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Abstract: Long-term efficacy and compliance with mandibular advancement devices (MAD) in the treatment of obstructive sleep apnea syndrome (OSAS) are under-studied. Our objective was to conduct a long-term assessment of the OPM4J device, measuring symptoms, compliance rate, and adverse effects in a cohort of consecutive patients treated with OPM4J for an average period of nearly three years. Out of 140 patients aged 62 +/- 10 years with body mass index (BMI) 27 +/- 4 kg/m^2^ and initial apnea-hypopnea index (AHI) 27 +/- 16, complete reversal of OSAS was achieved in 65%. A total of 76% reported regular MAD use, with 24% stopping treatment and half of those 24% falling back on continuous positive airway pressure (CPAP). Patients with lower residual AHI or residual Epworth scores at month 3 were more likely to continue treatment (P < 0.007 and P < 0.02). Reasons for discontinuing treatment included tooth pain, persistent snoring or fatigue, loss or breakage of the device, and the cost of replacing it. OPM4J reduced OSAS symptoms in the long-term. Regular use was reported in 76% of patients. Adverse effects were common but minor. Half of non-users were lost to follow-up and probably remain without treatment.

Notes: DA - 20121203
IS - 1879-680X (Electronic)
IS - 1761-7727 (Linking)
LA - eng
LA - fre
PT - Journal Article
SB - D
SB - IM


Abstract: This preliminary study investigated the effect of a mandibular advancement device on upper airway collapsibility in seven patients with obstructive sleep apnea. Overnight polysomnography and dynamic magnetic resonance imaging were performed at the retropalatal and retroglossal levels, and the apnea-hypopnea Index(AHI), anteroposterior and lateral distances, and airway volumes were recorded. The tests were repeated following a 3-month period of wearing a customized mandibular advancement device. A significant reduction in AHI (from 31 events per hour to 18.2 events per hour) and improvement in airway dimension at both the retropalatal and retroglossal levels were recorded, suggesting a baseline record for future studies with a larger patient sample.

Notes: DA - 20121026
IS - 0893-2174 (Print)
IS - 0893-2174 (Linking)
LA - eng
PT - Journal Article
SB - D


References
Abstract: PURPOSE: The aims of this study were to evaluate the effect of a mandibular advancement device on oropharyngeal dimension in patients with obstructive sleep apnea (OSA) and reveal the predominant site of changes produced by mandibular advancement using computed tomography (CT).

MATERIALS AND METHODS: CT scans of 20 patients diagnosed with OSA were taken with and without the appliance. Three-dimensional changes in pharyngeal shape measured on cross-sectional CT images during two respiratory cycles after oral appliance insertion were estimated at five vertical levels using three variables: (1) lateral dimension, (2) anteroposterior dimension, and (3) cross-sectional area. Various parameters related to severity of OSA such as snoring volume, frequency, duration, and episodes; breathing pauses; oxygen saturation; Epworth Sleepiness Scale (ESS) score; and Apnea Hypopnea Index (AHI) score underwent comparative evaluation subjectively and objectively. Data were analyzed using the Student t test for parametric analysis. Results: A significant increase in the lateral and anteroposterior dimension of the pharyngeal lumen was observed at all five levels, but the mean change was greatest at the retroglossal level and smallest at the hypopharyngal level in both the lateral and anteroposterior dimensions. The cross-sectional area at all levels appeared to increase significantly, and apnea indices improved significantly. A significant decrease in snoring volume, snoring frequency, breathing pauses, snoring duration, snoring episodes, ESS score, and AHI score and a significant increase in oxygen saturation were found after treatment with the mandibular advancement device. CONCLUSION: Within the limitations of this study, CT was shown to be useful in evaluating treatment efficacy in subjects with OSA.

Keywords: Adult/Continuous Positive Airway Pressure/Humans/Male/Paranasal Sinuses/surgery/Sleep Apnea,Central/etiology/Sleep Apnea,Obstructive

Abstract: By the current definition, complex sleep apnea (CompSA) refers to the emergence of central sleep apnea (CSA) during the treatment of obstructive sleep apnea (OSA) with continuous positive airway pressure (CPAP). However, new-onset CSA has been described with use of other treatments for OSA, including tracheostomy, maxillofacial surgery, and mandibular advancement device. We present a patient with CSA beginning after endoscopic sinus and nasal surgery for nasal obstruction in the setting of mild OSA. This case highlights the importance of non-PAP mechanisms in the pathogenesis of CompSA.


Keywords: Female/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Polysomnography/Posture/physiology/Prognosis/Retrospective Studies/Severity of Illness Index/Sleep Apnea,Obstructive/physiopathology/therapy/Statistics,Nonparametric/Treatment Outcome

Abstract: OBJECTIVE: To evaluate retrospectively the efficacy of the mandibular advancement device (MAD) in patients with obstructive sleep apnea in terms of positional dependency. DESIGN: Retrospective analysis. SETTING: Academic tertiary referral center. PATIENTS: One hundred patients with obstructive sleep apnea treated with the MAD at the Department of Otorhinolaryngology sleep clinic were included from January 1, 2005, through December 31, 2010. INTERVENTIONS: All patients underwent nocturnal full-night polysomnography before and at least 3 months after intraoral MAD application. MAIN OUTCOME MEASURES: Treatment results and prognostic factors deciding the success of MAD application. RESULTS: Of the 100 patients, 80 showed positional dependency and 20 showed nondependency. In the position-dependent obstructive sleep apnea group, the median (interquartile range) apnea-hypopnea index (AHI) decreased from 32.1 (24.4-41.9) to 8.6 (3.7-13.8) (P < .001); in the nondependent group, from 56.4 (26.2-71.5) to 15.7 (6.8-30.7) (P < .001). The success rate (AHI reduction >/=50% and AHI <10) was 57.5% and 30.0% in position-dependent and position-nondependent groups, respectively (P = .04). CONCLUSION: Identifying patients with obstructive sleep apnea as position dependent or nondependent may have important therapeutic implications in predicting the outcome of MAD treatment.

Notes: DA - 20120601
IS - 1538-361X (Electronic)
IS - 0886-4470 (Linking)
LA - eng
PT - Journal Article
SB - AIM
SB - IM
Ref ID: 7
Reprint: Not in File
Abstract: PURPOSE: This prospective clinical study investigates the efficacy of a specific custom-made titratable mandibular advancement device (MAD) for the treatment of obstructive sleep apnea (OSA). This MAD has attachments in the frontal teeth area that allow for progressive titration of the mandible. METHODS: Sixty-one adult OSA patients were included (age, 46.7 +/- 9.0 years; male/female ratio, 45/16; apnea-hypopnea index (AHI), 23.2 +/- 15.4 events/h sleep; body mass index, 27.9 +/- 4.1 kg/m²). After an adaptation period, titration started based on a protocol of symptomatic benefit or upon reaching the physiological limits of protrusion. As a primary outcome, treatment response was defined as an objective reduction in AHI following MAD treatment of >/=50 % compared to baseline, and treatment success as a reduction in AHI with MAD to less than 5 and 10 events/h sleep. Compliance failure was defined as an inability to continue treatment. RESULTS: A statistically significant decrease was observed in AHI, from 23.4 +/- 15.7 at baseline to 8.9 +/- 8.6 events/h with MAD (p < 0.01). Treatment response was achieved in 42 out of 61 patients (68.8 %), whereas 42.6 % met criteria of AHI < 5 and 63.9 % achieved an AHI < 10 events/h sleep, respectively. Four patients (6.6 %) were considered as "compliance failures." CONCLUSIONS: The present study has evaluated the efficacy of a specific custom-made titratable MAD in terms of sleep apnea reduction.

Notes: DA - 20120514
IS - 1522-1709 (Electronic)
IS - 1520-9512 (Linking)
LA - ENG
PT - JOURNAL ARTICLE

Ref ID: 8
Reprint: Not in File
Abstract: PURPOSE: This study aims to evaluate the incidence and prevalence of temporomandibular disorders (TMD) in patients receiving a mandibular advancement device (MAD) to treat obstructive sleep apnea using the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD). In addition, it also aims to assess the development of posterior open bite (POB). MATERIALS AND METHODS: Data from 167 patients were evaluated at baseline, from 159 patients after 118 days (visit II), from 129 patients after 208 days (visit III), and from 85 patients after 413 days (visit IV). The presence of TMD symptoms was evaluated through a questionnaire. TMD signs were assessed using the RDC/TMD. Clinical evaluation assessed for the presence of POB. RESULTS: The prevalence of TMD was 33/167 (19.8 %) at baseline. After an initial decrease to 14.5 % on visit II, the prevalence increased to 19.4 % on visit III and finally demonstrated a decrease to 8.2 % on visit IV. The incidence of TMD was 10.6 % on visit II. This decreased on further visits and only two (1.9 %) patients developed TMD from visit III to visit IV. POB was found to develop with an average incidence of 6.1 % per visit. The prevalence of POB was 5.8 % on visit II, 9.4 % on visit III, and 17.9 % on visit IV. CONCLUSION: The use of MADs may lead to the development of TMD in a small number of patients. Nevertheless, these signs are most likely transient. Patients with pre-existing signs and symptoms of TMD do not experience significant exacerbation of those signs and symptoms with MAD use. Furthermore, these may actually decrease over time. POB was found to develop in 17.9 % of patients; however, only 28.6 % of these patients were aware of any bite changes.

Notes: DA - 20120405
IS - 1522-1709 (Electronic)
IS - 1520-9512 (Linking)
LA - ENG
PT - JOURNAL ARTICLE

Ref ID: 9
Reprint: Not in File
Abstract: Obstructive sleep apnea (OSA) is an important public health issue, with challenges for diagnosis and treatment. A recent Comparative Effectiveness Review (CER) found numerous areas with insufficient or low strength of evidence. With the assistance of a panel of representative stakeholders, to identify and prioritize future research needs topics for treatment of OSA. Twenty-two panel members represented six stakeholder categories: patients and the public; providers; purchasers of health care; payers; policymakers, and principal investigators. Building on future research needs topics derived from the CER, stakeholders nominated additional topics for discussion. Nominated topics were discussed by stakeholders (excluding product makers) on a secure Web site discussion board. At the close of the discussion period, stakeholders nominated their top 10 future research needs topics based on the Agency for Healthcare Research and Quality Effective Health Care Program selection criteria. From these nominations, the highest priority future research needs were determined and were elaborated upon to include possible study designs to address the topics. The high-priority future needs topics included: 1. What is the impact of treatment of sleep-disordered breathing on major long-term clinical outcomes, including mortality, cardiovascular disease, and diabetes? a. What are long-term outcomes of mandibular advancement device (MAD) treatment? 2. Cost-effectiveness analysis of a management strategy (diagnosis of symptomatic or high-risk patients through treatments of patients diagnosed with OSA), specifically for patients with mild to moderate disease severity. a. Research on continuous positive airway pressure (CPAP) devices that are both economical as well as clinically effective. 3. Comparative trials of different sleep apnea treatments based on patient characteristics. a. Trials of CPAP stratified by disease severity. b. Trials of non-CPAP treatments stratified by disease severity. c. Comparison of alternative treatments for patients who do not tolerate CPAP. 4. Trials to improve compliance with CPAP, MAD, and other treatments, particularly evaluating cognitive therapy approaches. 5. What is the association between sleep apnea severity and long-term clinical outcomes? Fourteen other future research needs topics were discussed. Stakeholder participation in the online discussion board was low. Discussions were begun by only five stakeholders, and only 41 percent of stakeholders participated in the online discussion. The median number of comments across topics was only two. Topic nomination was done by 17 stakeholders (77 percent). Lessons learned from this Future Research Needs panel discussion can be applied to future panels.

