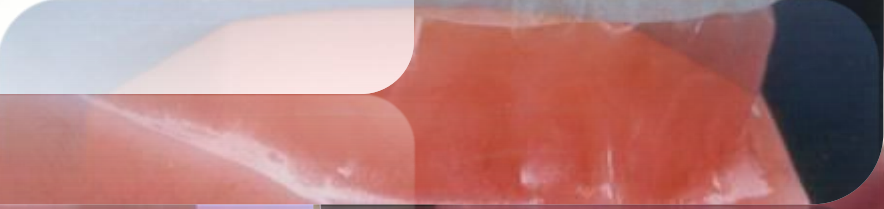


Disposable Bite Gauge used
to Establish Jaw Position

9



The Finished Appliance



- Int J Prosthodont. 2009 May-Jun;22(3):251-9.
- Effect of an adjustable mandibular advancement appliance on sleep bruxism: a crossover sleep laboratory study.
- Landry-Schönbeck A, de Grandmont P, Rompré PH, Lavigne GJ.

- Twelve subjects
- 5 nights in a sleep laboratory. After habituation and baseline nights, 3 more nights were spent with an MAA in either a slight (25%) or pronounced (75%) mandibular protrusion position or with an MOS (control).
- **CONCLUSION:** Short-term use of an MAA is associated with a significant reduction in SB motor activity without any appliance breakage. A reinforced MAA design may be an alternative for patients with concomitant tooth grinding and snoring or apnea during sleep.

- Int J Prosthodont. 2006 Nov-Dec;19(6):549-56.

- **Reduction of sleep bruxism using a mandibular advancement device: an experimental controlled study.**

- Landry ML, Rompré PH, Manzini C, Guitard F, de Grandmont P, Lavigne GJ.

- Thirteen intense and frequent bruxors
- The MOS was used as the active control condition and the MAD was used as the experimental treatment condition.
- Designed to temporarily manage snoring and sleep apnea, the MAD was used in 3 different configurations.
- **CONCLUSIONS:** Short-term use of a temporary custom-fit MAD is associated with a remarkable reduction in sleep bruxism motor activity.

Screening Your Patients

Sleep Apnea Risk Factors

- Obesity
- Increasing Age
- Male Gender
- Anatomic Abnormalities of Upper Airway
- Family History
- Alcohol or Sedative Usage
- Smoking
- Hypertension

OSA Risk Factors

- BMI > 30
- Neck circumference > 16in
- High arched palate
- Micro/retrognathia
- Mallampati class III / IV airway



Jamison R. Spencer, DMD, MS
Cameron A. Kuehne, DMD

Sleep Screening Questionnaires

Please answer the questions below to help us assess for possible sleep apnea, a condition in which your breathing pauses or stops for periods of time while you sleep. Sleep apnea can increase your risk for many health conditions. It can also increase your risk for breathing problems after surgery.

Name _____ Date _____
DOB _____ Height _____ Weight _____

	Yes	No
Have you ever been diagnosed with obstructive sleep apnea (OSA)?	<input type="checkbox"/>	<input type="checkbox"/>
Are you currently being treated for OSA?	<input type="checkbox"/>	<input type="checkbox"/>
Are you aware of a family history of OSA?	<input type="checkbox"/>	<input type="checkbox"/>
Are you aware of clenching or grinding your teeth at night?	<input type="checkbox"/>	<input type="checkbox"/>

ESS: Epworth Sleepiness Scale

How likely are you to doze off or fall asleep in the following situations, in contrast to just feeling tired?

