

Effective Physician and Dentist Collaboration

Anjoo Ely, DDS, DABDSM

Accreditation Statement

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of The American Academy of Sleep Medicine and the Michigan Academy of Sleep Medicine. The American Academy of Sleep Medicine is accredited by the ACCME to provide continuing medical education for physicians.

Conflict of Interest Disclosures for Speakers

Anjoo Ely, DDS has no relevant financial relationships with ineligible companies to disclose.

Learning Objectives

Upon completion of this course, attendees should be able to...

- Review the AASM Guidelines for OAT
- Understand the importance of a multidisciplinary approach in treating sleep apnea.
- Understand the ideal treatment pathway for the physician dentist collaboration depending on the patient diagnosis.
- Understand the role of the dentist in screening and managing sleep apnea patients.
- Understand the benefits of dentists and physicians working together such as improved health outcomes and improved treatment adherence.
- Understand Efficacy, Compliance and Overall Effectiveness of OAT Vs. CPAP

2015 American Academy of Sleep Medicine Practice Parameters

We recommend that sleep physicians prescribe oral appliances, rather than no therapy, for adult patients who request treatment of primary snoring (without obstructive sleep apnea). (STANDARD)

When oral appliance therapy is prescribed by a sleep physician for an adult patient with obstructive sleep apnea, we suggest that a qualified dentist use a custom, titratable appliance over non-custom oral devices. (GUIDELINE)

We recommend that sleep physicians consider prescription of oral appliances, rather than no treatment, for adult patients with obstructive sleep apnea who are intolerant of CPAP therapy or prefer alternate therapy. (STANDARD)

We suggest that qualified dentists provide oversight—rather than no follow-up—of oral appliance therapy in adult patients with obstructive sleep apnea, to survey for dental-related side effects or occlusal changes and reduce their incidence. (GUIDELINE)

AASM Practice Parameters

ADA Policy Statement



ADA Policy Statement 2017

The Role of Dentistry in the Treatment of Sleep Related Breathing Disorders Adopted by ADA's 2017 House of Delegates

Dentists can and do play an essential role in the multidisciplinary care of patients with certain sleep related breathing disorders and are well positioned to identify patients at greater risk of SRBD.

Oral appliances, specifically custom-made, titratable devices can improve SRBD in adult patients compared to no therapy or placebo devices. Oral appliance therapy (OAT) can improve OSA in adult patients, especially those who are intolerant of continuous positive airway pressure (CPAP). Dentists are the only health care provider with the knowledge and expertise to provide OAT.

ADA Policy Statement (cont'd)

- Oral appliances, specifically custom-made, titratable devices can improve SRBD in adult patients compared to no therapy or placebo devices. Oral appliance therapy (OAT) can improve OSA in adult patients, especially those who are intolerant of continuous positive airway pressure (CPAP). Dentists are the only health care provider with the knowledge and expertise to provide OAT.
- Dentists are encouraged to screen patients for SRBD as part of a comprehensive medical and dental history to recognize symptoms such as daytime sleepiness, choking, snoring or witnessed apneas and an evaluation for risk factors such as obesity, retrognathia, or hypertension.
- If risk for SRBD is determined, these patients should be referred, as needed, to the appropriate physicians for proper diagnosis.

ADA Policy Statement (cont'd)

- Dentists are encouraged to screen patients for SRBD as part of a comprehensive medical and dental history to recognize symptoms such as daytime sleepiness, choking, snoring or witnessed apneas and an evaluation for risk factors such as obesity, retrognathia, or hypertension.
- If risk for SRBD is determined, these patients should be referred, as needed, to the appropriate physicians for proper diagnosis.

ADA Policy Statement (cont'd)

Oral appliance therapy is an appropriate treatment for mild and moderate sleep apnea, and for severe sleep apnea when a CPAP is not tolerated by the patient.