Notes: DA - 20120309
LA - eng
PT - Book

Ref ID: 10
Keywords: Adult/Facial Paralysis/complications/rehabilitation/Follow-Up Studies/Humans/Magnetic Resonance Imaging/Male/Mandibular Advancement/instrumentation/Polysonmography/Sleep Apnea,Obstructive/etiology/prevention & control/Treatment Outcome
Reprint: Not in File
Abstract: This case report aimed to describe the fabrication procedure and treatment efficacy of an individual, one-piece, non-adjustable mandibular advancement device (MAD) for a moderate obstructive sleep apnoea patient with facial paralysis (FP). Mandibular advancement device was fabricated with autopolymerising acrylic resin. The intermaxillary relations were recorded such as to fix the mandible at a protruded position with increased vertical dimension. Initial evaluation of the MAD was made with axial magnetic resonance imaging and polysomnography on the first day of usage. Following evaluations were made on the third and sixth month. After a follow-up period of 6 months, Apnoea/Hypopnea Index (AHI) significantly decreased from 26.7 to 3.0. However, the average oxygen saturation did not improve as expected initially. The MAD therapy decreased the AHI scores of a patient with FP. At the end of a follow-up period of 6 months, the patient did not report any serious complaint except temporary tooth pains.
Notes: DA - 20120508
IS - 1365-2842 (Electronic)
IS - 0305-182X (Linking)
LA - eng
PT - Case Reports
PT - Journal Article
SB - D
SB - IM

Abstract: Considering the high prevalence of the obstructive sleep apnea syndrome (OSA), it is expected that many patients with the disorder are traveling to altitude. However, this may expose them to the risk of pronounced hypoxemia, exacerbation of nocturnal breathing disturbances by frequent central apneas, impaired daytime performance, and high blood pressure. Recently, randomized studies specifically investigated the effects of altitude (1630-2590 m) in OSA patients and the optimal treatment in this setting. The results indicate that patients should continue to use continuous positive airway pressure therapy (CPAP) when sleeping at altitude. Since CPAP alone does not control central sleep apnea emerging at altitude, combined treatment with acetazolamide and CPAP should be considered, in particular, in patients with severe OSA and co-morbidities. Supplemental oxygen combined with CPAP might be advantageous in patients with OSA and concomitant cardiopulmonary disease by preventing hypoxemia and central sleep apnea. In patients unable to use CPAP or if electrical power is not available, an optimally fitted mandibular advancement device might be an alternative treatment option that can be combined with acetazolamide during altitude sojourns. Acetazolamide alone is also beneficial and better than no treatment at all, since it improves oxygen saturation, breathing disturbances, and the excessive blood pressure elevation in OSA patients traveling to altitude.


Abstract: Mandibular advancement devices (MADs) represent the main non-continuous positive airway pressure (non-CPAP) therapy for patients with obstructive sleep apnoea (OSA). The aim of the European Respiratory Society Task Force was to review the evidence in favour of MAD therapy. Effects of tongue-retaining devices are not included in this report. Custom-made MADs reduce apnoea/hypopnoea index (AHI) and daytime sleepiness compared with placebo devices. CPAP more effectively diminishes AHI, while increasing data suggest fairly similar outcomes in relation to symptoms and cardiovascular health from these treatments. Patients often prefer MADs to CPAP. Milder cases and patients with a proven increase in upper airway size as a result of mandibular advancement are most likely to experience treatment success with MADs. A custom-made device titrated from an initial 50% of maximum mandibular advancement has been recommended. More research is needed to define the patients who will benefit from MAD treatment compared with CPAP, in terms of the effects on sleep-disordered breathing and on other diseases related to OSA. In conclusion, MADs are recommended for patients with mild to moderate OSA (Recommendation Level A) and for those who do not tolerate CPAP. The treatment must be followed up and the device adjusted or exchanged in relation to the outcome.

Abstract: The objective of this study was to assess variations in the occurrence of temporomandibular disorders (TMDs) and the risk of developing pain and function impairment of the temporomandibular complex in obstructive sleep apnea syndrome (OSAS) patients treated with either an oral appliance (mandibular advancement device) or continuous positive airway pressure (CPAP) in a 2-year follow-up study. In addition, we assessed the relationship between the mean mandibular protrusion and the frequency of wearing the appliance during follow-up with the occurrence of pain and function impairment of the temporomandibular complex. Fifty-one patients were randomized to oral appliance therapy and 52 patients to CPAP therapy. TMDs (diagnosed according to the Axis I Research Diagnostic Criteria for TMD), pain intensity and disability and mandibular function impairment were recorded at baseline, after 2 months, 1 year and 2 years of therapy. Only in the initial period of treatment the occurrence of pain-related TMDs was considerably higher (24%) in the oral appliance group compared to CPAP (6%). Oral appliance therapy furthermore resulted in more temporomandibular pain compared to CPAP (odds ratio 2.33, 95% confidence interval (1.22-4.43)). However, there were no limitations in mandibular function in both groups during the (entire) follow-up period. Although generally not serious and of transient nature, oral appliance therapy results in more pain-related TMDs in the initial period of use. Because of the transient nature, this pain is not a reason to contra-indicate an oral appliance in OSAS patients. Moreover, TMDs and the risk of developing pain and function impairment of the temporomandibular complex appear limited with long-term oral appliance use.


Abstract: It has recently been suggested that wearing a maxillary occlusal splint (i.e. a hard acrylic resin dental appliance that covers the occlusal surfaces of the maxillary dentition and that is being indicated for the treatment of, e.g. temporomandibular pain) may be associated with a risk of aggravating obstructive sleep apnoea (OSA). The present study tested the hypothesis that raising the bite without mandibular protrusion in OSA patients is associated with an increase in the apnoea-hypopnoea index (AHI). Eighteen OSA patients (13 men; 49.5 +/- 8.1 years old) received a mandibular advancement
device in 0% protrusion of the mandible (0%MAD). The MAD caused a bite rise of 6 mm as measured interincisally. Polysomnographic recordings were obtained at baseline and with the 0%MAD in situ. No statistically significant difference in AHI was noted between the baseline night and the 0%MAD night. However, nine patients had an aggravation in AHI during the night they used the 0%MAD. Taking into account the previously established smallest detectable difference of 12.8 in AHI, the AHI increased in only two of the patients. The outcomes of this study suggest that an increased jaw gape without mandibular protrusion might be associated with a risk of aggravation of OSA for some, but not for all OSA patients. Dental practitioners should be aware of this possible association when treating patients with oral devices that raise the bite.

Notes: DA - 20110809
IS - 1365-2842 (Electronic)
IS - 0305-182X (Linking)
LA - eng
PT - Clinical Trial
PT - Journal Article
SB - D
SB - IM


Ref ID: 15
Keywords: Adult/Continuous Positive Airway Pressure/Female/Follow-Up Studies/Humans/Male/Mandibular Advancement/Middle Aged/Polysomnography/Sleep Apnea, Obstructive/therapy/Treatment Outcome

Reprint: Not in File

Abstract: BACKGROUND: Long-term trials are needed to capture information regarding the persistence of efficacy and loss to follow-up of both mandibular advancement device (MAD) therapy and continuous positive airway pressure (CPAP) therapy. OBJECTIVES: The aim of the study was to compare these treatment aspects between MAD and nasal CPAP (nCPAP) in a 1-year follow-up. METHODS: Forty-three mild/moderate obstructive sleep apnea patients (52.2 +/- 9.6 years) with a mean apnea-hypopnea index (AHI) of 20.8 +/- 9.9 events/h were randomly assigned to two parallel groups: MAD (n = 21) and nCPAP (n = 22). Four polysomnographic recordings were obtained: one before treatment, one for the short-term evaluation, and two recordings 6 and 12 months after the short-term evaluation. Excessive daytime sleepiness (EDS) was also evaluated at the polysomnographic recordings. RESULTS: The initially achieved improvements in the AHI remained stable over time within both groups (p = 0.650). In the nCPAP group, the AHI improved 4.1 events/h more than in the MAD group (p = 0.000). The EDS values showed a gradual improvement over time (p = 0.000), and these improvements were similar for both groups (p = 0.367). In the nCPAP group, more patients withdrew from treatment due to side effects than in the MAD group. CONCLUSIONS: The absence of significant long-term differences in EDS improvements between the MAD and the nCPAP groups with mild/moderate obstructive sleep apnea may indicate that the larger improvements in AHI values in the nCPAP group are not clinically relevant. Moreover, nCPAP patients may show more problems in accepting their treatment modality than MAD patients.

Notes: DA - 20110722
IS - 1423-0356 (Electronic)
IS - 0025-7931 (Linking)
LA - eng
PT - Comparative Study
PT - Journal Article
PT - Randomized Controlled Trial
PT - Research Support, Non-U.S. Gov't
SB - IM

Abstract: INTRODUCTION: We assessed the effectiveness of mandibular advancement device (MAD) on 113 patients having consulted in our specialized unit for obstructive sleep apnea syndrome (OSAS), from January 2005 to January 2010. METHODS: We included all adult patients referred by pulmonologists for OSAS. The data collected were gender, age, BMI, dental occlusion, presentation of retromandibulism, apnea hypopnea index (AHI) at diagnosis, and MAD effectiveness (AHI, compliance, satisfaction, tolerance). RESULTS: One hundred and thirteen patients were included, 83 men and 30 women, with an average age of 53.6 years, and average BMI of 26.9. Fifty-eight patients (55.8%) used the MAD regularly, 17 (16.4%) irregularly, and 29 (27.9%) stopped using it. Fifty-seven patients (54.8%) were very satisfied, 20 (19.2%) somewhat satisfied, and 27 (26%) not at all. The average AHI with MAD was 13.3 (+/-10.3) and the average improvement of AHI was 19 (+/-14.1). Twenty-seven patients (28.7%) were cured, 46 (48.9%) presented with an AHI decrease greater than 50%, and for 21 (22.3%) the treatment failed. DISCUSSION: The sample of patients in this study has the same characteristics as the general apneic population. Adherence and satisfaction were satisfactory. AHI results were also good but seemed low compared to other studies. This was due to more stringent criteria for cure, more in line with the overall management. No criterion for inclusion was predictive of good tolerance and no score predictive of success could be established. However, the improvement in AHI was significantly correlated to the patient's BMI and its diagnostic AHI.

Ref ID: 18

Keywords: Blood Pressure/physiology/Cephalometry/Continuous Positive Airway Pressure/Facial Bones/pathology/Facial Pain/etiology/Follow-Up Studies/Forecasting/Humans/Jaw Relation Record/Malocclusion/Mandibular Advancement/adverse effects/instrumentation/Oxygen/blood/Patient Preference/Periodontal Diseases/Polysonography/Quality of Life/Respiration/Sleep Apnea, Obstructive/therapy/Sleep Deprivation/prevention & control/Sleep Stages/Temporomandibular Joint Disorders/Tooth Diseases/Treatment Outcome

Reprint: Not in File

Notes: DA - 20101206
IS - 1776-2588 (Electronic)
IS - 0761-8425 (Linking)
LA - fre
PT - Journal Article
PT - Practice Guideline
RN - 7782-44-7 (Oxygen)
SB - IM


Ref ID: 19

Keywords: Adolescent/Adult/Aged/Body Mass Index/Equipment Design/Fatigue/classification/Female/Follow-Up Studies/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Oxygen/blood/Patient Satisfaction/Polysonography/Prospective Studies/Quality of Life/Radiography/Panoramic/Sleep/physiology/Sleep Apnea, Obstructive/therapy/Sleep Stages/Treatment Outcome/Young Adult

Reprint: Not in File

Abstract: OBJECTIVES: To demonstrate the efficacy and tolerance of present generation mandibular advancement devices in the first intention treatment for obstructive sleep apnea syndrome (OSAS), even when severe, after one year. METHODS: Between June 2006 and December 2007, 152 patients (male: 77%; age: 50.9+/-10.9 years; BMI: 26.3+/-3.6 kg/m(2); AHI: 25.5+/-13.9), without previous treatment, requesting management other than continuous positive pressure and dentally apt for a mandibular advancement device, were pre-included in a prospective one-year multicenter study (13 general hospitals). RESULTS: One hundred and twenty-nine patients were assessed at least once after fitting. The efficacy was noted as of day 90: the overall AHI fell from 24.8 to 10.8 (from 40.6 to 17.7 in the 40 patients with AHI>30) and the Epworth index decreased from 11.2 to 6.9 (12.8 to 8.1 for AHI>30). The AHI reduction was independent of gender, age, BMI and baseline AHI. The efficacy was maintained throughout the study period. Only eight patients withdrew for adverse events and seven for reasons of therapeutic failure. CONCLUSION: Mandibular advancement devices proved effective in first intention, including severe OSAS. No predictive individual efficacy factors emerged.

groups. However, retropalatal space was widened only in the success group, which showed that retropalatal space may be important in determining treatment response of the MAD. CONCLUSION: The length of the soft palate showed a difference between success and nonsuccess groups, and widening of retropalatal space might be an important factor for successful outcome with MAD application.