0 = I would never doze 2 = I have a moderate chance of dozing
1 = I have a slight chance of dozing 3 = I have a high chance of dozing

Situation	Chance of Dozing
1. Sitting and reading	_____
2. Watching TV	_____
3. Sitting inactive in a public place (e.g. a theatre or a meeting)	_____
4. As a passenger in a car for an hour without a break	_____
5. Lying down to rest in the afternoon when circumstances permit	_____
6. Sitting and talking to someone	_____
7. Sitting quietly in a lunch without alcohol	_____
8. In a car while stopped for a few minutes in traffic	_____

STOP - BANG

		Yes	No
1. Snore	Do you snore loudly? (Louder than talking or loud enough to be heard behind a closed door?)	<input type="checkbox"/>	<input type="checkbox"/>
2. Tired	Do you often feel tired, fatigued or sleepy during daytime?	<input type="checkbox"/>	<input type="checkbox"/>
3. Obstruction	Has anyone observed you stop breathing during your sleep?	<input type="checkbox"/>	<input type="checkbox"/>
4. Pressure	Do you have or are you being treated for high blood pressure?	<input type="checkbox"/>	<input type="checkbox"/>
5. BMI	Is your body mass index greater than 28?	<input type="checkbox"/>	<input type="checkbox"/>
6. Age	Are you 50 years old or older?	<input type="checkbox"/>	<input type="checkbox"/>
7. Neck	Are you a male with a neck circumference greater than 17 inches, or a female with a neck circumference greater than 16 inches?	<input type="checkbox"/>	<input type="checkbox"/>
8. Gender	Are you a male?	<input type="checkbox"/>	<input type="checkbox"/>

Questionnaires adapted from www.EpworthSleepinessScale.com and Chung F, et. al Anesthesiology 2008; 108(5):812-821.
8119 Ustick Rd. Boise, ID 83704 • (208) 376-3600 • Fax (208) 376-3616 • www.cpcidaho.com • www.sleepidaho.com