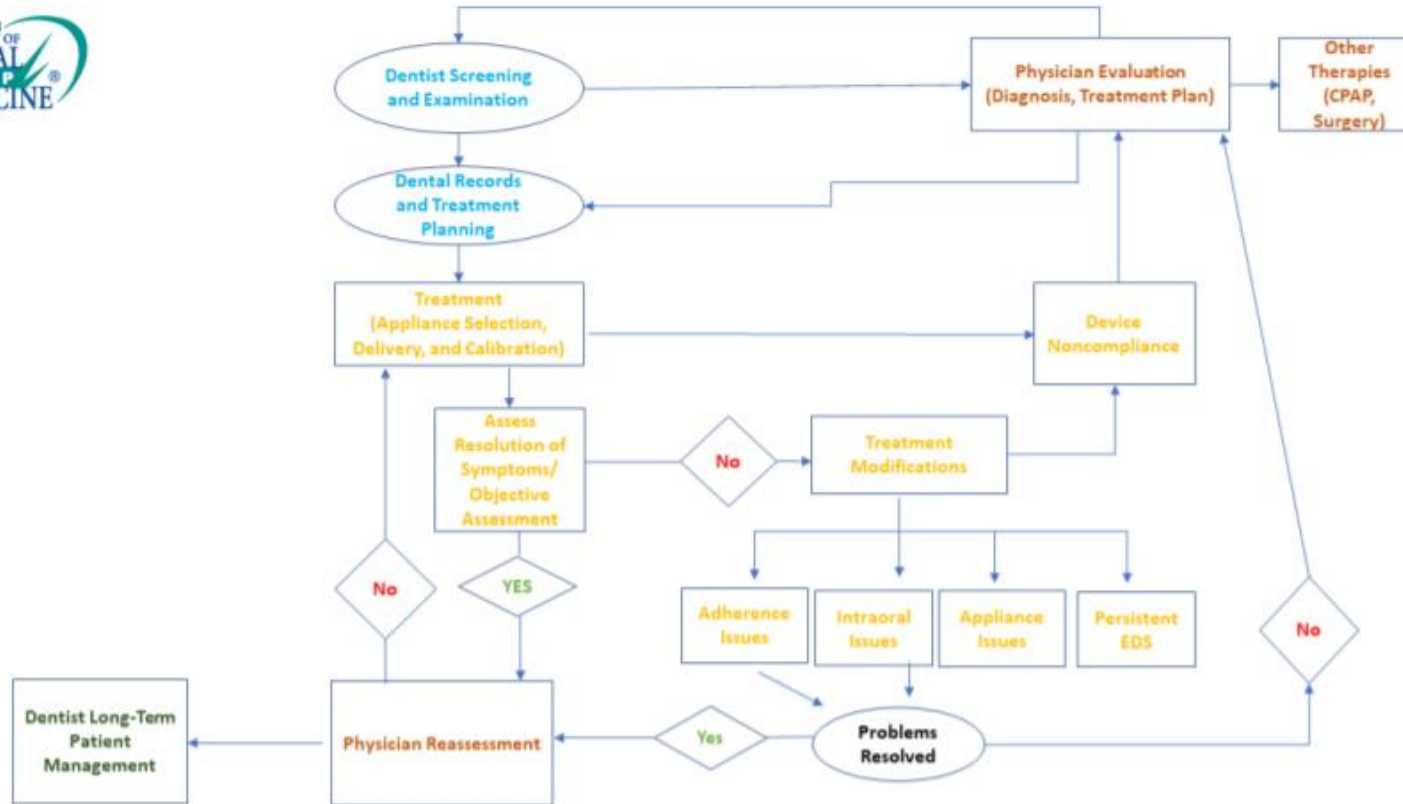
When oral appliance therapy is prescribed by a physician through written or electronic order for an adult patient with obstructive sleep apnea, a dentist should evaluate the patient for the appropriateness of fabricating a suitable oral appliance. If deemed appropriate, a dentist should fabricate an oral appliance.

Dentists should obtain appropriate patient consent for treatment that reviews the proposed treatment plan, all available options and any potential side effects of using OAT and expected appliance longevity.

Dentists treating SRBD with OAT should be capable of recognizing and managing the potential side effects through treatment or proper referral.

What is the Optimal Pathway?

FIGURE 1: Clinical Pathway for the Management and treatment of SRBD



CPAP = Continuous Positive Airway Pressure; EDS = Excessive Daytime Sleepiness

What Happens to the Patient after you refer?