Notes: DA - 20100720
IS - 1538-361X (Electronic)
IS - 0886-4470 (Linking)
LA - eng
PT - Comparative Study
PT - Journal Article
SB - AIM
SB - IM

Keywords: Humans/Orthodontic Appliance Design/Orthodontic Appliances,Removable/Sleep Apnea Syndromes/therapy
Reprint: Not in File
Abstract: PURPOSE: Currently, over 40 different types of oral appliances (OA) are available to dentists to treat sleep disordered breathing. OA can be classified by mode of action or design. One of the major categories is tongue retaining device; the other is a mandibular advancement device (MAD). Each device, however, has its own particular drawbacks, the most common revolving around cost or inherent difficulties in the production process. In this present report, we will introduce a "movable" OA which does not disturb the physiologic function. This approach utilizes novel connectors that are both low in cost and involve a straightforward production procedure. METHODS: Our device is categorized as a MAD. The design of the appliance followed that of the cap clasp, and the undercut was set at 0.25 mm. The polyester sheet was pressed to casts via a pressure molding machine, and cut along the design line mentioned above. In our device, we converted a Co-Cr wire as a connector for the OA. From this we developed and applied 2 new connectors for the clinical setting that were low in cost and allowed for mandible movement. These are lingual-side and labial-side types. In this present study the rate of success was 75.5%; with a good response classified as an AHI with less than 5 events/h, or a 50% decrease in their pre-treatment AHI. The efficacy of our OA was equal to previous studies. CONCLUSION: In this present report, we could propose inexpensive novel connectors which do not disturb the physiologic function.
Notes: DA - 20110613
IS - 2212-4632 (Electronic)
IS - 1883-1958 (Linking)
LA - eng
PT - Journal Article
SB - D
SB - IM

Reprint: Not in File
Abstract: Obstructive sleep apnea and hypopnea syndrome (OSAHS) is characterized by obstruction of upper airway and respiratory disturbance, excessive daytime sleepiness and tiredness. The possible causes are obesity, hypertension, and upper airway malformations, etc. The location and degree of upper airway structure narrowing in patients have been investigated in many ways, such as X-ray, multi-slices spiral computed tomography, etc. With multi-planar reconstruction technique, 3-dimensional construction of upper airway can be established which shows the delicate changes of the upper airway structure. Mandibular advancement device is known as an effective treatment on mild and moderate OSAHS. By advancing the mandible forward, it can increase the space of upper airway, especially the oropharyngeal space. This paper reviewed the methods of investigating on OSAHS and the change
of upper airway structure in OSAHS patients treated with mandibular advancement device. Supported by Combined Research Fund of Bureau of Health, Yunan Province and Kunming Medical College(Grant No.2009CD205)

Notes: DA - 20100520
IS - 1006-7248 (Print)
IS - 1006-7248 (Linking)
LA - chi
PT - English Abstract
PT - Journal Article
PT - Research Support, Non-U.S. Gov't
SB - D
SB - IM

Ref ID: 24 Keywords: Adult/Airway Obstruction/therapy/Humans/Malocclusion/etiology/Mandibular Advancement/adverse effects/instrumentation/Occlusal Splints/contraindications/Polysomnography/Positive-Pressure Respiration/Sleep Apnea,Obstructive/diagnosis/surgery/Temporomandibular Joint Dysfunction Syndrome/Weight Loss
Reprint: Not in File
Abstract: The obstructive sleep apnea syndrome (OSAS) constitutes a non-negligible risk which requires management by specialists of the upper airways. When OSAS is diagnosed, it needs to be treated and different resources are listed. Different forms of treatment can be envisaged: positive pressure ventilation (VCPP), mandibular advancement devices (MAD), and surgery (soft and hard tissues). The authors focus especially the treatments for MAD, outlining their positive and negative impact on ventilation, TMJ, the bony base and interarch relationships

Notes: DA - 20100322
IS - 1879-680X (Electronic)
IS - 1761-7727 (Linking)
LA - eng
LA - fre
PT - Journal Article
PT - Review
SB - D
SB - IM

Ref ID: 25 Keywords: Adult/Aged/Body Mass Index/Cephalometry/statistics & numerical data/Continuous Positive Airway Pressure/Female/Humans/Hyoid Bone/physiology/Male/Mandibular Advancement/instrumentation/Middle Aged/Occlusal Splints/Outcome Assessment (Health Care)/Palate,Soft/anatomy & histology/Pharynx/Pilot Projects/Sleep Apnea,Obstructive/therapy/Young Adult
Reprint: Not in File
Abstract: STATEMENT OF PROBLEM: Obstructive sleep apnea (OSA) is a life-threatening condition that is diagnosed and evaluated primarily by polysomnography (PSG). The procedure is time consuming, expensive, and inconvenient for the patient, and may not be universally available. PURPOSE: The purpose of this pilot study was to evaluate posttreatment results on lateral cephalograms in patients with OSA. MATERIAL AND METHODS: Lateral cephalograms of 16 patients diagnosed with OSA were made at the beginning of treatment and 4-6 weeks following treatment. Treatment modalities used in the study were the mandibular advancement device (MAD) and continuous positive airway pressure (CPAP) therapy (n=8). Pharyngeal dimensions, soft
palate area and angle, and hyoid bone position were recorded for the comparisons. The data were analyzed using Student's t test for the parametric analysis (alpha=.05). RESULTS: A significant increase in the pharyngeal area (P<.001), a significant decrease in the soft palate area (P<.001), and vertical changes in the hyoid position were observed, with no significant change in the anteroposterior position of the hyoid bone. CONCLUSIONS: Within the limitations of this pilot study, lateral cephalograms were shown to be useful in evaluating treatment efficacy in subjects with OSA

Notes: DA - 20100301
IS - 1097-6841 (Electronic)
IS - 0022-3913 (Linking)
LA - eng
PT - Journal Article
PT - Randomized Controlled Trial
SB - D
SB - IM

Ref ID: 26
Keywords: Age Factors/Female/Follow-Up Studies/Humans/Male/Middle Aged/Nasal Obstruction/complications/Odds Ratio/Orthodontic Appliances,Removable/adverse effects/statistics & numerical data/Patient Compliance/Patient Satisfaction/Polysonmography/Questionnaires/Retrospective Studies/Sleep Apnea,Obstructive/therapy/Snoring/Tongue/Treatment Outcome
Reprint: Not in File
Abstract: STUDY OBJECTIVES: The tongue-retaining device is a customized monobloc oral appliance used in the treatment of obstructive sleep apnea syndrome (OSAS). This study evaluated tongue-retaining device efficacy and its tolerance by patients with OSAS. METHODS: The charts of 84 apneic patients were retrospectively analyzed, and patients were contacted by telephone to answer an oral questionnaire. The median follow-up time was 5 years. RESULTS: Based on the apnea-hypopnea index, a complete or partial response was obtained in 71% of the cases. The mean apnea-hypopnea index decreased significantly from 38 to 14 (p < 0.001) with the tongue-retaining device. The subjective intensity of snoring decreased by 68% (p < 0.0001) and the Epworth Sleepiness Scale score decreased from 9 to 6 (p < 0.05). An age of more than 60 years associated with a mandibular protrusion distance inferior or equal to 7 mm was predictive of a nonresponse (odds ratio [OR]: 7.25; 95% confidence interval [CI]: 1.43-36.7; p < 0.02). The compliance rate, as determined by answers to the questionnaire, was 52% after 5 years of follow-up. Nasal obstruction was a negative predictor of good compliance (OR: 6.94; 95% CI: 0.28-0.79; p < 0.005), whereas patients with Class I occlusion were more compliant than patients with Class II or III occlusions (OR: 3.83; 95% CI: 1.00-2.81; p < 0.05). CONCLUSIONS: Tongue-retaining device performance tended to be similar to that of the mandibular advancement device. Thus, teams trained in tongue-retaining device fabrication and fitting may propose it as an alternative to continuous positive airway pressure, taking nasal obstruction into consideration as a contraindication

Notes: DA - 20091207
IS - 1550-9389 (Print)
IS - 1550-9389 (Linking)
LA - eng
PT - Evaluation Studies
PT - Journal Article
SB - IM

Ref ID: 27
Keywords: Adult/Aged/Arthralgia/etiology/Dental Occlusion/Equipment Failure/Facial Pain/Female/Follow-Up Studies/Humans/Jaw Relation Record/methods/Male/Mandibular Advancement/adverse effects/instrumentation/Middle Aged/Orthodontic Appliance
OBJECTIVE: To determine the variation in prevalence of temporomandibular disorders (TMD), other side effects, and technical complications during 5 years of sleep apnea treatment with a mandibular advancement device. MATERIALS AND METHODS: Forty patients diagnosed with obstructive sleep apnea received an adjustable appliance at 70% of the maximum protrusion. The protrusion was then progressively increased. TMD (diagnosed according to the Research Diagnostic Criteria for TMD), overjet, overbite, occlusal contacts, subjective side effects, and technical complications were recorded before and a mean of 14, 21, and 58 months after treatment and analyzed by the Wilcoxon test (P < .05). RESULTS: Fifteen patients still used the oral appliance at the 5-year follow-up, and no significant variation in TMD prevalence was observed. Subjective side effects were common, and a significant reduction was found in overjet, overbite, and in the number of occlusal contacts. Furthermore, the patients made a mean of 2.5 unscheduled dental visits per year and a mean of 0.8 appliance repairs/relines per year by a dental technician. The most frequent unscheduled visits were needed during the first year and were a result of acrylic breakage on the lateral telescopic attachment, poor retention, and other adjustments to improve comfort. CONCLUSIONS: Five-year oral appliance treatment does not affect TMD prevalence but is associated with permanent occlusal changes in most sleep apnea patients during the first 2 years. Patients seek several unscheduled visits, mainly because of technical complications.

**Ref ID: 29**

**Keywords:** Female/Humans/Jaw,Edentulous/Mandibular Advancement/instrumentation/Middle Aged/Polysomnography/Prosthesis Design/Severity of Illness Index/Sleep Apnea,Obstructive/diagnosis/therapy/Treatment Outcome

**Abstract:** BACKGROUND: It has been asserted that the success rate of oral appliances was more satisfactory for mild to moderate obstructive sleep apnea (OSA) than severe ones; besides, there is a lack of literature about mandibular advancement device (MAD) application for edentulous patients with OSA. REPORT: This clinical case shows fabrication method and treatment efficacy of a modified MAD, which is aiming to displace bulky masseter muscles laterally, to provide more space for tongue on totally edentulous patient with severe OSA.

**Notes:** DA - 20100219


**Ref ID: 30**

**Keywords:** Adult/Aged/Body Mass Index/Deglutition Disorders/etiology/Facial Pain/Female/Follow-Up Studies/Humans/Male/Mandibular Advancement/instrumentation/Masseter Muscle/physiopathology/Middle Aged/Monitoring,Ambulatory/Orthodontic Appliance Design/Orthodontic Appliances/adverse effects/Oxygen/blood/Polysomnography/Respiration/Sleep Apnea,Obstructive/therapy/Sleep Stages/physiology/Snoring/Supine Position/Time Factors/Tooth/Vertical Dimension

**Abstract:** The aim of the study was to assess the influence of four mandibular protrusion positions, at a constant vertical dimension, on obstructive sleep apnea (OSA). Seventeen OSA patients (49.2 +/- 8.5 years) received an adjustable mandibular advancement device (MAD). The patients underwent four polysomnographic recordings with their MAD in situ at, in random order, 0%, 25%, 50%, and 75% of the maximum protrusion. The mean apnea-hypopnea index (AHI) values of the patients differed significantly between the protrusion positions (P < 0.000). The 25% protrusion position resulted in a significant reduction of the AHI with respect to the 0% position, while in the 50% and 75% positions, even lower AHI values were found. The number of side effects was larger starting at the 50% protrusion position. We therefore recommend coming to a weighted compromise between efficacy and side effects by starting a MAD treatment in the 50% protrusion position.

**Notes:** DA - 20100513

Objectives: To evaluate retrospectively the efficacy of the mandibular advancement device (MAD) in Korean patients with obstructive sleep apnea (OSA) in terms of severity and to evaluate prognostic factors deciding the success of MAD application. Design: Retrospective analysis. Setting: Academic tertiary referral center. Patients: Of 142 patients who underwent MAD application for OSA management, 50 (46 men and 4 women; mean [SD] age, 50.2 [9.8] years) were included from March 2005 through August 2007. Intervention: Full-overnight polysomnography was performed before and at least 3 months after intraoral MAD application in 50 patients. Questionnaires for sleep quality, Epworth sleepiness scale, and cephalometry were also studied. Main Outcome Measures: Treatment results were evaluated and prognostic factors deciding success of MAD application were assessed. Results: The mean (SD) apnea-hypopnea index (AHI) decreased significantly (P < .001) from 36.6 (18.9) to 12.3 (11.4). The success rate, defined by an AHI of lower than 20 and a 50% decrease in AHI, were 74% (37 of 50 patients). Even patients who were not categorized into the success group had a decreased AHI. The success rates of patients with mild, moderate, and severe OSA were 43% (3 of 7), 82% (22 of 27), and 75% (12 of 16), respectively, and a higher success rate in patients with severe OSA showed that MAD could be applied even in patients with severe OSA. The duration of apnea and hypopnea, percentage of patients with snoring, and the Pittsburgh Sleep Quality Index were improved significantly after treatment. Epworth sleepiness scale scores and lowest oxygen saturation did not change significantly. An analysis of prognostic factors did not reveal any significant difference between the success and nonsuccess groups. Conclusions: The application of MAD significantly improved nocturnal respiratory function and sleep quality in patients with OSA, even in patients with severe OSA. In patients with OSA, MAD can be used as a good alternative treatment modality regardless of severity because it is noninvasive, easy to manufacture, and has good treatment results.


