

Conflict of Interest Disclosures for Speakers

Harmeet K Chiang, DDS, MS

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Type of Potential Conflict	Details of Potential Conflict
Grant/Research Support	
Consultant	Director-at-Large- American Board of Dental Sleep Medicine
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Financial support	
Other	

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Ryan Nord, MD

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Consultant	Inspire medical and Siesta medical
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Elsa Mathew, MD

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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 Virginia Academy of Sleep Medicine. The American Academy of Sleep Medicine is accredited by the ACCME to provide continuing medical education for physicians.



Multidisciplinary approach to treat Patient With Severe Obstructive Sleep Apnea With Mandibular Advancement Device: A Case Report

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INTRODUCTION

Obstructive sleep apnea syndrome is characterized by episodes of upper airway obstruction with respiratory effort, during sleep. It is one of the most frequently diagnosed sleep disorders, it occurs in both men and women, and it has many symptoms and morbidities. Beyond the multifactorial origin, obstructive sleep disorder patients have low rates of treatment adherence.

Multidisciplinary and multi-professional approaches are a good alternative to be offered, independently of the chosen treatment method. Here we describe the multidisciplinary approach offered to an obstructive sleep apnea patient in H.H McGuire Veterans Hospital looking to improve patient's adherence.

OBJECTIVE

Objective: To show the success of oral appliance therapy in a patient with severe OSA using a multidisciplinary approach.

REPORT OF CASE

HPI: 36 y/o MALE with a prior hx of obstructive sleep apnea (OSA), diagnosed in 2006, and with poor CPAP and BiPAP tolerance presented for PAP-alternate options to the Sleep Clinic in May 2019. The PMHx was significant for an addiction disorder for which he was being prescribed suboxone. Given persistent sleep apnea symptoms including daytime sleepiness, snoring, and sleep fragmentation, he completed a home sleep apnea test (HSAT) in May 2019. The HSAT revealed severe OSA along with hypoxemia (Table 1). The quite notable hypoxemia prompted an in-lab PSG with capnography which was completed in July 2019. This confirmed the severe OSA with hypoxemia, but elevated CO₂ was found suggesting against hypoventilation.

RESULTS: Table 1 Home Sleep Apnea Test (HSAT)

Analysis Time (min):558.4
Respiratory Event Index (REI): 86/ hr
Total number of respiratory events: 800
#of obstructive apneas: 539
#of mixed apneas: 11
#of central apneas: 15
#of hypopneas: 235
Supine REI (/hr):: 97.7
Duration spent in supine sleep (%): 83
Mean SpO ₂ (%):88.8
Minimum SpO ₂ (%):66
SpO ₂ <=88% (min):227.4
Oxygen Desaturation Index (ODI):88.4

RESULTS: Table 2 DISE study

Velum: partial AP collapse
Oropharynx: No collapse
Tongue Base: partial tongue base collapse
Epiglottis: complete collapse
Narrowing of lateral hypopharyngeal wall

RESULTS: Table 3 HSAT Efficacy study

Upper Tray #2, Lower Tray #1
Analysis Time (min):419.4
Respiratory Event Index (REI): 13.9/hr
Total number of respiratory events: 97
#of obstructive apneas: 14
#of mixed apneas: 1
#of central apneas: 11
#of hypopneas: 71
Supine REI (/hr): 13.4
Duration spent in supine sleep (%): 81.9
Non-supine REI (/hr):: 16.2
Mean SpO ₂ (%): 92.1
Minimum SpO ₂ (%): 82
SpO ₂ <=88% (min):10.1
Oxygen Desaturation Index (ODI):14.1

The patient care was discussed in the Richmond VAMC Multi-Disciplinary Sleep Clinic and underwent DISE procedure showing multilevel airway collapse. It was determined that he would be a good candidate for hyoid suspension, tongue base reduction + oral appliance therapy (OAT). A 2-step approach was decided on with the patient proceeding to OAT initially, followed by a repeat sleep study and then consideration for ENT surgery. Additionally, Mental Health input was requested, and it was decided that the patient was stable and ready for a voluntary decrease in suboxone dosing. The patient began OAT in February 2020. He reported significant improvement in clinical symptoms, commenting on an increase in daytime alertness and a decrease in both sleep fragmentation and snoring. Once adjustments were completed with the OAT, he was scheduled for an HST, oral appliance efficacy Study.

An efficacy study pn July 2020 revealed a 90% improvement from his baseline REI. Subjective daytime sleepiness, assessed by the Epworth Sleepiness Scale (dropped from 13 to 3), improved with the MAD as seen in our patient.

CONCLUSION

The patient presented with severe somnolence during the day and reported that it affected his professional activity and daily normal life. After 6 weeks of appliance usage, the primary OSA symptoms were eliminated in this veteran. His other frequent complaints including nocturnal polyuria, night awakenings, and morning headaches also showed significant improvement, and control of these symptoms translated into a better quality of life for patient.