- Consultation and Education
- Oral Appliance “Therapy”
- Appliance choice and appliance fabrication based on clinical exam
- Delivery of appliance and adjustment/titration appointments
- Follow up Sleep Testing
 - if Maximum Medical improvement reached, refer back to sleep MD
 - If further titration needed, retest and refer at that point.
- Annual recall
- Monitoring for side effects

Documentation and Communication

Why is the Dentist a vital part of screening?

- Clinical Exam
- What other medications is the patient taking?
- What related medical conditions do they have?





Related Medical History

Acid Reflux (GERD – Gastro Esophageal Reflux Disease)

High Blood Pressure

Morning Headaches

Diabetes

Sexual Dysfunction

Memory Problems – Alzheimer's / Dementia

Nocturia

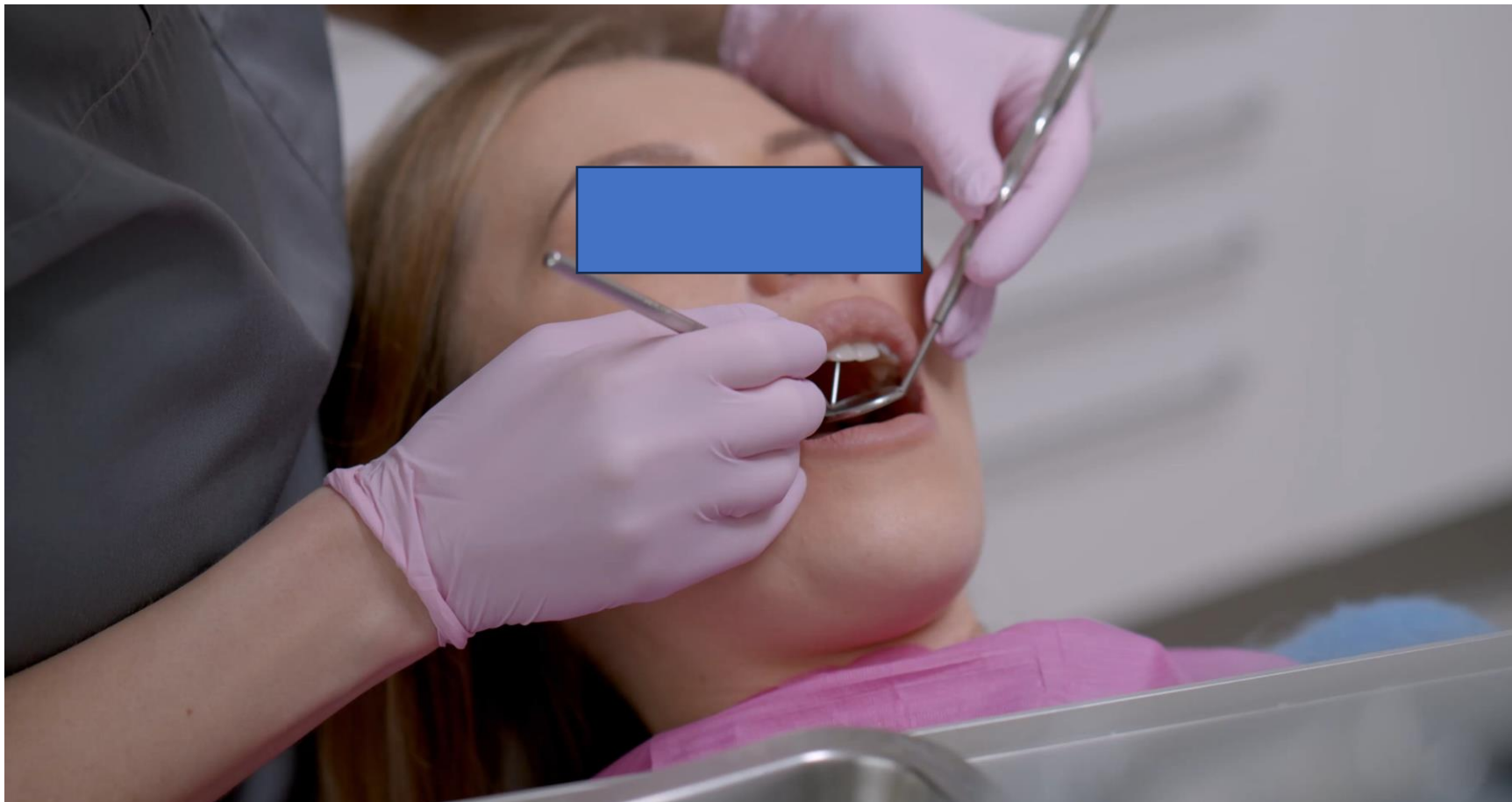
Cardiovascular Disease

Stroke

OSA Prevalence among medical conditions

Hypertension	30%	Nieto - JAMA 2000
Drug Resistant Hypertension	83%	Logan - Hypertension 2001
Chronic Heart Failure (40%C 30%O)	76%	Oldenburg - Eur J Heart Failure
Congestive Heart Failure	85%	Jiang - Journal of Cardiac Failure 2007
Atrial Fibrillation	49%	Gami-Nat Clin Pract Cardiovasc Med 2005
Ischemic Heart Disease	38%	Moore - Am J Respir Crit Care Med 2001
Stroke	92%	NorAdina- Singapore Med J 2006
Medically Refractory Epilepsy	33%	Malow -Neurology 2000
Metabolic Syndrome	50%	Ambrosetti - J Cardiovasc Med 2006
Type II Diabetes	48%	Einhorn - Endocr Pract. 2007
Obese Diabetics	70%	Brooks - J Clin Endocrinol Metab 1994
Morbid Obesity Male 90% Female	50%	Fritscher- Obes Surg 2007
GERD (same for snoring as OSA)	60%	Valipour- Chest 2002

Clinical Exam



Clinical Exam

- Large Tongue
- Scalloped Tongue
- Large Tonsils
- Worn enamel
- Abfractions
- Bruxism
- Retrognathia
- Mandibular Tori



Possible Barriers to Effective Collaboration

- Physicians aren't sure who to refer to?
- Physicians possibly not well versed in oral appliances – low expectations of efficacy?
- Physician wary of possible side effects – jaw pain, bite changes?
- Physicians don't view dentists as part of the healthcare team for the patient?
- Physicians refer the patient and never receive follow up documentation from the dentist thus losing track of their patient?