Objectives: The aims of this study were to assess changes in the upper airway morphology associated with an oral appliance in situ in patients suffering from the obstructive sleep apnoea-hypopnoea syndrome and to relate these changes to treatment response. Changes in upper airway morphology as a result of an oral appliance were assessed in 52 patients with obstructive sleep apnoea-hypopnoea syndrome by means of cephalometric analysis. Lateral
cephalograms were taken at baseline and after 2-3 months of treatment. Baseline and follow-up cephalograms were traced twice and cephalometric variables were compared. The predictive value of changes in upper airway morphology for the treatment response was evaluated in univariate and multivariate regression analyses. Oral appliance therapy resulted in an increased posterior airway space at the level of the second vertebra, the uvular tip and the base of the tongue. The increase of the posterior airway space at the level of the second vertebra and the uvular tip were the best predictors for relative improvement of the apnoea-hypopnoea index. However, the predictive value for treatment response of these cephalometric upper airway changes should be interpreted with caution.

Notes: DA - 20090420
IS - 1365-2842 (Electronic)
IS - 0305-182X (Linking)
LA - eng
PT - Journal Article
SB - D
SB - IM


Ref ID: 33
Keywords: Adult/Aged/Cognition/Continuous Positive Airway Pressure/methods/Cross-Over Studies/Female/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Patient Compliance/Patient Preference/Polysomnography/Quality of Life/Sleep Apnea Syndromes/therapy/Sleep Stages/Treatment Outcome
Reprint: Not in File
Abstract: The aim of this study was to compare mandibular advancement device (MAd) therapy and continuous positive airway pressure (CPAP) for obstructive sleep apnoea/hypopnoea syndrome (OSAHS) after one-night polysomnographic (PSG) titration of both treatments. 59 OSAHS patients (Apnoea/hypopnoea index (AHI): 34+/13 events x h(-1); Epworth scale: 10.6+/4.5) were included in a crossover trial of 8 weeks of MAd and 8 weeks of CPAP after effective titration. Outcome measurements included home sleep study, sleepiness, health-related quality of life (HRQoL), cognitive tests, side-effects, compliance and preference. The median (interquartile range) AHI was 2 (1-8) events x h(-1) with CPAP and 6 (3-14) events x h(-1) with MAd (p<0.001). Positive and negative predictive values of MAd titration PSG for treatment success were 85% and 45%, respectively. Both treatments significantly improved subjective and objective sleepiness, cognitive tests and HRQoL. The reported compliance was higher for MAd (p<0.001) with >70% of patients preferring this treatment. These results support titrated MAd as an effective therapy in moderately sleepy and overweight OSAHS patients. Although less effective than CPAP, successfully titrated MAd was very effective at reducing the AHI and was associated with a higher reported compliance. Both treatments improved functional outcomes to a similar degree. One-night titration of MAd had a low negative predictive value for treatment success.

Notes: DA - 20091002
IS - 1399-3003 (Electronic)
IS - 0903-1936 (Linking)
LA - eng
PT - Comparative Study
PT - Journal Article
PT - Randomized Controlled Trial
PT - Research Support, Non-U.S. Gov't
SB - IM


Ref ID: 34
Keywords: Activator Appliances/adverse effects/Adult/Follow-Up Studies/Humans/Male/Mandibular Advancement/instrumentation/Middle
Abstract: The obstructive sleep apnea syndrome is characterised by repeatedly occurring complete or partial obstructions of the upper airway during sleep, which can be accompanied by serious oxygen desaturations. This can result in cardiovascular co-morbidity and excessive daytime sleepiness, with an increased chance of motor vehicle accidents and diminished performance at work. The use of a mandibular advancement device appears to be an effective therapy. In the long term, however, the possibility of dental side effects should be taken into consideration. Development of a relative mesioclusion has frequently been observed. Side effects are usually mild and transient. To objectively evaluate whether the side effects are stable or progressive, a thorough follow-up is needed. It is therefore desirable that treatments with a mandibular advancement device are carried out by dentists or specialists with experience and special expertise in this area.

Notes: DA - 20090313
IS - 0028-2200 (Print)
IS - 0028-2200 (Linking)
LA - dut
PT - Case Reports
PT - English Abstract
PT - Journal Article
SB - D


Ref ID: 35
Keywords: Adolescent/Adult/Aged/Continuous Positive Airway Pressure/methods/Cross-Over Studies/Endothelium, Vascular/physiopathology/Humans/Male/Mandibular Advancement/Microvessels/physiology/Middle Aged/Polysomnography/Rheology/Severity of Illness Index/Sleep Apnea, Obstructive/diagnosis/therapy/Vasodilation/Young Adult

Reprint: Not in File
Abstract: OBJECTIVES: Endothelial dysfunction has been proposed as a potential mechanism implicated in the pathogenesis of cardiovascular complications of obstructive sleep apnea syndrome (OSAS). This study aimed to evaluate the microvascular endothelial function (MVEF) in OSAS and the impact on MVEF of 2 months of treatment with continuous positive airway pressure (CPAP) and mandibular advancement device (MAD). METHODS: Microvascular reactivity was assessed using laser Doppler flowmetry combined with acetylcholine (Ach) and sodium nitroprusside (SNP) iontophoresis in 24 OSAS patients and 9 control patients. In 12 of the 24 OSAS patients, microvascular reactivity was reassessed after 2 months of CPAP and MAD using a randomized cross-over design. RESULTS: Ach-induced vasodilation was significantly lower in OSAS patients than in matched controls and correlated negatively with apnea hypopnea index (r=-0.49, p<0.025) and nocturnal oxygen desaturations (r=-0.63, p<0.002). Ach-induced vasodilation increased significantly with both CPAP and MAD. The increase in Ach-induced vasodilation under OSAS treatment correlated with the decrease in nocturnal oxygen desaturations (r=0.48, p=0.016). CONCLUSION: Our study shows an impairment of MVEF in OSAS related to OSAS severity. Both CPAP and MAD treatments were associated with an improvement in MVEF that could contribute to improve cardiovascular outcome in OSAS patients.

Notes: DA - 20090727
IS - 1878-5506 (Electronic)
IS - 1389-9457 (Linking)
LA - eng
PT - Journal Article
PT - Randomized Controlled Trial
PT - Research Support, Non-U.S. Gov't
SB - IM

Keywords: Cephalometry/China/Facial Bones/pathology/Female/Humans/Hyoid Bone/Male/Mandible/Mandibular Advancement/instrumentation/Occlusal Splints/Palate,Soft/Sleep Apnea,Obstructive/therapy/Tongue

Abstract: INTRODUCTION: The objective of this study was to investigate whether a reduction of obstructive sleep apnoea (OSA) severity is associated with significant airway and craniofacial changes with mandibular advancement device (MAD) in Chinese subjects. MATERIALS AND METHODS: A total of 14 Chinese subjects (8 males, 6 females) diagnosed with OSA by overnight polysomnography (PSG), were fitted with the MAD. The mean +/- standard deviation baseline apnoea-hypopnoea index (AHI) was 38.4 +/- 17.2 and minimum arterial oxygen saturation (SaO2) was 75.5 +/- 11.1%. The second lateral cephalogram was taken (wearing the MAD) after the second PSG. The second PSG was indicated when symptoms have improved as shown by the Epworth Sleepiness Score and sleep questionnaire after wearing the MAD for 1 month. Comparison of cephalometric variables was done to evaluate the effects of the MAD on the upper airway and anatomical variables. Pre-treatment versus post-treatment variables were compared using Wilcoxon signedrank test to determine the statistical significance at the 5% levels. The changes in airway variables were correlated with the changes in AHI using the Spearman correlation test. RESULTS: At the second polysomnogram, AHI was significantly reduced to 10.9 +/- 14.7. Minimum SaO2 was significantly increased to 86 +/- 8.4%. Mean airway dimension was significantly increased at the nasopharyngeal area from 22.7 +/- 3.0 mm to 24.8 +/- 2.1 mm. The distance of the hyoid bone to the mandibular plane was significantly reduced with the MAD from a mean of 21.2 +/- 5.7 mm to 13.9 +/- 7.0 mm (P <0.05). This reduction of the distance of the hyoid bone to the mandibular plane was significantly correlated with the reduction in the AHI. CONCLUSION: An increase in the nasopharyngeal airway and reduction of the distance of the hyoid bone to the mandibular plane was observed for this sample of Chinese OSA subjects. This study forms the baseline for future studies on the effects of MAD on the airway and craniofacial structures in a larger sample.

Notes: DA - 20080917 IS - 0304-4602 (Print) IS - 0304-4602 (Linking) LA - eng PT - Journal Article SB - IM


Keywords: Equipment Design/Humans/Mandibular Advancement/instrumentation/Sleep Apnea Syndromes/diagnosis/therapy

Abstract: Sleep apnea and hypopnea syndrome (SAHS) is a disorder characterized by intermittent and repetitive obstruction of the upper airway provoking pharyngeal collapse. It is characterized clinically by a triad of daytime hypersomnia, snoring and pauses in breathing during sleep that are normally reported by the partner. Polysomnography is the chosen method for diagnosing this pathology. Patients with this disorder tend to have the following dental and orofacial signs: a retrognathic jaw, a narrow palate, a wide neck, deviation of the nasal septum and relative macroglossia, among others. Dentists should be ready to evaluate the risk-benefit of certain dental treatment options for this public health problem. The treatment of this problem will depend on its severity, with one of the options being the Mandibular Advancement Device (MAD) that is used especially in the treatment of slight or moderate SAHS and in the treatment of snoring, with results that are occasionally very successful. The objective of this study is to carry out an up-to-date literature review of SAHS and to evaluate the role of the dentist when faced with this pathology.

Notes: DA - 20080901 IS - 1698-6946 (Electronic) IS - 1698-4447 (Linking) LA - eng PT - Journal Article

Abstract: STATEMENT OF PROBLEM: Intraoral mandibular advancement devices have become widely used in recent years for the management of snoring and sleep apnea, and short-term effectiveness has been demonstrated. However, there is a shortage of data regarding long-term compliance. PURPOSE: The purpose of this study was to investigate the long-term compliance of patients who were provided with a mandibular advancement device. MATERIAL AND METHODS: Records of 180 patients who were provided with a mandibular advancement device in 1996 were available for review. A questionnaire was sent to all of these patients inquiring about continued device usage, comfort, and effectiveness. Questions were also asked about smoking, alcohol consumption, height, and weight. Data were analyzed with chi-square tests for any association between these factors and success of the device (alpha=.05). RESULTS: The response rate was 40%, with 72 replies. Of this number, 34 patients were currently wearing the device every night, with a further 13 wearing the device for up to 6 nights per week. Thirty-one of the respondents who were wearing the device felt more refreshed on waking. The median body mass index (BMI) was 30, 8 were smokers, and 12 subjects drank more than 20 units of alcohol per week. Few adverse effects of the device were reported. CONCLUSIONS: The mandibular advancement device appears to be an effective long-term solution for a significant number of patients with problem snoring and also those with mild to moderate obstructive sleep apnea.


