



A RETROSPECTIVE STUDY OF DENTAL RECORDS OF PATIENTS TREATED FOR OSA WHO PREFERRED ORAL APPLIANCE INSTEAD OF CPAP

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1. INTRODUCTION:

Obstructive sleep apnea (OSA) is a chronic sleep breathing disorder (SBD) and effective long-term treatment is necessary to prevent associated health risks. OSA is associated with higher levels of excessive daytime sleepiness (EDS), attributed to several factors such as increased arousal index (AI) and apnea hypopnea index (AHI), which can increase cardiovascular risk and affect the quality of sleep and consequently quality of life. The two most common therapies used to treat OSA are Continuous Positive Airway Pressure (CPAP) with mask and Oral Appliance Therapy (OAT) (Figure 1).

Figure 1. – The two common therapies used to treat OSA are the CPAP with mask and Oral Appliances.



The CPAP is the standard treatment which is highly effective, but has limitations with patient acceptance and adherence rates which in turn obviates the desired health benefits. The OAT is an alternative treatment where a mandibular advancement splint is the most commonly used. Patients often report preferring OA to CPAP therapy. Such therapies contribute to improving the patient's health.

2. METHODS:

A retrospective study of dental records of 14 patients treated for OSA who did not adhere to the CPAP therapy and preferred the oral appliance. The convenience sample with average (standard deviation) is as follows: age: 52.5(13.6); body mass index (BMI): 29.67 (5.13); IAH: 31.57 (32.00); snoring: 3.5 (0.65); Epworth sleepiness scale (ESS): 10.43 (5.87); sleep efficiency (SE): 80.86 (11.41); arousal index (AI): 27.18 (26.36); heartbeat (HB) major: 89.26 (27.60) and HB minor: 53.30 (5.91). Three polysomnography tests were used to compare before (baseline) and after (CPAP and OA) therapies. The mode of action of oral appliance is explained in Figure 2.

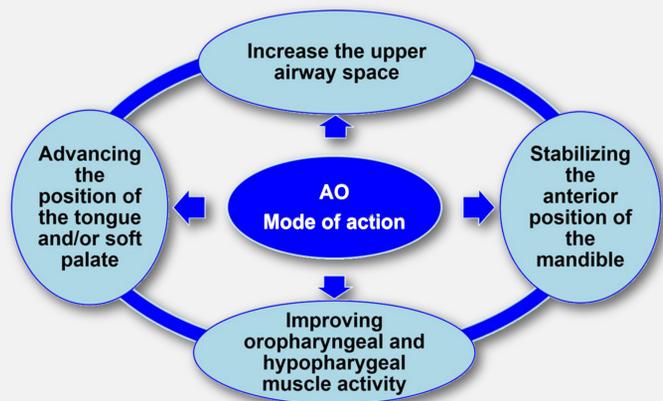


Figure 2 – The mode of action of OA: Increase the upper airway space changing both the position of jaw, tongue and/or soft palate, improving oropharyngeal and hypopharyngeal muscle activity.

The OA used in this study is DIORS® - Dispositivo Intra Oral Restaurador do Sono, which means Intra Oral Sleep Restorator Device (Figure 3). This Brazilian OA is based on Functional Jaw Orthopedics concepts, respecting muscle origin and insertion, stimulating tongue protrusion, lip sealing and nasal breathing.



Figure 3 – The Brazilian OA DIORS® - Dispositivo Intra Oral Restaurador do Sono - inside the mouth showing the jaw and tongue protrusion.

Repeated measure analysis of variance were applied to compare the results with 5% significance level, calculated through the SAS System (SAS Institute Inc. The SAS System, release 9.3. SAS Institute Inc., Cary: NC, 2010). Residual normality was accessed by the Shapiro-Wilk test, Skewness and Kurtosis.

3. RESULTS:

Analysis of variance p-values are presented in Table 1. There is no evidence of differences between the true means of the therapies at level of 5% of significance. There is strong evidence of differences ($p < 0,01$) between the true means of AHI, snoring, AI and SaO₂ in different phases. As can be seen in Figure 4, the averages of AHI, snoring and AI are significantly lower after the treatment than before the treatment. Since there is no significant effect on the interaction, these conclusions are valid for both therapies tested. On the other hand, in both therapies, the average of SaO₂ increased significantly after the treatment. Only in ESS is there evidence of significant effect ($p < 0,05$) on the interaction and Figure 4 shows a lower average after the therapy in both treatments, but in the OAT the difference is bigger than in the CPAP therapy.

4. CONCLUSION:

Both CPAP and OA therapies demonstrated improvement in the AHI, snoring, AI and SaO₂, suggesting improvement in sleep quality, despite discrete weight gain. However, due to a preference for OAT and the significant evidence effect in the EES ($p < 0,05$), the oral appliance therapy appeared to be more efficient and effective than CPAP therapy. Further studies are recommended to evaluate these results with the OA used.

5. BIBLIOGRAPHY REFERENCES:

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6. COI – CONFLICTS OF INTEREST:

Financial support - DFB & Associados Ltda. Potential conflict of interest - DIORS® - Dispositivo Intra Oral Restaurador do Sono - Oral Appliance.

VARIABLES	EFFECTS		
	THERAPY	PHASE	INTREACTION
BMI	0.8954	0.0501	0.3661
AHI	0.4462	0.0001	0.2142
Snoring	0.4762	0.0001	0.3504
SaO ₂ min	0.6534	0.0001	0.4175
ESS	0.5128	0.0759	0.0178
SE	0.2239	0.0617	0.1727
AI	0.7398	0.0001	0.5719
HB major	0.2125	0.9822	0.1356
HB minor	0.4843	0.1536	0.6009

Table 1. P-values testing the effects of the therapy, phase and of the interaction over BMI (Body Mass Index), AHI (Apnea Hypopnea Index), snoring, SaO₂ (Oxygen Saturation) minimum, ESS (Epworth Sleep Scale), SE (Sleep Efficiency), AI (Arousal Index) HB (Heartbeat) major and minor.

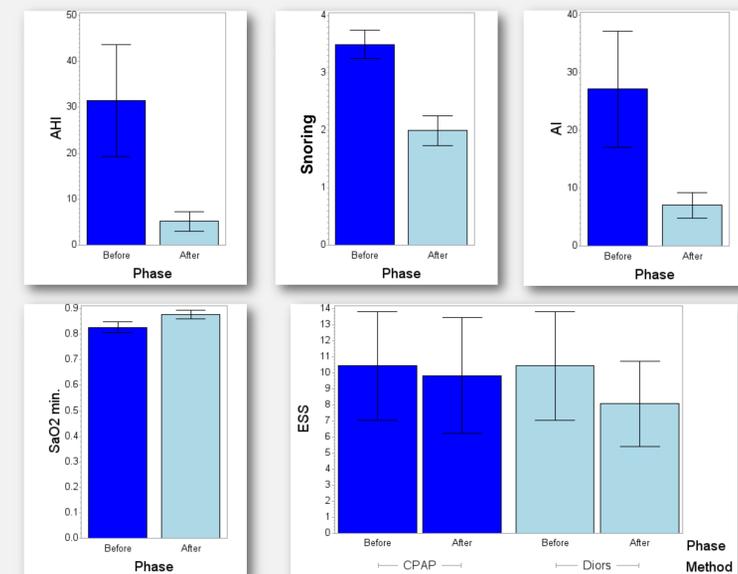


Figure 4 - Comparison of averages and confidence limits (95%) in significant variables in analysis of variance.