Who Should Physicians collaborate with for oral appliances?



Patient's own
dentist not
trained in DSM



"Qualified"
dentist with
AADSM



Diplomate with
ABDSM



Does oral appliance efficacy in treating obstructive sleep apnea depend on the appliance specialist's experience?

G Buiret ¹, C T Molta ²

Affiliations + expand

PMID: 37676348 DOI: [10.1007/s11325-023-02908-y](https://doi.org/10.1007/s11325-023-02908-y)

Abstract

Purpose: In France, oral appliances (OAs) are the first-line treatment for moderate and second-line treatment for severe obstructive sleep apnea-hypopnea syndrome. In general, the sleep specialist refers his/her patient to the appliance specialist for the impressions and the fitting. However, is there a relationship between the volume of activity of the appliance specialist and the efficacy of this device?

Methods: Our unit includes seven appliance otolaryngology specialists whose activities are highly variable (number of patients varying by a factor of almost 10). Data from a prospective follow-up registry of patients treated with an OA for moderate and severe obstructive sleep apnea-hypopnea syndrome were studied, and differences in outcomes between practitioners in the team were sought.

Results: Among 859 patients, OAs significantly reduced the apnea-hypopnea index. Even if the patients were not completely comparable from one practitioner to another, there was a significant heterogeneity in efficacy (complete or partial response of the apnea-hypopnea index and failure of OAs) between practitioners ($p = 0.0038; 0.0011; 0.0007$ respectively), with better results in practitioners with a higher level of OA activity.

Conclusion: The findings suggest that it may be preferable to refer patients to OA practitioners who see a higher volume of patients with moderate or severe obstructive sleep apnea-hypopnea syndrome treated with an OA.

Efficacy Goals for a “Successful” Case

- Mild to Moderate OSA- reduce AHI<10 and by 50%
- Severe OSA – Reduce AHI by 50%
- Oxygenation above 90% for all severities

EFFECTIVENESS

Efficacy

the capacity to produce an effect. It is these conditions that distinguish efficacy from the related concept of effectiveness, which relates to change under *real-life* conditions.