Abstract: OBJECTIVE: The aim of this study was to investigate pharyngeal size differences between pre- and posttrials of a Mandibular Advancement Device (MAD), using a computed tomography (CT),in the treatment of Obstructive Sleep Apnea (OSA) adult patients. MATERIALS AND METHODS: Eighteen patients with mild to moderate OSA (mean Apnea/Hypopnea Index, AHI, of 16.7) were treated with a MAD to wear at night only. After 3 months of treatment, three-dimensional changes in pharyngeal dimensions were measured on CT images performed with a sixteen detector-row CT scanner (Light Speed Plus; GE Medical Systems). Two consecutive axial sections from the hard palate to the epiglottis were obtained with and without the appliance. Measurements were made of the following airway areas (mm2) and lengths (mm): RF (nasopharynx); ROF (naso-oropharynx); OF (oropharynx); IPF (hypopharynx); SPL (soft palate length); SPT (soft palate thickness); Rgn (retrognation)-hyoid bone; hyoid bone-C2; Rgn-C2; PhL (oropharynx length); pharynx posterior wall thickness at three level. The angle between the hard and the soft palate (APDM) was also calculated.
RESULTS: AHI improved significantly (from 16.7 to 11.2) when the appliance was used. Measurements from CT scans showed statistically significant expansion in the naso-oropharynx area (RF p<.014; ROF p<.050), in the Rgn-C2 length (p<.005) and in the angle between the hard and the soft palate (APDM p<.001). CONCLUSIONS: Our findings confirm the effectiveness of MAD in the treatment of patients with mild to moderate OSA. The use of MAD significantly expands the areas of the upper airway lumen most involved in the collapse

Notes: DA - 20090318
IS - 1723-7785 (Print)
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LA - eng
LA - ita
PT - Clinical Trial
PT - Journal Article
SB - D
SB - IM


Ref ID: 40
Keywords: Computer Simulation/Humans/Mandibular Advancement/instrumentation/methods/Models,Biological/Prognosis/Respiratory Mechanics/Rheology/Sleep Apnea,Obstructive/physiopathology/radiography/rehabilitation/Therapy,Computer-Assisted/Treatment Outcome
Reprint: Not in File
Abstract: Mandibular advancement devices (MADs) have emerged as a popular alternative for the treatment of sleep-disordered breathing. These devices bring the mandibula forward in order to increase upper airway (UA) volume and prevent total UA collapse during sleep. However, the precise mechanism of action appears to be quite complex and is not yet completely understood; this might explain interindividual variation in treatment success. We examined whether an UA model, that combines imaging techniques and computational fluid dynamics (CFD), allows for a prediction of the treatment outcome with MADs. Ten patients that were treated with a custom-made mandibular advancement device (MAD), underwent split-night polysomnography. The morning after the sleep study, a low radiation dose CT scan was scheduled with and without the MAD. The CT examinations allowed for a comparison between the change in UA volume and the anatomical characteristics through the conversion to three-dimensional computer models. Furthermore, the change in UA resistance could be calculated through flow simulations with CFD. Boundary conditions for the model such as mass flow rate and pressure distributions were obtained during the split-night polysomnography. Therefore, the flow modeling was based on a patient specific geometry and patient specific boundary conditions. The results indicated that a decrease in UA resistance and an increase in UA volume correlate with both a clinical and an objective improvement. The results of this pilot study suggest that the outcome of MAD treatment can be predicted using the described UA model

Notes: DA - 20071126
IS - 0021-9290 (Print)
IS - 0021-9290 (Linking)
LA - eng
PT - Clinical Trial
PT - Journal Article
SB - IM


Ref ID: 41
Keywords: Atrial Fibrillation/complications/Humans/Male/Mandibular Advancement/adverse effects/instrumentation/Middle Aged/Orthodontic Appliances,Removable/Polysomnography/Sleep Apnea,Central/etiology/Sleep Apnea,Obstructive/therapy
Reprint: Not in File
Abstract: INTRODUCTION: Mandibular advancement (MA) has emerged over the last decade as an alternative solution to nasal continuous airway pressure (nCPAP) for the treatment of obstructive sleep apnea syndrome (OSAS). OBSERVATION: We report the case of a patient with history of chronic atrial fibrillation and moderate supine-dependent OSAS in whom central sleep apneas developed during treatment by a bi-bloc MA device. Central apneas increased with the level of MA and preferentially occurred in the supine position. We hypothesized that mouth opening under excessive mandibular advancement in supine position may have led to pharyngeal narrowing at the base of the tongue and potentially unstable ventilation. Sleep fragmentation that enhanced during progressive MA may also have compromised ventilatory control stability in our patient. Finally, chronic atrial fibrillation may have predisposed to central sleep apneas. CONCLUSION: Our case report highlights the importance of follow-up nocturnal recordings during progressive MA.

NOTES: DA - 20070222
IS - 0761-8425 (Print)
IS - 0761-8425 (Linking)
LA - fre
PT - Case Reports
PT - English Abstract
PT - Journal Article
SB - IM

Ref ID: 42
Keywords: Adolescent/Adult/Aged/Aged,80 and over/Ambulatory Care/Equipment Design/Female/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Oxygen/blood/Prospective Studies/Sleep Apnea,Obstructive/therapy/Treatment Outcome
Reprint: Not in File
Abstract: OBJECTIVE: To prospectively evaluate the efficacy of the mandibular advancement device (MAD) Somnoguard in the treatment of OSA patients. STUDY DESIGN AND SETTING: Forty-four patients with OSA and noncompliant to continuous positive airway pressure were enrolled in this case series. Somnoguard is made of thermoplastic material. Direct intraoral fitting was done by an otorhinolaryngologist. Polysomnographic data concerning sleep and respiration were assessed at baseline and after familiarization with the MAD. RESULTS: Sleep efficiency and sleep stages distribution did not change significantly. The RDI could be reduced from 31.5+/−17.6 to 18.2+/−17.0 (P<0.05), the minimal oxygen saturation increased from 78+/−12.9 to 82+/−12.5% (P<0.05). According to standard criteria, 18 patients were cured, 12 were improved, 8 remained unchanged, and 6 worsened. Snoring time decreased from 223+/−132 to 183+/−134 minutes (P<0.05). CONCLUSION AND SIGNIFICANCE: With Somnoguard 68% of the enrolled OSA patients could be cured or substantially improved. It is a simple MAD for the otolaryngologist.
Notes: DA - 20070205
IS - 0194-5998 (Print)
IS - 0194-5998 (Linking)
LA - eng
PT - Clinical Trial
PT - Journal Article
RN - 7782-44-7 (Oxygen)
SB - IM

Ref ID: 43
Keywords: Adult/Algorithms/Equipment Design/Feasibility Studies/Female/Humans/Male/Mandibular Advancement/instrumentation/Monitoring,Ambulatory/Orthodontic Appliances/Oxygen/blood/Polysomnography/Quality of Life/Sensitivity and Specificity/Signal Processing,Computer-Assisted/Sleep Apnea,Obstructive/diagnosis/psychology/therapy/United States
Abstract: There is increasing evidence that mandibular advancement devices (MADs) can be an effective treatment for some patients with obstructive sleep apnea, a highly prevalent chronic disease. In this study, the objectives were to objectively assess the effectiveness of MAD therapy using a limited channel recorder, and to develop a model for identifying patients who may be appropriate for MAD therapy as the initial treatment option. Thirty patients were prospectively recruited and studied at two independent dentist offices and the participants’ homes. Subjects wore the ARES Unicorder for two nights before insertion of the MAD, and again when the dentist determined that the patient had reached the titration endpoint. Self-reported measures of depression, sleepiness, and quality of life were obtained pre- and posttreatment. The reviewer was blinded to the study status while the physiological signals were being visually inspected. Significant reductions in the apnea/hypopnea index (AHI), hypoxemia measures, and snoring level were observed posttreatment. Twenty-seven of the 30 (90%) patients had a posttreatment AHI (using a 4% desaturation for hypopneas) below a clinical cut-off of 10. All but one patient (97%) exhibited at least a 50% decrease in AHI or had a posttreatment AHI \(< 10\). Significant differences in body mass index, weight, and neck circumference in patients with posttreatment AHIs above and below a clinical cut-off of five were identified. The linear regression used to predict the posttreatment AHI using pretreatment data resulted in an \(R^2\) of 0.68. The model correctly predicted two patients who were unable to obtain a posttreatment AHI of 10 or less. This study was designed to demonstrate two models of collaboration between a dental sleep medicine specialist and a sleep medicine physician in the monitoring of a patient treated with a MAD. The outcome data suggest that the limited channel recording system can be used as an alternative to laboratory polysomnography to reduce the cost of MAD treatment, and to improve the quality and consistency of posttreatment patient care.


Ref ID: 44

Keywords: Adult/Bruxism/physiopathology/prevention & control/Cross-Over Studies/Facial Pain/etiologie/Female/Humans/Male/Mandibular Advancement/instrumentation/Motor Activity/physiology/Occlusal Splints/Orthodontic Appliance Design/Orthodontic Appliances/Polysonmography/Salivation/Sleep/Sleep Bruxism/Surface Properties

Reprint: Not in File

Abstract: The objective of this experimental study was to compare the effect on sleep bruxism and tooth-grinding activity of a double-arch temporary custom-fit mandibular advancement device (MAD) and a single maxillary occlusal splint (MOS). MATERIALS AND METHODS: Thirteen intense and frequent bruxors participated in this short-term randomized crossover controlled study. All polygraphic recordings and analyses were made in a sleep laboratory. The MOS was used as the active control condition and the MAD was used as the experimental treatment condition. Designed to temporarily manage snoring and sleep apnea, the MAD was used in 3 different configurations: (1) without the retention pin between the arches (full freedom of movement), (2) with the retention pin in a slightly advanced position (< 40%), and (3) with the retention pin in a more advanced position (> 75%) of the lower arch. Sleep variables, bruxism-related motor activity, and subjective reports (pain, comfort, oral salivation, and quality of sleep) were analyzed with analysis of variance and the Friedman test. RESULTS: A significant reduction in the number of sleep bruxism episodes per hour (decrease of 42%, \(P < .001\)) was observed with the MOS. Compared to the MOS, active MADs (with advancement) also revealed a significant reduction in sleep bruxism motor activity. However, 8 of 13 patients reported pain (localized on mandibular gums and/or anterior teeth) with active MADs. CONCLUSIONS: Short-term use of a temporary custom-fit MAD is associated with a remarkable reduction in sleep bruxism motor activity. To a smaller extent, the MOS also reduces sleep bruxism. However, the exact mechanism supporting this reduction remains to be explained. Hypotheses are oriented toward the following: dimension and
configuration of the appliance, presence of pain, reduced freedom of movement, or change in the upper airway patency

Notes: DA - 20061214
IS - 0893-2174 (Print)
IS - 0893-2174 (Linking)
LA - eng
PT - Comparative Study
PT - Journal Article
PT - Randomized Controlled Trial
PT - Research Support, Non-U.S. Gov't
SB - D


Ref ID: 45
Keywords: Activator Appliances/Adult/Aged/Cephalometry/China/ethnology/Dental Occlusion/Face/Facial Bones/pathology/Female/Follow-Up Studies/Hong Kong/Humans/Image Processing,Computer-Assisted/Longitudinal Studies/Male/Mandible/Mandibular Advancement/instrumentation/Middle Aged/Orthodontic Appliance Design/Patient Compliance/Skull Base/Sleep Apnea,Obstructive/therapy/Vertical Dimension

Reprint: Not in File

Abstract: The objective of this study was to evaluate long-term dentofacial changes in Chinese obstructive sleep apnea (OSA) patients treated with a mandibular advancement device (MAD). Lateral cephalograms in natural head posture were obtained from 67 consecutive OSA patients (mean age = 46.9 +/- 8.9 years) treated with an MAD. The cephalograms were obtained at start of treatment (T0), after 1 year (T1), 2 years (T2), and 3 years (T3) of treatment. The lateral cephalograms were digitized twice, and the average of two readings was used for statistical analyses. Small, but statistically significant changes occurred in some dentofacial variables. The lower anterior facial height steadily increased during the observation period, and this increase was significant for the T0-T1 and T1-T2 periods and marginally significant for the T2-T3 period. A significant increase in the mandibular plane angle was observed during the T0-T1 and T2-T3 periods only. Significant reductions in the overjet and overbite were observed for the T0-T1 period but not thereafter. Statistically significant dentofacial changes were observed in this study, but they were of small magnitude. The overjet and overbite changes observed mainly occurred at the initial stage of treatment

Notes: DA - 20060426
IS - 0003-3219 (Print)
IS - 0003-3219 (Linking)
LA - eng
PT - Journal Article
SB - D
SB - IM


Ref ID: 46
Keywords: Aged/Brain/metabolism/Heart Failure/epidemiology/Humans/Male/Mandibular Advancement/methods/Natriuretic Peptides/blood/Polysomnography/Prosthesis Design/Quality of Life/psychology/Sleep Apnea,Obstructive/therapy

Reprint: Not in File

Abstract: The aim of the present study was to investigate the effect of a mandibular advancement device (MAD) for the treatment of sleep apnea (SA) on plasma brain natriuretic peptide (BNP), left ventricular ejection fraction (LVEF), and health-related quality of life (HRQL) in patients with mild to moderate stable congestive heart failure (CHF). Seventeen male patients aged 68.4 +/- 5.5 with an apnea-hypopnea index (AHI) >or=10 were equipped with an individually fitted MAD. SA was evaluated using a portable respiratory multirecording system before and after the initiation of treatment. Eleven patients
completed follow-up and were evaluated after 6 months of treatment. The AHI reduced from 25.4+/-10.3 to 16.5+/-10.0 (p=0.033) compared to baseline and mean plasma BNP levels decreased from 195.8+/-180.5 pg/ml to 148.1+/-139.9pg/ml (p=0.035). SA-related symptoms, e.g., excessive daytime sleepiness, were also reduced (p=0.003). LVEF and HRQL were unchanged. We conclude that SA treatment with a MAD on patients with mild to moderate stable CHF appears to result in the reduction of plasma BNP levels. Further studies to investigate if the observed reduction in BNP concentrations also result in improved prognosis are warranted.

