POSTER #030

IS THE RELATIONSHIP BETWEEN OAT OUTCOMES, DOSAGE AND OAT DEVICE TYPE AS EXPECTED? A PRIVATE PRACTICE, RETROSPECTIVE COHORT STUDY.

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Introduction: This investigation reports outcomes, dosages and Oral Appliance Therapy (OAT) device types for a large sample of consecutively treated patients with Obstructive Sleep Apnea (OSA). For OAT, dosage is defined as mandibular repositioning. Advancing the mandible alleviates OSA in a dose dependent fashion by creating room for the tongue and related anatomy, increasing side effects and decreasing adherence.

Limited data is available demonstrating how different OAT devices perform against these criterions.

Methods: OAT outcomes data was analyzed for consecutively treated patients (n=306) with complete pre/post OAT sleep tests. The sample included 211 men (69%) and 94 women (31%). Mean BMI was 28.8 +/-5.3,age was 60.6 +/-15.0 years, neck was 16.0 +/-1.9 inches. Mean pre-treatment OSA was 22.2 +/-15.9 events per hour and subjective sleepiness (ESS) was 12.3 +/-2.9.

After diagnosis by a physician, patients were provided standard of care OAT. Polyvinylsiloxane and/or digital scanning dental impressions were fabricated. One of three types of OAT devices were selected based on an examination, insurance requirements and patient preference. The three types of devices were: Precision-style, Traditional-style, and Traction/Pull-style.

Dosage (mandibular position) was selected based on clinician examination and OAT device manufacturer recommendations. A 30% mandibular protrusive position was utilized for Precision-type OAT devices. 60% for Traditional-type. 90% for Traction/Pull-type.

For the purposes of this study, patients were organized into three cohorts:
- #1: 30% max protrusion position, treated with Precision-type OAT devices
- #2: 60% position, treated with Traditional-type OAT devices
- #3: 90% position, treated with Traction/Pull-type OAT devices

67.8% of patients were in Cohort #1. 13.8% and 18.4% were in Cohorts #2 and #3, respectively.

Patients were titrated to optimal health outcomes.

Results:

OSA Alleviation
For Cohort #1, 85% of patients achieved an AHI<15 and 73% achieved an AHI<10. For Cohort #2, 81% achieved an AHI<15 and 72% achieved an AHI <10. For Cohort #3, 74% achieved an AHI<15 and 61% achieved an AHI<10.

Subjective Sleepiness (ESS) Improvement
For Cohort #1, mean ESS with OAT was 2.6 with an improvement of 79%. For Cohort #2, mean

ESS with OAT was 3.0 with an improvement of 75%. For Cohort #3, mean ESS with OAT was 3.2 with an improvement of 78%.

ESS Comparisons
The ESS improvement for Cohort #3 was not better than Cohort #2 (p-value 0.22). The ESS improvement for Cohort #2 was not better than Cohort #1 (p-value 0.15).
The ESS improvement for Cohort #1 was better than Cohort #3 (p-value 0.01).

Conclusions: Clinicians should consider OAT device type when determining dosage. This investigation hypothesized that Cohorts with more protrusive positions would have better treatment efficacy. This hypothesis was not supported by this investigation. A greater percentage of patients achieved successful outcomes (AHI <10, AHI <15) in Cohort #1. The favorable difference in ESS for Cohort #1 over Cohort #3 was statistically significant.

There are several limitations to this study. A prospective, cross-over, study design likely would have allowed for additional control. Future research may wish to incorporate side effects and adherence data. Another area of future research is to evaluate the specific OAT device design features that impact dosage and outcomes.