ALTERNATIVES TO CPAP - AN OVERVIEW

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OBJECTIVES

1. Gain a basic understanding of alternatives to CPAP for treatment of OSA
2. Learn skills in persuading patients to attempt treatment whether CPAP or other.
3. Learn what treatments are available in the case of a patient failing CPAP
4. Acquire information about the most up to date treatments including scams and treatments that aren't proven
I’M NOT GONNA WEAR THAT C-PAK!

- Don’t bother correcting the patient
INTRODUCTION

- Many proven and unproven approaches to treating Obstructive Sleep Apnea (OSA)
- This presentation is an overview of numerous treatments
- The intention is to give sleep technologists the knowledge to quickly handle questions from patients, particularly when a patient is present for a CPAP titration and refuses it based on deciding to try an alternative treatment
- It is not intended to be an in-depth discussion of the various treatments
- Gives hope that if a patient truly fails CPAP, another treatment may work
- Review of various scam/unproven treatments
PHENOTYPING USING POLYSOMNOGRAPHY

- PUP and PUPpy
- Precision Sleep Medicine
- Shown promise for predicting outcomes of therapies
- Algorithms Detect
  - Breaths
  - Calculate normalized ventilation
  - Model ventilatory drive
Endophenotypic Traits
- Pharyngeal collapsibility
- Poor muscle compensation
- Ventilatory instability
- Arousability from sleep (low arousal threshold)
ALTERNATIVES TO CPAP

- Mandibular Advancement Device (MAD)/Oral Devices
- Implanted devices
- Combination Therapy
- Medication
- Surgery
- Positional Therapy
- Physical Therapy
- Atrial Overdrive Pacing
- Weight Loss
MANDIBULAR ADVANCEMENT DEVICE (MAD)/ORAL DEVICES

- Device worn in the mouth to push mandible forward
  - Some require certain amount of teeth
  - Insurance may not pay
  - May have to “fail” CPAP first
  - Over the counter devices have lower effectiveness
  - Medicare approved devices have demonstrated efficacy
MANDIBULAR ADVANCEMENT DEVICE (MAD)/ORAL DEVICES

- Comfortable
- Easy to wear
- Quiet
- Portable
- Convenient for travel
- Easy to care for
- Reduces bruxism
- Reducing AHI varies
- Combine with PAP using hybrid device
Side effects and contraindications for use

- Tooth shifting
- Temporal Mandibular Joint (TMJ) pain
MEDICATION

- Not a first line or recommended treatment in most situations
- Selective serotonin reuptake inhibitors (SSRIs) increase upper airway muscle tone by hypoglossal motoneuron stimulation. Neurons are less active during REM. Little evidence to support use in treating OSA
- Acetazolamide and CO2-inhalation/Central apnea only
MEDICATION

- Protriptyline AASM lists as Level 2 or 3 evidence (tricyclic antidepressants (TCA)) reduces REM
- Modafinil approved for residual sleepiness/AASM level 1 or 2
- Solriamfetol approved for residual sleepiness (dopamine and norepinephrine reuptake inhibitor (DNRI))
- Serotonin reuptake inhibitors, methylxanthines, and estrogen replacement therapy use are against AASM parameters
- Methylxanthines may reduce AHI but reduce sleep quality
Clinical trials have failed to show significant benefit in pharmacologic treatment of OSA.
The type of sleep apnea surgery that will be most effective for you depends on the structures that are causing your sleep apnea and blocking your breathing during sleep. In children, surgery (usually tonsillectomy and/or adenoidectomy) is a first-line option for obstructive sleep apnea (OSA), whereas sleep apnea surgery is typically a second-line therapy in adults.

**SURGERY**

- Numerous surgeries available
  - Nasal Surgery-makes CPAP more tolerable
  - Upper Airway Surgery-UPPP-improves snoring, OSA possibly
  - Maxillomandibular Advancement (MMA)-OSA can improve
  - Tracheostomy-eliminates OSA but at what physical/mental cost?
  - Hypoglossal Nerve Stimulation-implanted device-OSA can improve
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- Some procedures are reversible
- Some are not
IMPLANTED DEVICES

- Inspire™
  - Hypoglossal Nerve Stimulation-implanted device
  - Stimulates the tongue muscle
  - FDA recently approved a two incision procedure
  - Unobtrusive
  - Low maintenance
  - Simple to use
Inspire™ is possible for:

- Moderate to severe obstructive sleep apnea
- Patients unable to use or get consistent benefit from CPAP
- Patients that are not significantly obese
- Age 18 or above
Side Effects and Contraindications for Use
- Concomitant device interaction
- Swelling and minor surgical issues
- Battery Replacement is invasive
- Insurance and Medicare coverage not consistent
IMPLANTED DEVICES