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IS - 1520-9512 (Print)
IS - 1520-9512 (Linking)
LA - eng
PT - Journal Article
PT - Research Support, Non-U.S. Gov't
RN - 0 (Natriuretic Peptides)
SB - IM

Ref ID: 47
Keywords: Antihypertensive Agents/therapeutic use/Blood Pressure/physiology/Cross-Sectional Studies/Female/Follow-Up Studies/Heart Rate/Humans/Hypertension/physiopathology/Male/Mandibular Advancement/instrumentation/Middle Aged/Orthodontic Appliance Design/Orthodontic Appliances/Polysomnography/Remission Induction/Sleep Apnea,Obstructive/therapy/Treatment Outcome
Reprint: Not in File
Abstract: PURPOSE: The aim of this study was to evaluate the effect of individually prescribed oral appliances for the treatment of obstructive sleep apnea syndrome (OSAS) on blood pressure, as well as factors influencing the efficacy. MATERIALS AND METHODS: One hundred sixty-one patients (121 men and 40 women, mean age: 54.3 +/- 13.7 years) diagnosed with mild to moderate OSAS (mean apnea-hypopnea index: 17.9 +/- 14.1) were studied before and after insertion of a mandibular advancement device, with a mean interval of 60 days. Systolic, diastolic, and mean blood pressure was taken using an automatic blood pressure monitor (132.0 +/- 16.1 mmHg, 82.1 +/- 10.6 mmHg, 107.1 +/- 12.9 mmHg, respectively, at baseline). RESULTS: The patients were subdivided into 3 groups: responder, partial responder, and nonresponder, according to the difference of mean arterial pressure fall after the treatment. The systolic, diastolic, and mean blood pressure decreased significantly (P < .001) (127.5 +/- 15.0 mmHg, 79.2 +/- 10.0 mmHg, 103.4 +/- 12.0 mmHg, respectively) after the insertion of the device. The oral appliance therapy produced falls in blood pressure (4.5 mmHg, 3.0 mmHg, 3.7 mmHg, respectively). The response was significantly (P < .001) correlated to baseline blood pressure. The responders (n = 70, mean blood pressure fall > 3.7 mmHg) and the partial responders (n=46, 0 < fall < or = 3.7 mmHg) showed significantly (P < .05; analysis of variance) higher reduction in apnea-hypopnea index (69.6%, 65.9%, respectively) than that (52.5%) of nonresponders (n=45, fall < or =0 mmHg). CONCLUSION: These data suggest that effective oral appliance therapy for OSAS patients with hypertension can lead to a substantial reduction in daytime blood pressure.
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LA - eng
PT - Journal Article
RN - 0 (Antihypertensive Agents)
SB - D

Ref ID: 48
Keywords: Adult/Equipment Design/Feasibility Studies/Female/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Patient Satisfaction/Pilot Projects/Polysomnography/Sleep Apnea,Obstructive/therapy/Snoring/Treatment Outcome
Obstructive sleep apnoea (OSA) is a common sleep disorder, which is, among others, associated with snoring. OSA has a considerable impact on a patient's general health and daily life. Nasal continuous positive airway pressure (nCPAP) is frequently used as a "gold standard" treatment for OSA. As an alternative, especially for mild/moderate cases, mandibular advancement devices (MADs) are prescribed increasingly. Their efficacy and effectiveness seem to be acceptable. Although some randomized clinical trials (RCTs) have been published recently, most studies so far are case studies. Therefore, our department is planning a controlled RCT, in which MADs are compared with both nCPAP and a control condition in a parallel design. As a first step, an adjustable MAD was developed with a small, more or less constant vertical dimension at different mandibular positions. To test the device and the experimental procedures, a pilot trial was performed with 10 OSA patients (six mild, four moderate; one women, nine men; mean age = 47.9 +/- 9.7 years). They all underwent a polysomnographic recording before as well as 2-14 weeks after insertion of the MAD (adjusted at 50% of the maximal protrusion). The apnoea-hypopnoea index (AHI) was significantly reduced with the MAD in situ (P = 0.017). When analysed as separate groups, the moderate cases showed a significantly larger decrease in AHI than the mild cases (P = 0.012). It was therefore concluded from this pilot study that this MAD might be an effective tool in the treatment of, especially, moderate OSA.


Keywords: Aged/Female/Heart Failure/complications/physiopathology/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Patient Selection/Polysomnography/Sleep Apnea Syndromes/diagnosis/therapy/Snoring/prevention & control

Abstract: Sleep disordered breathing (SDB) including obstructive and central sleep apnoea/hypopnoea as well as periodic breathing (PB) is common and is believed to increase risk for mortality in patients with congestive heart failure (CHF). Mandibular advancement device (MAD) has widely been recommended for treatment of obstructive sleep apnoea but the method has never been investigated for treatment of SDB in the patients with CHF. The aim with the present study was to examine the effect of MAD intervention on SDB in patients with CHF. The study included 17 male patients, aged 68.4 +/- 5.7 (mean +/- SD) with stable, mild to moderate CHF due to left ventricular systolic dysfunction and with SDB, expressed as apnoea/hypopnoea index (AHI) > or = 10. The SDB was examined during a single night using an unattended, portable polysomnographic device in the patients home, prior to and following intervention with a individually adjusted MAD. The SDB was evaluated by calculating AHI, PB expressed as the percentage of the total registration time, oxygen desaturation index (ODI) and snoring time. The AHI was reduced by MAD intervention from 25.1 +/- 9.0 to 14.7 +/- 9.7 (p=0.003). ODI reduced from 21.1 +/- 9.0 to 10.5 +/- 7.8 (p=0.007) and snoring time decreased from 53 +/- 111 to 18 +/- 47 seconds (p=0.02). PB was reduced from 55.7 +/- 25.6 to 40.4 +/- 26.4 per cent without statistical significance. In conclusion, the MAD intervention may be a feasible method for reducing SDB in patients with stable, mild to moderate CHF and left ventricular systolic dysfunction.

Keywords: Adult/Age Factors/Aged/Female/Follow-Up Studies/Heart Failure/complications/physiopathology/Humans/Intervention Studies/Male/Mandibular Advancement/adverse effects/instrumentation/Middle Aged/Natriuretic Peptide, Brain/-blood/Patient Satisfaction/Pharynx/pathology/radiography/Polysomnography/Quality of Life/Sleep Apnea Syndromes/therapy/Sleep Stages/Snoring/prevention & control/Stroke Volume/physiology/Survival Rate/Temporomandibular Joint Disorders

Abstract: In patients with congestive heart failure (CHF), sleep disordered breathing (SDB)--including obstructive and central sleep apnoea as well as periodic breathing--is a common condition and is believed to increase the risk of mortality. Treatment of SDB is considered important in the management of CHF. Improvements in SDB have a positive effect on cardiac output, measured with left ventricular ejection fraction (LVEF); on neurohormonal activity, measured as brain natriuretic peptide (BNP); and on the quality of life. Continuous positive airway pressure has been the traditional method used to treat SDB in patients with CHF, but compliance and tolerability are poor. A mandibular advancement device (MAD) is a dental device recommended for the treatment of sleep apnoea, but the method has never been evaluated in patients with CHF. The aims of the present studies were to evaluate the practical use of the MAD for the treatment of SDB in patients with CHF and to test the hypothesis that this intervention increases the dimensions of the pharyngeal airway (PAW), reduces SDB and BNP, and improves LVEF and the quality of life. Patients with mild to moderate CHF and SDB were evaluated using a portable polysomnographic device, lateral radiographs, cardiological and odontological examinations, and quality of life measures prior to and following intervention with an custom-made MAD. At the short-term follow-up 4-6 weeks after habituation with the MAD, the severity of SDB according to the apnoea-hypopnoea index had decreased from 25.1 +/- 9.4 (mean +/- SD) to 14.7 +/- 9.7 (p = 0.003). An increase in the inferior region of the PAW (7 +/- 5 mm) was observed on radiographs (p = 0.0001). However, no correlation between the effect of the MAD on the dimensions of the PAW and its effect on SDB was found. At the 6-month follow-up, the sleep apnoea-related symptoms had decreased by 31% (p = 0.003). Quality of life remained stable. BNP were reduced from 195.8 +/- 180.5 pg/ml to 148.1 +/- 139.9 pg/ml (p = 0.035). LVEF, however, remained unchanged. At the 12-month follow-up, 64% of the patients were still using the MAD. Three patients withdrew from the study because of discomfort with the MAD. In most patients, MAD treatment had no severe side effect on the signs or symptoms of temporomandibular disorders. However, dental complications were observed. In conclusion, in patients with stable CHF who are experiencing problems with SDB, MAD intervention appears to reduce the severity of SDB, sleep apnoea-related symptoms, and neurohormonal activity. A lower tendency for PAW collapse may explain the effect observed on SDB. The reduction in plasma BNP may indicate decreased cardiac strain as a result of treatment with the MAD. The 5-year survival rate, measured from the start of MAD intervention, was higher in the group that used a MAD than in the group that did not use a MAD (p = 0.036). No severe side effects on the stomatognathic system were observed during the intervention, and most patients--edentulous included--tolerated the treatment well. Impaired oral health, including reduced dentition and edentulousness, seemed to limit the use of the MAD in this group of elderly patients, both because of technical difficulties and because of the increased risk of dental complications. However, because the treatment of SDB is important in the management of CHF, the MAD intervention seems to be a valuable method in the treatment arsenal of SDB.
Abstract: OBJECTIVE: Mandibular advancement devices (MADs) have been introduced as a conservative, non-invasive treatment for socially disturbing snoring and mild obstructive sleep apnea (OSA). A prospective, non-randomized pilot study was conducted to investigate the efficacy, feasibility, side-effects and compliance of Somnoguard, an immediately intraorally adaptable MAD made from thermoplastic material. MATERIAL AND METHODS: Twenty consecutive heavy snorers with a respiratory disturbance index of <20 events/h were prospectively selected. Prior to the adaptation of the appliance, ambulatory polygraphy was carried out without a MAD. After a 1-month habituation period, a polygraphic evaluation was carried out with the device. Treatment success was defined as a reduction in the apnea-hypopnea index (AHI) of at least 50%. RESULTS: The results indicated a success rate of 65%. The AHI decreased from 8.4 +/- 2.9 events/h at baseline to 3.9 +/- 1.8 events/h with the device (p = 0.001). At 1-month follow-up, significant reductions in the snoring index (p < 0.001) and the Epworth Sleepiness Scale (ESS) score (p = 0.036) were noted. At 6-month follow-up, similar results were achieved, with significant drops in the snoring index (p = 0.025) and ESS score (p = 0.033). CONCLUSION: We conclude that immediate intraoral adaptation of a low-cost fabricated "one-size-only" MAD is a feasible and well-tolerated treatment for snoring and mild OSA. Further research is needed to evaluate this thermostatic appliance as a strategy to "screen" the efficacy of MAD treatment in the individual patient with a less expensive appliance before constructing a more expensive custom-made MAD.

Abstract: Continues positive airway pressure (CPAP) is recommended for treatment of sleep apnoea (SA) in patients with congestive heart failure (CHF) but is not easily tolerated resulting in poor patient compliance. Mandibular advancement device (MAD) is designed to inhibit pharyngeal airway (PAW) obstruction and may be a valuable alternative. It has been proposed that MAD exerts its effect by increasing PAW dimensions. This has not, however, been clearly demonstrated. The aim of this study was to examine the effect of MAD on PAW dimensions and SA in patients with CHF. Seventeen CHF-patients with mild to moderate heart failure, aged 68 +/- 6 years, (mean +/- SD), range 54-75 years, with sleep apnoea-hypopnea index (AHI) > or = 10 were evaluated. PAW dimensions were studied with and without the MAD, using lateral radiographs in supine position. Nocturnal breathing patterns were studied using a portable polysomnographic device during a single night with and without MAD. A reduction of AHI > or = 30% (arbitrary level) for each individual was regarded as a successful treatment. Mean AHI was reduced from 25.1 +/- 9.4 to 14.7 +/- 9.7 (p = 0.003). The PAW increased in its inferior section in 13 patients (p = 0.0001). AHI decreased > or = 30% in 9 patients (p = 0.003) of whom 8 showed increased PAW dimensions. Reduction of AHI was not significantly related to increased PAW dimensions. In conclusion MAD increased PAW dimensions and reduced SA in patients with CHF. The results may indicate that MAD reduces SA by other mechanism than increasing PAW dimensions.


