70-Year Old CPAP Intolerant Male with Complaints of Claustrophobia

This is the case of a 70-year-old male who underwent a PSG in a Florida facility and was diagnosed with severe OSA. His respiratory disturbance index (RDI) was 31 and the patient reported normally sleeping in the supine position. The patient underwent a split-night protocol, but was CPAP-intolerant and complained of claustrophobia. He underwent bypass surgery over two years ago. The patient is 6'1" tall, weighs 216 lbs, with a neck size of 17.5" and BMI of 28.5.

Seeking an Alternative

Seeking an alternative to CPAP, the patient arranged to have an overnight MediByte baseline test performed while on vacation. He hoped an oral appliance might prove effective and more comfortable. The MediByte is a simple to use and reliable Type 3 portable monitoring device for diagnosing snoring and apnea in the comfort of the patient's home. The patient self-applied the sensors, wore the MediByte on the sternum overtop clothing. The unit was programmed to start and stop automatically. The following parameters were recorded: Airflow (oronasal cannula pressure), Snoring (oronasal cannula pressure), Oronasal airflow (thermistor), Chest RIP effort, Abdomen RIP effort, SUM, internal Body Position sensor, Audio (microphone), Volume (microphone), SpO_2, and Pulse Rate.

Results from the baseline night confirmed severe OSA with an RDI of 38, mostly a combination of obstructive apneas and hypopneas, with a few central events. Total recording time for night one was seven hours and 47 minutes. Time between 90% to 100% SpO_2 was 89.5% of the entire night, between 80% to 90% was 10.3%, and time below 80% was 0.2%. The number of desaturations of 4% or greater was 262 with this index of 33.6. The total number of respiratory disturbances during the night was 298 (i.e., combination of obstructive, central, and mixed apneas plus hypopneas), with the vast majority being obstructive apnea in nature. Based on both the laboratory PSG and the home sleep test (HST), it was concluded this individual suffered from unambiguous obstructive apnea hypopnea syndrome and was an oral appliance candidate given his CPAP intolerance.

Oral Mandibular Advancement Device

Prior to night two, a Silent Sleep mandibular advancement oral appliance was fitted for use on a trial basis. Fitting time was approximately five minutes. The goal of combining a second MediByte test with the Silent Sleep was to determine whether an oral appliance would be a viable alternative to CPAP. The Silent Sleep appliance, which is cleared by the FDA for the treatment of snoring and sleep apnea, was invented by Dr. Jamison Spencer, DDS, and is also sold by BRAEBON. The appliance is very comfortable, inexpensive, and ideal for trial use to evaluate the efficacy of an oral appliance prior to ordering a more expensive custom appliance. Unlike other temporary oral appliances, which use thermodeformable material (i.e., boil & bite appliances), the Silent Sleep uses vinyl polysiloxane resilient denture liner and is easily custom fitted for each patient. The denture liner is injected into the Silent Sleep appliance tray using the equivalent of a caulking gun, the patient bites into the appliance in the protruded position, and the material cures in about two minutes providing a custom oral appliance ready for immediate use. There is nothing to boil and no risk of injury due to hot temperatures. After trimming, the appliance provides ample room to position the tongue anteriorly and allows modest lateral movement. Speaking, drinking, and mouth breathing are all easily accomplished with this appliance.