- **remedē®**
  - For moderate to severe Central Sleep Apnea NOT OSA
  - Stimulates the diaphragm
  - Use in adults only
  - MRI contraindicated
  - Pacemaker or implanted defibrillator use may be possible
  - Usual surgical risks
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- Siesta Medical’s AIRLIFT® Hyoid Suspension with UPPP
  - 74% reduction in OSA (AHI < 20)
  - No limitations on BMI or other physiological factors
  - Study involved 39 patients with several complications
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- Maxillomandibular advancement
  - Surgery to move jaw forward
  - Appears to be more successful than UPPP
  - More complicated
  - Greater risk
  - Longer recovery time
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**SURGERY**

- **Uvulopalatopharyngoplasty (UPPP)**
  - Remove tissue around tongue
  - Remove uvula
  - Shorten soft palate
  - Laser-assisted uvulopharyngoplasty, (LAUP)
- **Radiofrequency probe (somnoplasty)**
- **Snoring reduced, OSA not resolved in over half the patients**
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**SURGERY**

- Nasal Surgery
  - Remove polyps
  - Correct deviated septum
  - Can improve snoring in some patients
  - Doesn’t affect OSA for the most part
  - Makes CPAP more tolerable as nasal mask can be used
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- **Tracheostomy**
  - Surgically create opening in the trachea below the larynx
  - Bypasses the area of obstruction
  - Plug during the day to be able to talk
  - Eliminates apneas completely
  - Previously the only treatment
  - Used now only in extremely severe cases
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**SURGERY**

- Other surgical procedures
  - Radiofrequency reduction of the size of the tongue
  - Stiffening the soft palate with stents
  - Advancement of the front of the lower jaw
  - Relocation of the hyoid bone
  - None of these operations has been shown to have a high rate of success in the treatment of OSA
  - May be used selectively with extreme care taken to choose the correct patient
The type of sleep apnea surgery that will be most effective for you depends on the structures that are causing your sleep apnea and blocking your breathing during sleep. In children, surgery (usually tonsillectomy and/or adenoidectomy) is a first-line option for obstructive sleep apnea (OSA), whereas sleep apnea surgery is typically a second-line therapy in adults.

ATRIAL OVERDRIVE PACING

- Reduces episodes of central or obstructive sleep apnea in patients previously fitted with a pacemaker for sick sinus or bradycardia-tachycardia syndrome
- Sleep apnea patients who do not have any gross craniofacial abnormalities or obesity
- The benefit is small and likely not of clinical significance. Atrial overdrive pacing should not be universally indicated in patients with SA, unless they have a conventional indication for cardiac pacing.
Snoring and apneas often increase when supine
Many devices and pajama options
NightBalance™ palm-sized device is worn across your chest, vibrates to cause patient to shift to side without waking. Not inferior to CPAP in exclusive positional obstructive sleep apnea (ePOSA)
Most people have apneas present in all positions
$849 cost/insurance coverage not yet available
Need Rx
PHYSICAL THERAPY

- Playing the didgeridoo/loud singing 25 minutes a day
- Myofunctional Therapy-tongue exercises
- Orthodontic braces
Weight loss can improve apnea
Bariatric surgery may be helpful
Challenging to keep weight of as patient ages
- **Oral Pressure Therapy (OPT)**- vacuum pressure to suction the soft palate towards the middle of the mouth, widening the nasal airway reducing or eliminating airway obstruction

- **EPAP Valve**- Expiratory Positive Airway Pressure devices (stickers) work by creating resistance on exhale of breath

- **Continuous Negative External Pressure (cNEP)**- New technology that utilizes a sucking pressure outside of the neck area in order to keep the airway open during sleep

- **O2Vent™** oral device that moves the jaw forward and incorporates an airway channel to further stabilize airway, for use in mild to moderate patients
OTHER TREATMENTS

- Many unproven treatments
- OTC oral appliances
- Supplements
- Mouth tape (POP)
- Nasal dilators
- Sprays
- Airing™
AFTER THE SLEEP STUDY

Time for Treatment

Simple strategy to use with the reluctant patient
Great question for any scenario:

Why did you have apnea testing in the first place?

- “My doctor said I would have a heart attack.”
- “I fell asleep driving.”
- “My significant other won’t sleep with me.”
- “I got kicked out of deer camp for snoring.”
- Ask if the patient wants to return to the way things were
- Focus on the simple things that make life better right away
- Many patients want immediate gratification
  - Do you want to sleep with your significant other?
  - Do you want to be safer driving?
  - Do you want to go to overnight social activities like hunting lodge, hotels, staying at friends’ homes?
  - Do you want to get up less at night to go to the bathroom?
  - Do you want to be able to stay up later?
  - Do you want to sleep in a bed, not a recliner?
There are many treatments for OSA
Some are reversible, some not
Some work better than others
Some practitioners are great at choosing the correct procedure for the correct patient
QUESTIONS?
THANK YOU

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- https://www.respicardia.com/remede-system/
- https://jcsmaasm.org/doi/10.5664/jcsm.7868
- https://www.medscape.com/viewarticle/783330#:~:text=Atrial%20overdrive%20pacing%20reduces%20episodes%20of%20sleep%20apnea.,the%20brainstem%20respiratory%20centers%20to%20the%20respiratory%20muscles