Compliance or adherence

the act of complying with a wish, request, or demand; acquiescence.

In *Medicine*, the willingness to follow a prescribed course of treatment

Effectiveness

How well the treatment works in the real-world

Combined measure of efficacy and compliance.

Efficacy versus Effectiveness in the Treatment of Obstructive Sleep Apnea: CPAP and Oral Appliances

Kate Sutherland, PhD^{1,2}; Craig L. Phillips, PhD^{1,2}; Peter A. Cistulli, MD, PhD¹

¹Department of Respiratory and Sleep Medicine, Royal North Shore Hospital and Sydney Medical School, University of Sydney, Sydney, Australia; ²Woolcock Institute of Medical Research, University of Sydney, Sydney, Australia

Table 1—Efficacy and effectiveness of oral appliances versus CPAP: AHI and health outcome results from randomized trials.

Study	Study Design	N	Baseline AHI	Treatment AHI		Health Outcomes			
				CPAP	OA	Daytime Sleepiness		Health-Related Quality of Life	Blood Pressure
						Subjective (ESS)	Objective		
Aarab, 2010	parallel	57	20.9 ± 9.8	1.4 ± 13.1	5.8 ± 14.9	↔	N/A	↔	N/A
Barnes, 2004	crossover	80	21.5 ± 1.6	4.8 ± 0.5	14.0 ± 1.1	↔	↔ (MWT)	N/A	↔
Engleman, 2002	crossover	48	31 ± 26	8 ± 6	15 ± 16	CPAP	CPAP (MWT)	CPAP	N/A
Ferguson, 1997	crossover	20	26.8 ± 11.9	4.0 ± 2.2	14.2 ± 14.7	↔	N/A	N/A	N/A
Gagnadoux, 2009	crossover	59	34 ± 13	2 (1–8) [#]	6 (3–14) [#]	↔	↔ (OSLER)	OA	N/A
Hoekema, 2008	parallel	103	40.3 ± 27.6	2.4 ± 4.2	7.8 ± 14.4	↔	N/A	↔	N/A
Lam, 2007	parallel	101	23.8 ± 1.9 [^]	2.8 ± 1.1	10.6 ± 1.7	CPAP	N/A	CPAP	↔
Phillips, 2013	crossover	108	25.6 ± 12.3	4.5 ± 6.6	11.1 ± 12.1	↔	N/A	↔	↔
Tan, 2002	crossover	21	22.2 ± 9.6	3.1 ± 2.8	8.0 ± 10.9	↔	N/A	↔	N/A

[#]Median (interquartile range). [^]Mean ± standard error. Summary of AHI data with CPAP and oral appliances (OA) in randomized trials comparing treatments. Summary of commonly reported health assessments are presented. "CPAP" or "OA" indicates superior results were found with that treatment, ↔ indicates equivalent findings observed with both treatments. AHI data is mean ± standard deviation, unless otherwise indicated. ESS, Epworth Sleepiness Score; MWT, maintenance of wakefulness test; OSLER, oxford sleep resistance test.



Health Outcomes

- Blood Pressure
- Arterial Stiffness
- Subjective sleepiness
- Driving Simulator Performance
- Quality of Life outcomes