Abstract: Obstructive sleep apnoea syndrome (OSAS) is a common disorder in obesity. Leptin, an adipocyte-derived signalling factor, plays an important role in metabolic control. There is growing evidence that leptin regulation is altered in OSAS. Therefore, the aim of this study was to test the hypothesis that effective treatment will influence leptin levels in OSAS patients. Serum leptin levels were determined in 86 consecutive patients (aged 57.5 +/- 11.0 yrs) with polysomnographically verified OSAS. In addition, leptin levels were reassessed and treatment efficacy was evaluated by polysomnography after 6 months of therapy. Patients were treated with continuous or bilevel positive airway pressure, a mandibular advancement device or conservatively, depending on the clinical symptoms. Mean serum leptin levels did not change with treatment in the whole study group (7.3 +/- 5.0 versus 7.5 +/- 4.8 ng.mL-1), however, leptin levels decreased in effectively treated patients (8.5 +/- 5.0 versus 7.4 +/- 5.1 ng.mL-1) while they increased in ineffectively
treated patients (5.0 +/- 4.0 versus 7.7 +/- 4.1 ng.mL-1). Furthermore, not only was there a significant and independent correlation between the change in leptin levels with treatment and the change in body mass index, but also with the change in apnoea/hypopnoea index. Effective treatment of sleep-disordered breathing may have significant effects on leptin levels in obstructive sleep apnoea syndrome patients. Changes in leptin levels are related to changes in apnoea/hypopnoea index in obstructive sleep apnoea syndrome patients.


Abstract: The aim of this prospective, randomized study was to analyze dental and skeletal side effects after 4 years of treating obstructive sleep apnea (OSA) patients with a mandibular advancement device (MAD) compared with uvulopalatopharyngoplasty (UPPP). With the appliance in position, the mandible was advanced 50% of maximum protrusion capacity (ie, 4-6 mm); the vertical opening between the incisal edges was, on average, 3 mm. Thirty patients in the MAD group and 37 in the UPPP group completed the 4-year follow-up. There were no differences between the MAD and the UPPP groups in any of the dental or skeletal variables measured after the 4-year treatment period. In the MAD group, small but statistically significant changes were found: there was a posterior rotation of the mandible (mandibular line [ML]/nasion-sella line [NSL]) (mean 0.5 degrees [95% confidence interval (CI) 0.1-0.8 degrees]). Correlated to the posterior rotation of the mandible, the distances incision superius ML, incision superius-NSL, and incision inferius-NSL increased by means (95% CI) of 0.7 (0.5-1.2), 0.8 (0.4-1.1), and 1.3 (0.8-1.8) mm, respectively. Overjet and overbite did not change significantly, nor was there a significant change in the mandibular length. The observed changes were considered clinically insignificant because overbite and overjet stayed within normal limits. Only the vertical position of the maxillary incisors in relation to ML changed to the extent that the 95% CI of the mean for the change was outside that of the mean of the change in the UPPP group and measurement error. Treatment of OSA with a dental appliance is probably a lifelong process, and long-term follow-up studies should therefore be undertaken to control both the treatment effect on OSA and the side effects on the masticatory system.

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LA - eng
PT - Clinical Trial
PT - Comparative Study
PT - Journal Article
PT - Randomized Controlled Trial
SB - D
SB - IM


Ref ID: 57
Keywords: Female/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Orthodontic Appliance Design/Orthodontic Appliances/Patient Compliance/Questionnaires/Sleep Apnea,Obstructive/physiopathology/therapy
Reprint: Not in File
Abstract: The present study investigated the effectiveness of an intra-oral mandibular advancement device in the treatment of patients with obstructive sleep apnoea (OSA) who could not tolerate or who had failed to comply with continuous positive airway pressure (CPAP). Thirty-five patients diagnosed by sleep study as suffering from OSA, who had either been unable to tolerate or had been non-compliant with CPAP treatment, were included in the study. The subjects completed an Epworth sleep questionnaire. The subjects then had an oral appliance made. After using the appliance for 3 months, the patients repeated the questionnaires and had a repeat sleep study performed with the oral appliance in situ. Thirty-one subjects completed the investigation. Mean AHI pre- and post-study were 26.64 and 24.06, respectively (P > 0.05). Mean Epworth scores pre- and post-study were 16.32 and 14.64, respectively (P > 0.05). Those patients with a pre-study AHI < 20 (n = 23), however, did significantly better with the appliance (P < 0.0001). Those patients with a pre-study AHI > 20 did not benefit from this device (P > 0.05). The main problems encountered were initial jaw discomfort in 18 patients and dry mouth in 11 patients (both of which improved with continued usage). It was concluded that the type of appliance used in this study can be recommended for those with mild OSA who are unable to tolerate CPAP.

Notes: DA - 20030519
Mandibular advancement devices provide a therapeutic option for obstructive sleep apnea syndrome (OSAS). Clinical improvement has been proven in different available studies, mainly on nocturnal respiratory events and quality of sleep. Less snoring has been noted by bed partners and objective studies have demonstrated a decrease in snoring frequency and intensity. The effects of these appliances on upper airways resistance syndrome is not yet well documented. The significant clinical improvement is secondary to the decrease in the occurrence of apneas and hypopneas. Polysomnographic improvement criteria with an apnea hypopnea index less than 10 per hour has been noted in certain cases, although no improvement or even worsening was noted in other cases. Sleep architecture has also changed in these patients, with a decrease in the time spent in stages 1 and 2, and an increase in the time spent in stages 3, 4 and rapid eye movement sleep. Micro-arousals are also reduced in number. Somnolence and loss of attention are improved; these have been evaluated subjectively or by a well known and approved somnolence scale. In some cases a test for vigilance was done. Our results are identical to those published in the different studies concerning respiratory events and sleep architecture.

Medical management of patients with obstructive sleep apnea syndrome (OSAS) implies a multidisciplinary organization. Dietary advice is always needed because the great majority of these patients are significantly overweight. Drinking alcoholic beverages before bedtime and smoking must be advised against. Re-learning good sleeping habits is also necessary for certain patients with a chronic disorder. In patients with a mild to moderate OSAS, or whose diagnostic tracing demonstrates position-related respiratory events, it may be useful to avoid dorsal decubitus when sleeping. Sedatives should of course be totally avoided. Drug treatment for OSAS has generally been disappointing, but new serotoninergic receptor antagonists offer new possibilities. Medical management of associated conditions such as hypothyroidism must also be an integral part of the long term treatment of OSAS. The gold standard treatment remains continuous nocturnal positive pressure ventilation with proven efficacy largely demonstrated in several controlled trials.
showing often spectacular response within days. Prescription is guided by the intensity of the clinical diurnal and nocturnal symptoms, better results being obtained in patients with a high index of respiratory events. For patients with mild to moderate disease (index < 30) or for patients with severe disease who do not tolerate positive pressure ventilation, surgery or a mandibular advancement device should be considered.

Notes: DA - 20021218
IS - 0035-1768 (Print)
IS - 0035-1768 (Linking)
LA - fre
PT - English Abstract
PT - Journal Article
PT - Review
RN - 0 (Hypnotics and Sedatives)
RN - 0 (Serotonin Antagonists)
SB - D
SB - IM


Ref ID: 60
Keywords: Adult/Aged/Equipment Design/Female/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Oxygen/blood/Polysomnography/Sleep Apnea Syndromes/therapy/Snoring/Treatment Outcome
Reprint: Not in File

Abstract: In the treatment of snoring (SN) and sleep-related breathing disorders (SRBD), mandibular advancement devices (MAD) are of increasing importance. Their mode of action is based on the advancement of the mandible, thereby increasing various upper airway dimensions and thus airway patency and airflow during sleep. The aim of the present study was to investigate efficacy and tolerability of an individually fitted MAD on 11 patients (10 males, 1 female), mean age 57 years, using sleep laboratory methods in 3 subsequent nights (adaptation-, baseline-, treatment night). The MAD consists of 2 separate parts that attach to both dental arches. On occlusion the upper maxillary part with a protruding cone meets an inclined plane of the lower mandibulary part, thereby forcing the mandible to advance. 10 patients (6 with obstructive sleep apnea, 3 with obstructive hypopnea and 1 primary snorer) tolerated the MAD well; one patient (primary snorer) removed the MAD after 1 hour. Regarding the target variable, the snoring index (SI), confirmatory statistics demonstrated a significant improvement from 108 to 53/h sleep, though normalisation could not be achieved. Descriptive data analysis showed significant improvement of the apnea-hypopnea index (AHI) from 15 to 5.5/h and of the oxygen desaturation index (O2-DI) from 21 to 13/h sleep. Arousal variables and periodic leg movement index (PLMI) improved as well. Objective sleep efficiency and subjective sleep- and awakening quality remained unchanged. Thus, besides the good therapeutic efficacy (the medians of improvement of the SI, AI, AHI, O2-DI and PLMI were 37, 48, 53, 51 and 29%, respectively), acute acceptance of the MAD was also satisfactory. Last but not least our present study showed once more the necessity of an adaptation night, as from the first to the second sleep laboratory night respiratory indices deteriorated significantly.

Notes: DA - 20021105
IS - 0043-5325 (Print)
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LA - ger
PT - English Abstract
PT - Evaluation Studies
PT - Journal Article
RN - 7782-44-7 (Oxygen)
SB - IM

Ref ID: 61

Keywords: Adult/Aged/Cephalometry/Equipment Design/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Prognosis/Risk Factors/Sleep Apnea Syndromes/etiology/therapy/Treatment Outcome

Reprint: Not in File

Abstract: BACKGROUND: The mandibular advancement device (MAD) is accepted as an additional treatment option for snoring and mild obstructive sleep disorders. Its therapeutic efficacy can only be verified through nocturnal polysomnography with the appliance in situ. The relevance of the craniofacial skeletal and soft-tissue structures as an etiological cofactor is controversial. While the lateral cephalogram of the facial skeleton is of no direct diagnostic relevance, it remains unclear to what extent cephalometric assessment can provide prognostic information to better ensure treatment success with an MAD. METHODS AND RESULTS: This study is based on the evaluation of 57 patients diagnosed polysomnographically with obstructive sleep apnea (OSA). The patients were treated primarily with a modified activator; after 6-12 weeks, control polysomnography was carried out in the sleep laboratory. The cephalometric variables were analyzed using a multivariate regression procedure with the response variable of treatment outcome. In addition to a horizontal craniofacial morphology, the downward and forward posture of the hyoid is a prognostic variable for effective therapy with an MAD.


Ref ID: 62

Keywords: Adult/Aged/Follow-Up Studies/Humans/Magnetic Resonance Imaging/Mandible/pathology/physiopathology/surgery/Mandibular Advancement/instrumentation/Middle Aged/Patient Compliance/Pharynx/Polysomnography/Predictive Value of Tests/Prospective Studies/Severity of Illness Index/Sleep Apnea,Obstructive/Treatment Outcome

Reprint: Not in File

Abstract: In obstructive sleep apnoea syndrome (OSAS), prosthetic mandibular advancement devices (MAD) seem to be a promising treatment alternative to conventional continuous positive airway pressure therapy. Unfortunately, while they are effective in some patients, they are ineffective in others or may even worsen OSAS. At present, it is not known whether predictors can be defined which allow for estimation of the potential effect of oral appliances on the severity of OSAS. Clinical and polysomnographical efficacy of a MAD was evaluated in 15 patients with OSAS. In addition, ultrafast magnetic resonance imaging (MRI) of the pharynx was performed in 13 of these patients at rest during transnasal shallow respiration and during performance of the Muller manoeuvre, both with and without the MAD, and the site of closure was determined. The MAD reduced the mean apnoea/hypopnoea index (AHI) from 19.8+/-14.5 to 7.2+/-7.4 x h(-1). Seven subjects (53.8%) had at least a 50% reduction in AHI to a value <10 x h(-1) with the MAD, whereas the MAD was ineffective in six patients. Five of the seven treatment responders had no significant pharyngeal obstruction during the manoeuvre with the device, while all of them had pharyngeal obstruction when not equipped with the device. Four of the six patients with treatment failure had a single velopharyngeal obstruction and two a combined obstruction of the velo- and glossopharynx during the Muller manoeuvre while wearing the device. The results of this study suggest that airway patency during the Muller manoeuvre while wearing a mandibular advancement device may be predictive of the success of obstructive sleep apnoea syndrome treatment with a mandibular advancement device.

Abstract: This article describes the problems of snoring and obstructive sleep apnoea, together with an outline of treatment options. The Glasgow approach, whereby patients are investigated at a sleep clinic and a custom-made mandibular advancement device is made in semi-soft material, is also described. We have demonstrated the acceptability and effectiveness of a simple appliance in patients with varying dental states, some with simple snoring and some with mild to moderate sleep apnoea. Our experience relates to around 260 patients, extending over a period of 4 years with good success. The simple intraoral device is recommended as a first line of approach for patients with problem snoring.