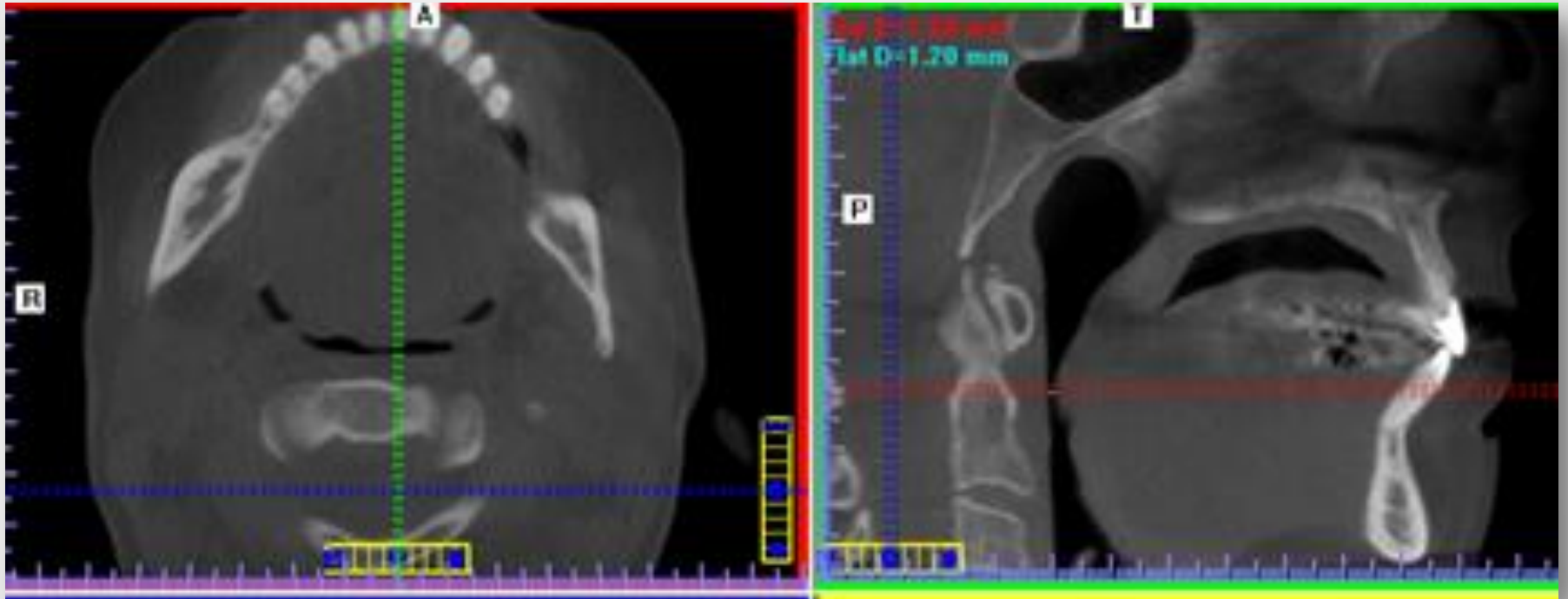


Worn teeth due to grinding (Bruxism)