CPAP = Oral Appliances

Efficacy

- CPAP > Oral Appliances

Compliance

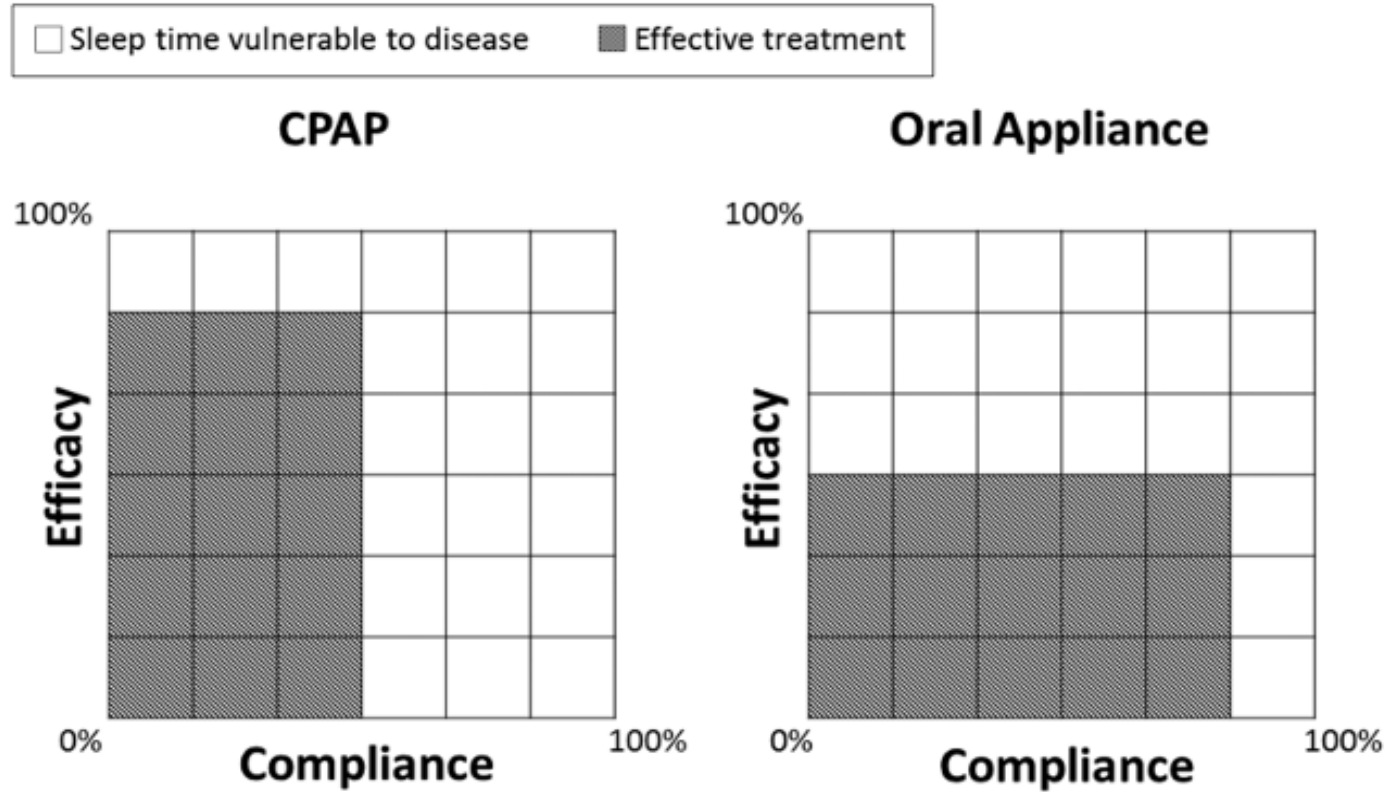
- Oral Appliance > CPAP

Effectiveness – Health Outcomes

- CPAP = Oral Appliances

Effectiveness

Figure 1—Comparison of treatment effectiveness profile of CPAP and oral appliances.



Efficacy (y axis) reflects the ability of treatment to prevent obstructive breathing events when it is physically applied. Compliance (x axis) reflects the hours the treatment is applied for over the total sleep time when obstructive events can occur. "Effectiveness" requires both efficacy and compliance and the balance of these likely reflects over health outcomes. This schematic illustrates the scenario of an oral appliance which is only half as efficacious as CPAP but has two-fold greater compliance which results in equivalent effectiveness (shaded area).