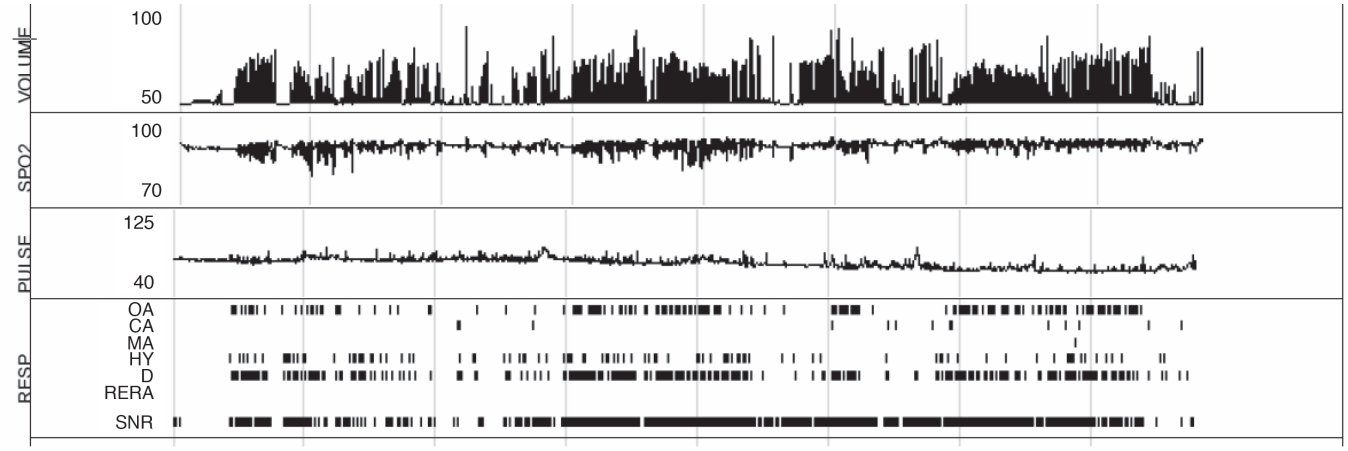

Fig. 1. Snoring Volume dB(A), SpO_2, Pulse Rate, and occurrences of obstructive, central, mixed apneas and hypopneas during baseline MediByte Type 3 recording (no oral appliance).

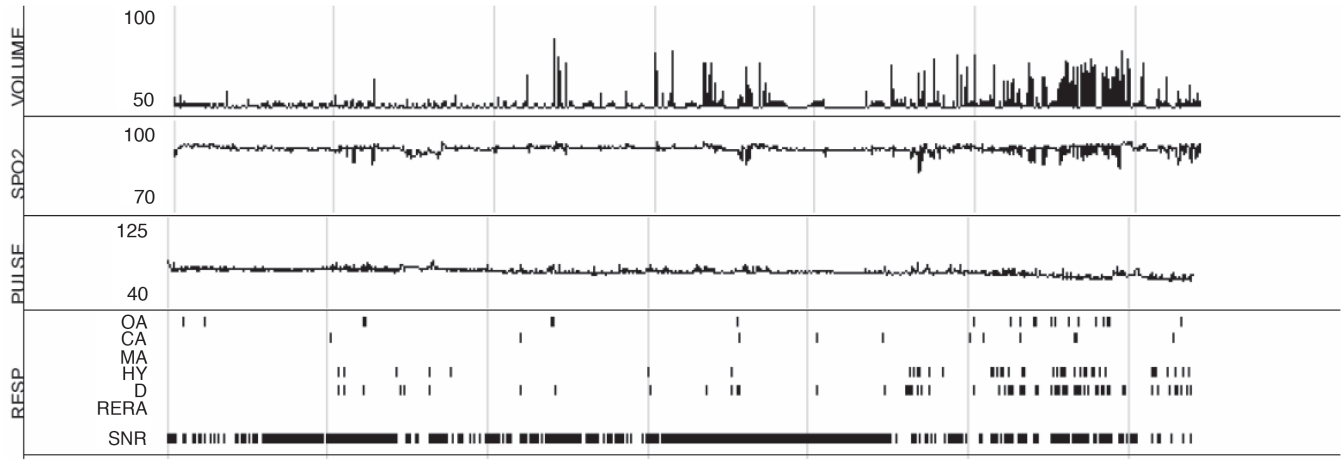

Fig. 2. Snoring Volume dB(A), SpO_2, Pulse Rate, and occurrences of obstructive, central, mixed apneas and hypopneas during treatment night using both MediByte recorder and Silent Sleep oral appliance. Note improvement in parameters while wearing the oral appliance.

Outcome and Recommendations

Two nights after the baseline test was performed, a second MediByte recording was conducted in the patient's home, but during this second test the patient wore the Silent Sleep oral appliance. In this manner, side by side comparison of both baseline and treatment nights was easily performed. Total recording time for night two was 6 hours and 24 minutes. The outcome from the second MediByte recording while wearing the oral appliance was remarkable and impressive. The RDI was reduced to 11 from the original baseline of 38, with virtually all obstructive events occurring during the last hour of the night. SpO_2 time between between 90% to 100% increased from the baseline night value of 89.5% to 97.2% of the entire second recording night. Time between 80% to 90% SpO_2 decreased to 2.8 %, and there was no time below 80% SpO_2. Furthermore, the total number of desaturations of 4% or greater was reduced to 61 (from 262) with an index of 9.5. The total number of respiratory disturbances during the second night dropped to 72 from a baseline of 298. The snoring volume graph showed a dramatic improvement in snoring and the SpO_2 graph improved significantly (see Figures 1 and 2). The bed partner reported the quietest and most peaceful sleep in ten years, and the patient reported improved energy. The patient was referred for a permanent oral appliance and continues oral appliance therapy to this day.

In conclusion, the BRAEBON MediByte is a clinically valuable tool to monitor oral appliance therapy effectiveness. This case study clearly indicates the vital role temporary oral appliances may play in the proper management of sleep disordered breathing. The cost-effective application of MediByte recordings in conjunction with Silent Sleep treatment enables an efficient protocol for monitoring the effectiveness of oral appliance treatment for snoring and mild to moderate obstructive sleep apnea, or as an alternative to CPAP therapy.

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For more information regarding the MediByte go to www.braebon.com

For more information regarding the Silent Sleep go to www.mysilentsleep