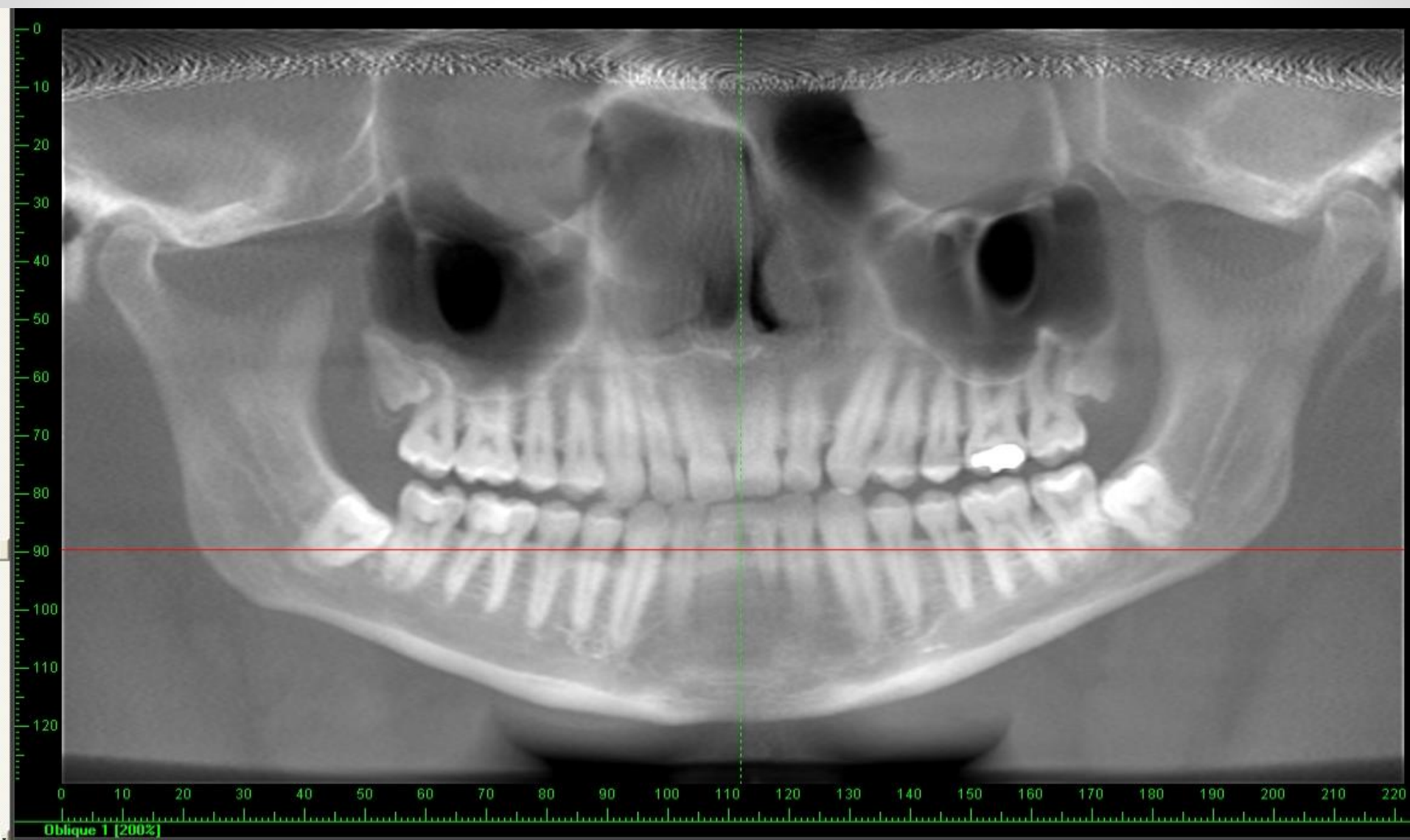




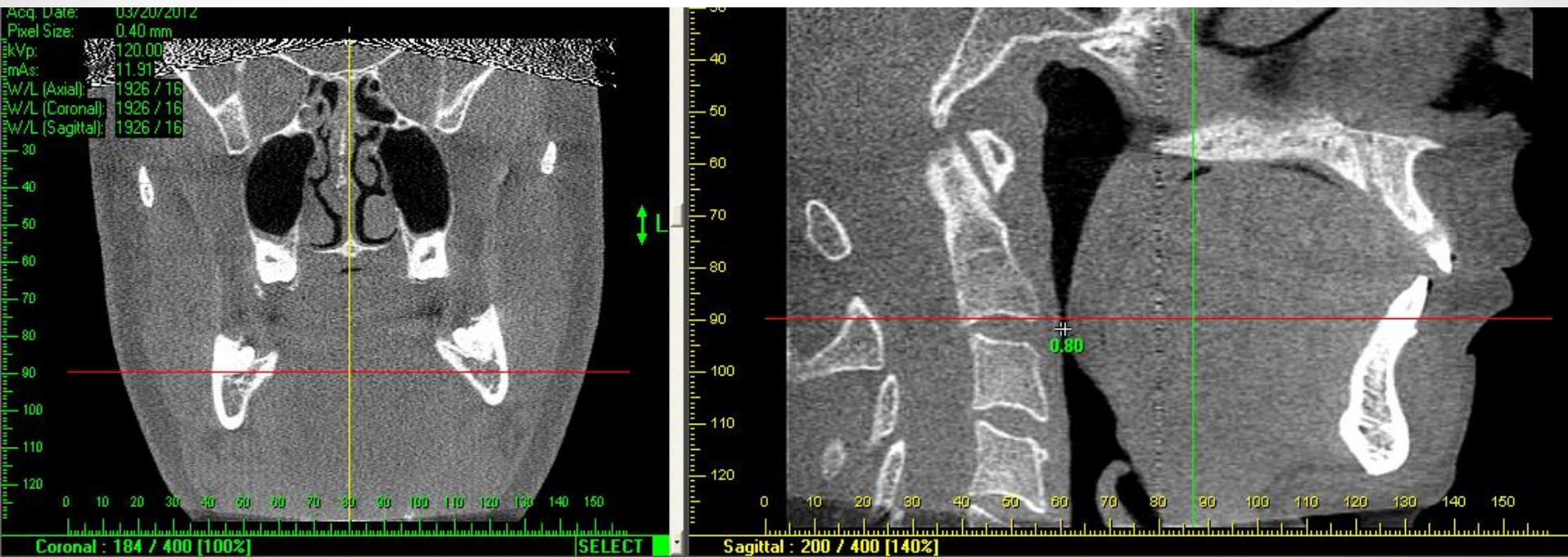
1.2 mm Airway!!!



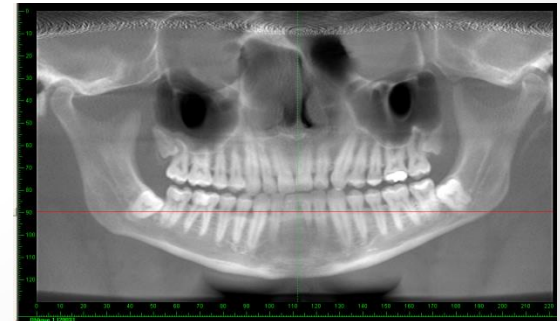




0.8 mm Airway!!!