Despite multi-level collapse on DISE and anticipated multilevel airway ENT surgery a thoughtful plan and stepwise approach lead to an excellent clinical outcome and avoidance of major surgery.

REFERENCES

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4. Dieltjens et al (2015) AADSM Annual Meeting abstracts

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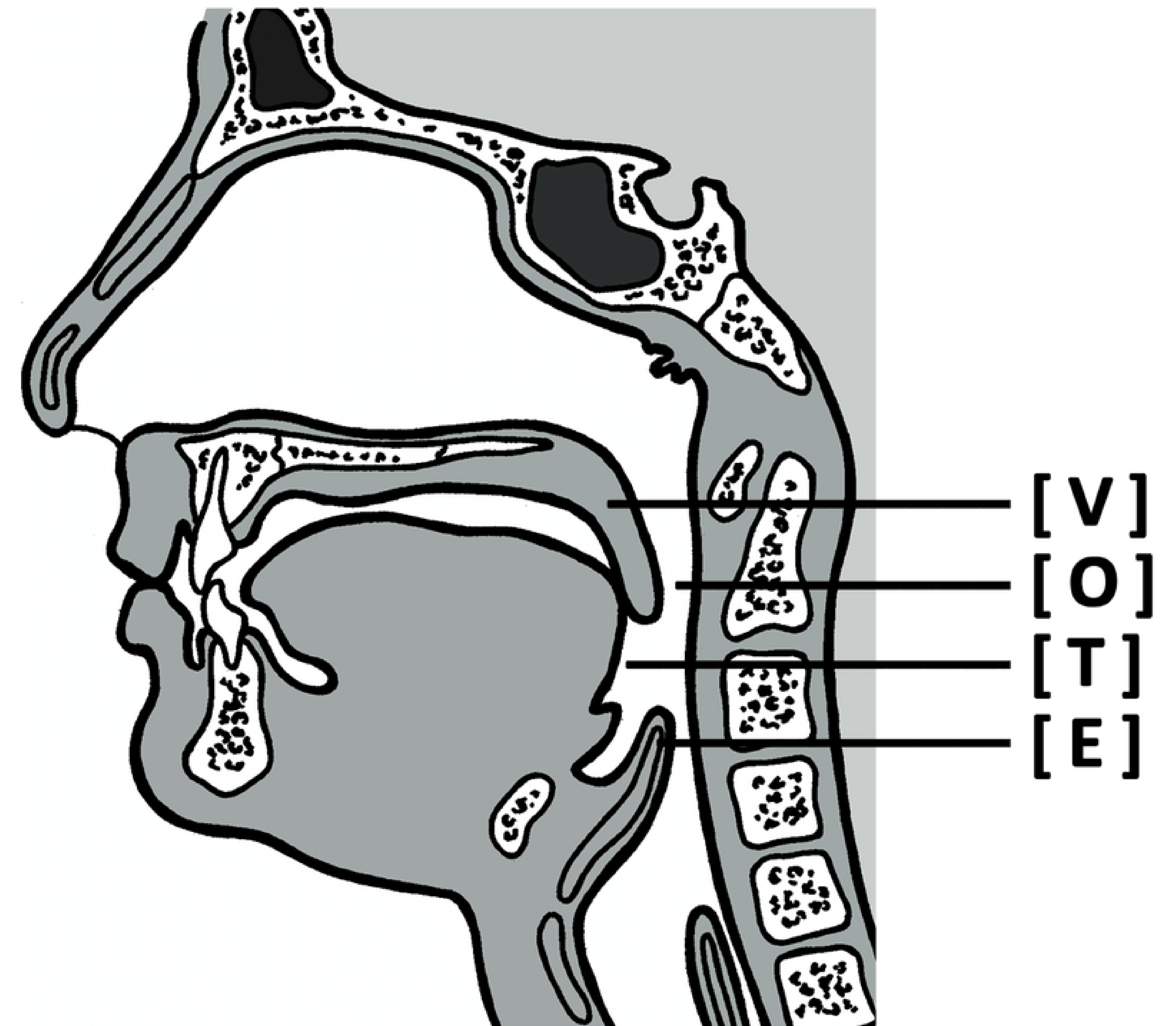
MULTI DISCIPLINARY TEAM

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EFFICACY STUDY- HSAT

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- Despite multi-level collapse on DISE and anticipated multilevel airway ENT surgery a thoughtful plan and stepwise approach lead to an excellent clinical outcome and avoidance of major surgery.

PATIENT SELECTION

I personally save the more complicated (expensive and invasive) tests for those patients:

- **Severe OSA** where there has been intolerance to PAP, Higher BMIs, older age,
- Patients who are failing 2 therapies
- Fewer anatomic abnormalities associated (therefore, a higher probability of non-anatomic traits).