Health Outcomes of CPAP versus OAT for Obstructive Sleep Apnea: A Randomised Controlled Trial

CL Phillips, RR Grunstein, MA Darendeliler, AS Mihailidou, VK Srinivasan, BJ Yee, GB Marks and PA Cistulli

- Multiple important health outcomes
- both treatment modalities (CPAP/COAT)
- full spectrum of OSA severity



Conclusions :

MAS treatment may be an acceptable choice for first line treatment of patients with:

- Mild, Moderate and Severe* OSA
- Who are willing and eligible to use MAS

- This study assessed short-term (1 month) effectiveness
- Long term health outcome studies are needed
 - Objective measures of MAS compliance
 - Prospective identification of favourable candidates for both CPAP and MAS

Side Effects to be Managed

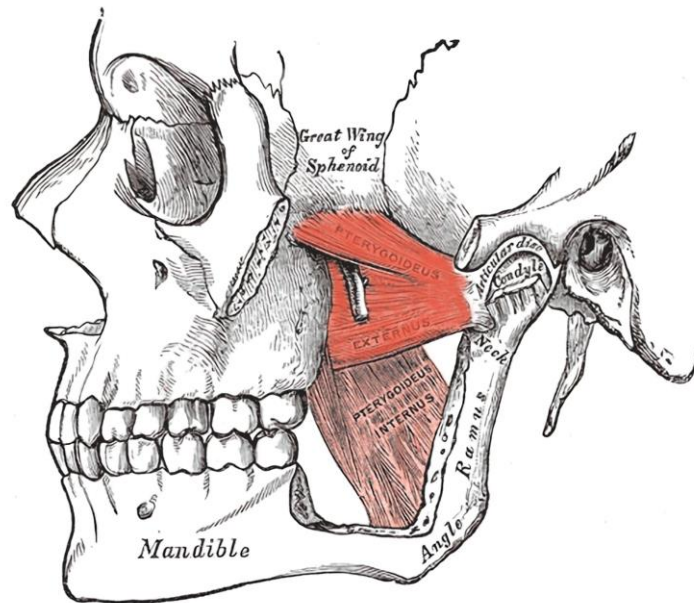
- Short Term

- Salivation
- Dry Mouth
- Tooth Pain
- Gum irritation

- Long Term

- Bite Changes?
- TMJ Dysfunction?

Bite Changes



● Lateral pterygoid

Posterior open bite in the morning

- Contracted/shortened pterygoid muscles

Need to be addressed daily

- Eating breakfast, chewing gum, AM aligner, bite tabs, jaw exercises

INFORMED CONSENT

Posterior Open Bite (POB)

- Methods
 - Visit 1 167 patients studied – baseline
 - Visit 2 159 patients after 118 days
 - Visit 3 129 patients after 208 days
 - Visit 4 85 patients after 413 days

Results

POB was found to develop with an average incidence of 6.1 % per visit. The prevalence of POB was 5.8 % on visit II, 9.4 % on visit III, and 17.9 % on visit IV.

Photos of bite Change



11/08/2018



02/12/2020



Some patients do not get bite change.



11/23/2015 -
preop

12/16/2015 delivery



02/20/2020

COMBINATION OAT-CPAP THERAPY

TITLE

Combining MAD And CPAP as an Effective Strategy for Treating Patients With Severe Sleep Apnea Intolerant to High-Pressure PAP and Unresponsive to MAD

IMPORTANCE

This study may show that combining oral appliance therapy (OAT) and (CPAP) can be an effective therapy for patients who are resistant to both treatments.

CITATION

Liu HW, Chen YJ, Lai YC, et al. Combining MAD and CPAP as an effective strategy for treating patients with severe sleep apnea intolerant to high-pressure PAP and unresponsive to MAD. Kou YR, ed. *PLoS One*. 2017;12(10):e0187032. doi:10.1371/journal.pone.0187032

SUMMARY

This study examined the use of combination therapy in patients with severe apnea, who were resistant to both CPAP and OAT. Patients who were intolerant to CPAP were switched to OAT for 12 weeks. If residual AHI remained, the patient was then switched to combination therapy for 12 weeks. In the end, a total of 14 patients were included in this retrospective study. The researchers found that residual AHI was lower on combination therapy than on CPAP or OAT. Furthermore, patients used combination therapy for 6.4±1.5 hr/night median at the follow-up (36.5 months). Overall, combining OAT and CPAP was effective for these patients.

WEB URL LINK

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0187032>

Benefits of Effective Collaboration

- Treatment choices for the patient
- Cutting edge sleep medicine
- Possible Combination Therapy
- Reactivation of CPAP failure patients
- **Better Health outcomes**



Thank you!

- Anjoo Ely, DDS, DABDSM