With Teeth Apart!!!

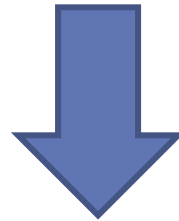


Case Studies

Nacho



- Male
- 42 years old
- Chief Complaint: Tired, lack of energy
- Doctor asks, “Do you snore?”
- Patient says, “Yes.”

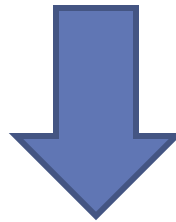


- Refer for Sleep Study

Jennifer



- Female
- 45 years old
- Chief Complaint: “Tired, lack of energy”
- Doctor asks, “Are you having trouble sleeping?”
- Patient says, “Yes.”



Becky

- 35yo,
- 5'5", 125 lbs, BMI 20.8,
- Healthy
- square jawed
- large tori
- snoring
- anterior wear (bonding which she broke off)
- "jaw has always popped,"
- NG for 4 years
- Referred to me by dentist for chief complaints of temporal headaches, bilateral jaw pain
- Patient thought her pain might have been brought on by stress since her husband went to China and she has 3 small boys.



• **AHI = 24**

Linda

- 54yo woman
- 5' 2", 122lbs, BMI 22.3,
- AHI 11, supine AHI 21, REM AHI 36
- Chief complaints of extreme facial pain, jaw clicking, jaw pain, ear pain (2007 sleep study—CPAP intolerant, history of chronic TMD and facial pain among other problems, treated with antidepressants)







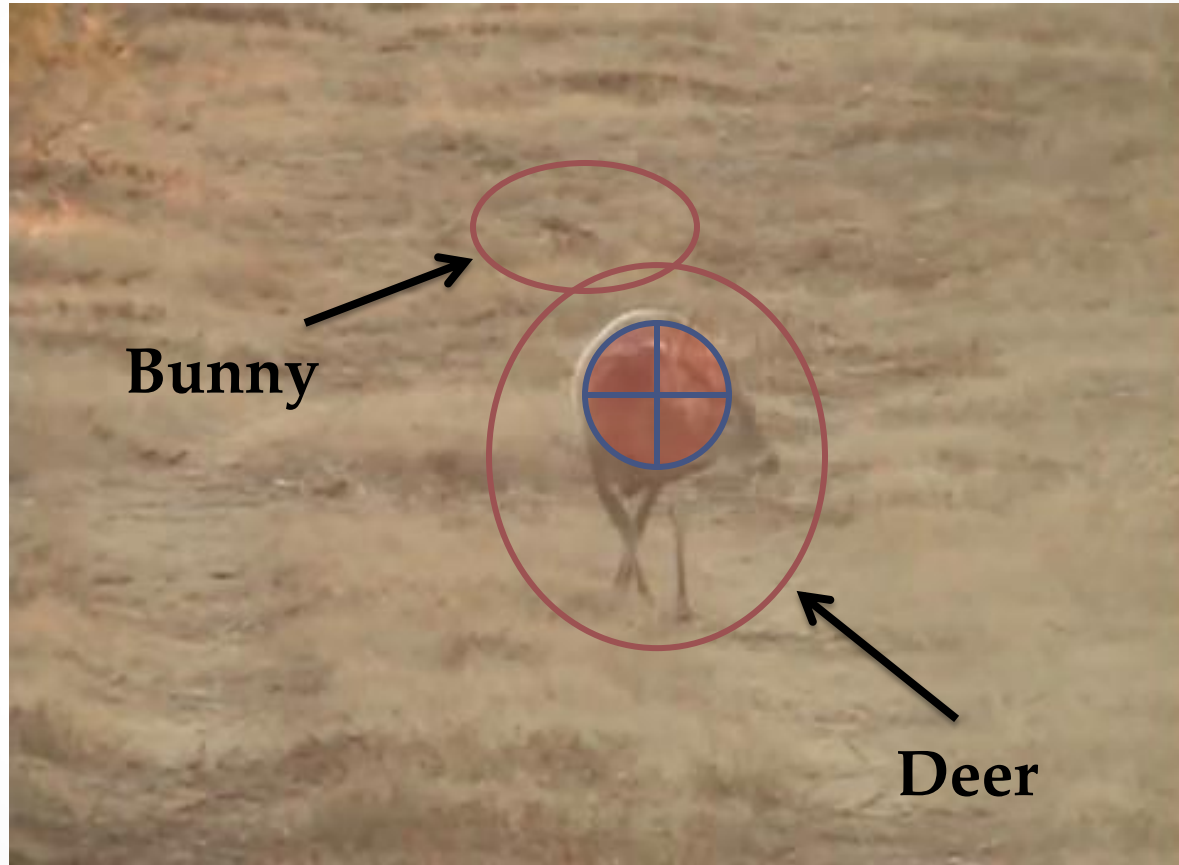
Innocent Bystanders?



Please Look Away If You Are Sensitive

Innocent Bystanders?

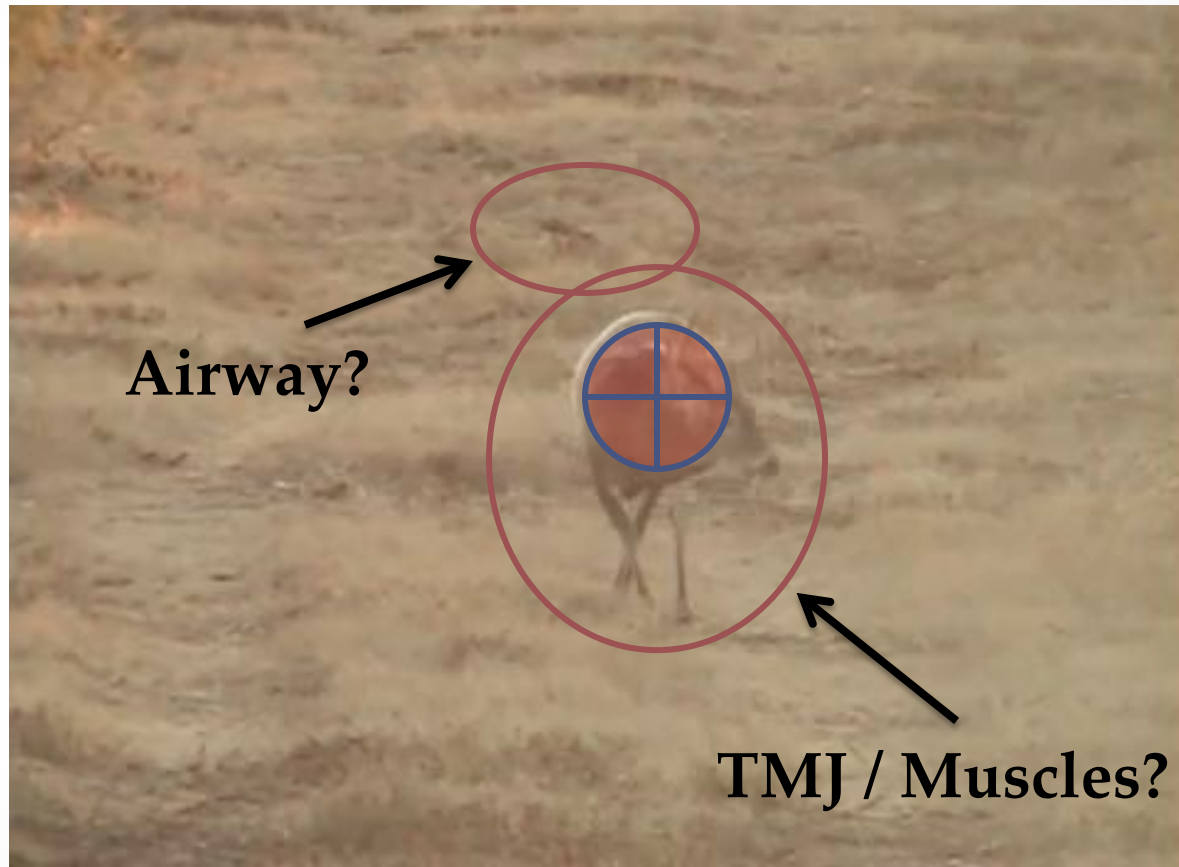
(or what you focus on isn't always what you hit)



Please Look Away If You Are Sensitive

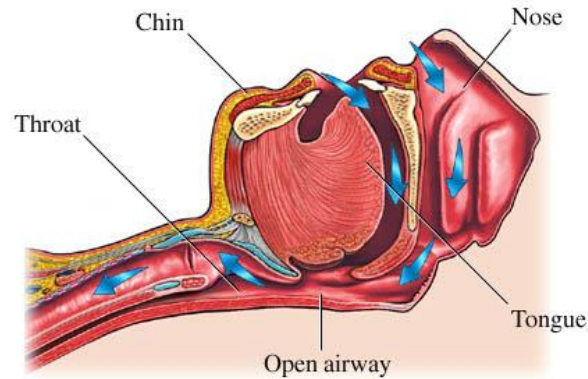
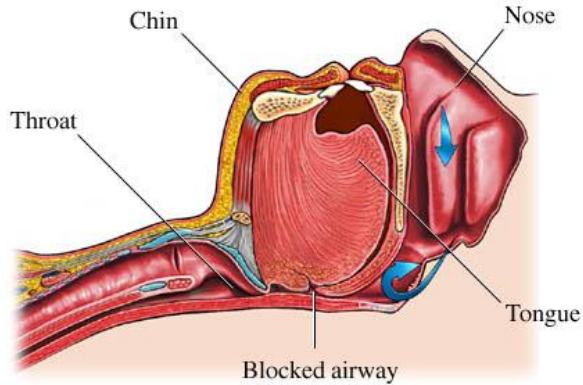
Innocent Bystanders?

(or what you focus on isn't always what you hit)

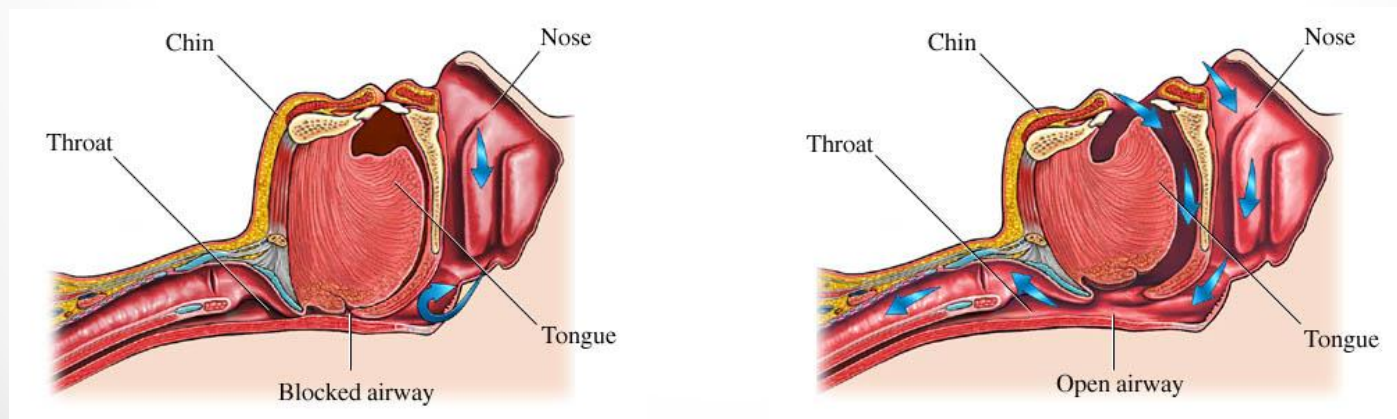
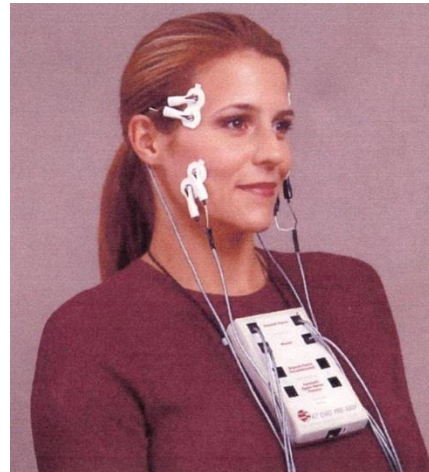


Innocent Bystanders?

(or what you focus on isn't always what you hit)



Accidental Sleep Doctors?



Accidental Sleep Doctors?

Accidental
for good
or for bad?

Acci...Dental

Suggested Protocol

- Screen ALL your patients for bruxism, snoring and sleep apnea (Epworth, STOP-BANG, Bruxism Questionnaire)
- Treat your patient with a temporary appliance **FOR BRUXISM**
- Refer your patient to their family doctor or sleep doctor for consideration of a sleep study (with a letter/phone call)
- Follow up with your patient for creation of a long term treatment plan

- The *Mystery* is
in the *History...*



Botox for TMJ?

In Conclusion

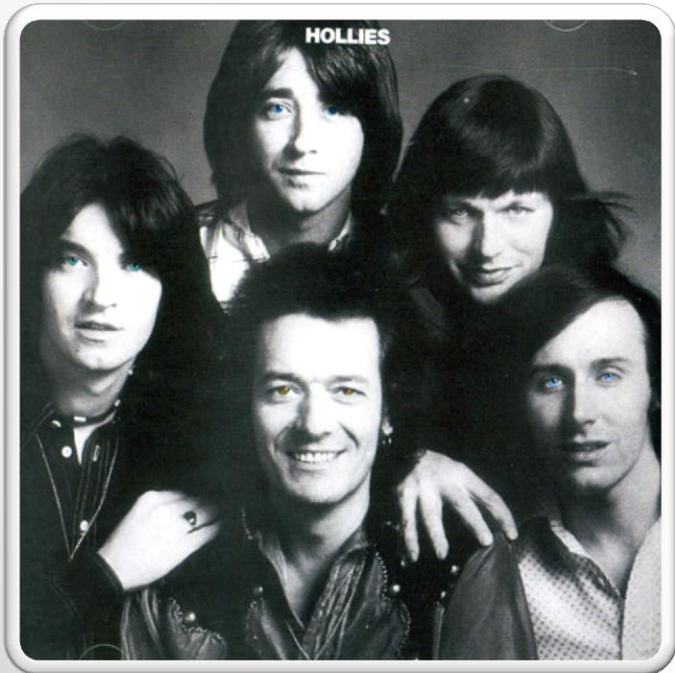
- Sleep apnea is not only in fat, old, men
- Wear patterns on the teeth may be an indication of OSA related bruxism
- If a patient suffers with OSA related bruxism, treatment of the OSA may reduce or eliminate the bruxism
- Use of an oral appliance in such cases may not only treat the OSA but also protect the teeth from further wear and breakdown

“All you need is love”

- The Beatles



“All I need
is the air that I breathe,
and to love you”



- The Hollies



**The Dentist's Role
in the Diagnosis and Treatment of
Sleep Disordered Breathing**

Hands On Workshop

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www.MySilentSleep.com