Notes: DA - 20010808
IS - 0305-5000 (Print)
IS - 0305-5000 (Linking)
LA - eng
PT - Journal Article
SB - D


Abstract: STUDY OBJECTIVES: To evaluate the long-term effects on apneas and sleep and the tolerability of a mandibular advancement device in patients with obstructive sleep apnea. DESIGN: Prospective study. SETTING: Department of Respiratory Medicine, University Hospital, Umea, Sweden. PATIENTS: Thirty-three consecutively treated patients. INTERVENTIONS: Individually adjusted mandibular advancement devices. Measurements and results: Polysomnographic sleep recordings on 1 night without the device and 1 night with the device were performed after 0.7 +/- 0.5 years (mean +/- SD) and after 5.2 +/- 0.4 years from the start of treatment. Nineteen of the 33 patients experienced a short-term satisfactory treatment result with an apnea-hypopnea index of < 10 events per hour and a satisfactory reduction in snoring. Fourteen patients were regarded as being insufficiently treated with the device. Seventeen of the short-term satisfactorily treated patients (90%) and 2 of the remaining patients continued treatment on a long-term basis. The apnea-hypopnea index was reduced by the device from 22 +/- 17 to 4.9 +/- 5.1 events per hour (p < 0.001) in these 19 long-term treatment patients, which did not differ from what was found at the short-term follow-up visits in these patients. Patients with their devices replaced or adjusted experienced a better long-term effect than patients still using their original devices (p < 0.05). CONCLUSIONS: The long-term effect and tolerability of a mandibular advancement device are good in patients who are recommended the treatment on the basis of a short-term sleep recording, provided that the device is continuously adjusted or replaced with a new one when needed. A short-term follow-up is valuable in the selection of patients who will benefit from long-term treatment with a mandibular advancement device.

Notes: DA - 20010713
IS - 0012-3692 (Print)
IS - 0012-3692 (Linking)
LA - eng

Ref ID: 65

Abstract: We report on a 41-year old patient who complained of loud snoring, excessive daytime sleepiness and chronic nasal obstruction. Clinical findings were septal deviation and enlarged turbinates, tonsillar hypertrophy with velar webbing and pharyngeal narrowing. Polysomnography revealed severe obstructive sleep apnoea syndrome with an apnoea-hypopnoea index (AHI) of 51.7/h. As the patient refused nCPAP therapy, we performed septoplasty with conchotomy and an uvulopalatopharyngoplasty with tonsillectomy. Snoring and excessive daytime sleepiness disappeared completely and the AHI decreased to 31.1/h. The mandibular advancement device Snorban was subsequently fitted. We found a complete resolution of OSAS. The AHI was 4.4/h.

The postsurgical polysomnographic results were stable two years after surgery. However, the patient discontinued using the oral device as he did not feel any additional benefit when using it. The combination of UPPP and mandibular advancement device can resolve a severe OSAS


Ref ID: 66

Abstract: In this study the fabrication of a simplified mandibular advancement device for sleep apnea syndrome was described. Its effect on respiratory function and sleep quality variables was evaluated polysomnographically in 256 patients with sleep apnea syndrome and snoring. Polysomnographic recordings were performed twice, before and after insertion of the oral appliance. The mean apneahypopnea index (AHI) decreased significantly (p < 0.0001) with the appliance to 18.2 from 43.2 without it. Responders defined by AHI < 10 were 54% and those defined as a 50% decrease of AHI were 66%. Oxygen saturation, duration of apnea, sleep efficiency, and total arousal were improved significantly after treatment without major side effects. The device improved significantly the respiratory function and sleep quality in patients with sleep apnea syndrome. Compliance was about 90% followed for 2.5 years. This appliance offers some advantages over other therapies because it is noninvasive, easy to fabricate, and well accepted by patients

Notes: DA - 20010621
IS - 0935-8943 (Print)
IS - 0935-8943 (Linking)
LA - ger
PT - Case Reports
PT - English Abstract
PT - Journal Article
SB - IM

Notes: DA - 20010205
IS - 0886-9634 (Print)
IS - 0886-9634 (Linking)
LA - eng
PT - Clinical Trial

Reprint: Not in File

Abstract: This study describes the technical steps for the making of a mandibular advancement device for sleep disordered patients (apnea index < 10). In a second part of the study, a group of 21 patients with sleep disordered breathing treated successfully with a mandibular advancement device is compared to a homologous control group. The experimental group showed cephalometric characteristics approaching those seen in patients with sleep apnea syndrome. The mandibular advancement device moved the mandible forward (SNB angle increases by 1.7 degrees) and downward (mandibular plane angle increases by 3 degrees, which can be related to the 7.4 mm anterior vertical height increase). The hyoid bone adopted a more distant position from the cervical vertebrae. Important individual variations were seen among the patients for the optimal repositioning of the mandible.

Notes: DA - 20010201
IS - 0078-6608 (Print)
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LA - fre
PT - Clinical Trial
PT - Controlled Clinical Trial
PT - Journal Article
SB - D
SB - IM


Reprint: Not in File

Abstract: Objective: To compare three different oral appliances: a mandibular advancement device (Snoreguard), a tongue retaining device, and a soft palate lift, for treatment of severe obstructive sleep apnea syndrome (OSAS). Background: Oral appliances are therapeutic options for patients with OSAS. Methods: Eight patients with a mean apnea hypopnea index (AHI) of 72.1 (SD +/- 39.9) were studied. Polysomnographic measures during each of the treatment nights were compared to baseline. Results: Eight out of 8 patients completed the mandibular advancement device (MAD) night; 5/8 tolerated the tongue retaining device (TRD); only 2/8 could sleep with the soft palate lift (SPL) in place. Improvement using the MAD reached significance: overall AHI (mean +/- SD) decreased from 72.1 +/- 39.9 at baseline to 35.5 +/- 39.4 with the appliance in place (P<0.02). There was a non-significant increase in slow wave sleep (SWS) from 9.6% +/- 8.7 to 14.4% +/- 10.5 with the MAD in place. In five responders, the mean AHI decreased from 60.0 +/- 36.6 to 9.0 +/- 4.8; all were subjectively improved, using the MAD at 1 year follow-up. However, three non-responders had persistence of AHI > 40. With the TRD, AHI decreased from 50.3 +/- 18.9 at baseline to 43.5 +/- 32.5 (ns). The SPL was not effective with an AHI at baseline of 52.4 +/- 8.0, and 47.3 +/- 31.0 with the device in place (ns), and not well tolerated. Conclusions: A mandibular advancement device is an effective treatment alternative in some patients with severe OSAS. In comparison, the tongue retaining device and the soft palate lift do not achieve satisfactory results.

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Abstract: Our purpose was to compare the effectiveness and side effects of a novel, single-piece mandibular advancement device (OSA-Monobloc) for sleep apnea therapy with those of a two-piece appliance with lateral Herbst attachments (OSA-Herbst) as used in previous studies. An OSA-Monobloc and an OSA-Herbst with equal protrusion were fitted in 24 obstructive sleep apnea patients unable to use continuous positive airway pressure (CPAP) therapy. After an adaptation period of 156 +/- 14 d (mean +/- SE), patients used the OSA-Monobloc, the OSA-Herbst, and no appliance in random order, using each appliance for 1 wk. Symptom scores were recorded and sleep studies were done at the end of each week. Several symptom scores were significantly improved with both appliances, but to a greater degree with the OSA-Monobloc. Epworth Sleepiness Scale scores were 8.8 +/- 0.7 with the OSA-Herbst, and 8.6 +/- 0.8 with the OSA-Monobloc devices, and 13.1 +/- 0.9 without therapy (p < 0.05 versus both appliances). The apnea/hypopnea index was 8.7 +/- 1.5/h with the OSA-Herbst and 7.9 +/- 1.6/h with the OSA-Monobloc device, and 22.6 +/- 3.1/h without therapy (p < 0.05 versus both appliances). Side effects were mild and of equal prevalence with both appliances. Fifteen patients preferred the OSA-Monobloc, eight patients had no preference, and one patient preferred the OSA-Herbst device (p < 0.008 versus OSA-Monobloc). We conclude that both the OSA-Herbst and the OSA-Monobloc are effective therapeutic devices for sleep apnea. The OSA-Monobloc relieved symptoms to a greater extent than the OSA-Herbst, and was preferred by the majority of patients on the basis of its simple application.

Abstract: Mandibular advancement device (MAD) represents a therapeutic option for simple snoring to obstructive sleep apnea syndrome (OSAS). The different available studies report an improvement either on nocturnal respiratory events or on the quality of sleep. The decrease in the intensity of snoring is confirmed by the patient's partner and by objective studies. For the time being the effects of these mandibular advancement devices on the upper airway resistance syndrome has not yet been well documented. The significant clinical improvement is secondary to the decrease in apnea hypopnea index (AHI). A polysomnographically proved cure has been reported with AHI < 10/h. Sleep architecture is also improved with wearing MAD demonstrating a decrease in the time passed in stage 1 sleep and an increase in slow wave sleep and rapid eye movement sleep (REM). A decrease in microarousals
index has been shown. Daytime vigilance disorders are subjectively and objectively less remarkable. Then MAD can be beneficial for mild to moderate SAOS.


Keywords: Adult/Aged/Equipment Design/Female/Follow-Up Studies/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Oxygen/blood/Patient Satisfaction/Polysonmography/Sleep Apnea,Obstructive/therapy/Snoring/diagnosis/Treatment Outcome

Reprint: Not in File

Abstract: Oral appliances are used to treat snoring and sleep apnea. Yet, their success cannot be predicted without a therapeutical trial. This uncertainty and the high prices of the appliances are the reasons for their limited use. We tested a cheap, custom fit mandibular advancement device (SnorBan) for the treatment of sleep disordered breathing in order to assess its efficacy. 39 consecutive patients (51.1 +/- 9.2 years, BMI = 27.4 +/- 4.5 kg/m2) with different degrees of sleep disordered breathing (AHI = 16.6/h +/- 15.6/h) received the device after a thorough clinical examination. After getting used to the device a second polysomnography was performed. The AHI improved significantly from 16.6/h to 8.2/h (P < 0.01) in the whole group. The only patient who became worse could not get used to the device. Time with snoring dropped significantly from 16.3% to 6.6%, 59.1% of the sleep apnea patients were successfully treated as their RDI dropped below 10/h. The sleep efficiency remained unchanged. Slow wave sleep and REM-sleep increased significantly from 12% to 16% (P < 0.05). The overall compliance was 75%. The custom fit mandibular advancement device Snorban is a cheap and effective treatment for a number of patients with snoring and sleep apnea. The oral appliance is proven to be a useful and simple, non-surgical treatment option.

Polysomnographic follow-up is mandatory as breathing may worsen with the device while asleep.


Keywords: Adult/Airway Resistance/physiology/Elasticity/Equipment Design/Female/Humans/Male/Mandibular Advancement/instrumentation/Middle Aged/Oropharynx/physiopathology/Polysonmography/Sleep Apnea,Obstructive/etiology/therapy/Treatment Outcome

Reprint: Not in File

Abstract: Oral mandibular advancement devices are becoming an increasingly important treatment alternative for obstructive sleep apnea (OSA). The first aim of the study was to determine whether a new oral elastic mandibular advancement device (EMA) prevents pharyngeal airway closure during sleep in patients with OSA. The second aim of the study was to determine if the polysomnographic response to the oral mandibular advancement device was dependent on the site of airway closure. Overnight polysomnograms were performed in 28 untreated OSA subjects with and without EMA. A third
polysomnogram was performed in 12 of the subjects to determine the site of airway closure without the device. Site of airway closure above or below the oropharynx was determined by measuring the respective presence or absence of respiratory fluctuations in oropharyngeal pressure during induced occlusions in non-rapid eye movement (NREM) sleep. Mean apnea-hypopnea index (AHI) was 52.6 +/- 28.2 (SD) events/h without the device and 21.2 +/- 19.3 events/h with the device. Nineteen subjects (68%) had at least a 50% reduction in AHI with the device. The change in AHI with the device (AHI without device - AHI with device) was directly related to the AHI without the device. All three subjects with airway closure in the lower pharyngeal airway had a greater than 80% reduction in AHI with the device. Two of the nine subjects with airway closure in the velopharynx had a similar therapeutic response. The results show the effectiveness of EMA in the treatment of OSA. The results also indicate that polysomnographic severity of OSA and the site of airway closure should not be used to exclude patients from this oral device treatment.


Ref ID: 73
Keywords: Adult/Aged/Humans/Mandibular Advancement/instrumentation/Middle Aged/Odds Ratio/Polysomnography/Sleep Apnea Syndromes/therapy/Supine Position/Treatment Outcome
Reprint: Not in File
Abstract: STUDY OBJECTIVE: To evaluate the effect of a mandibular advancement device in patients with supine-dependent sleep apnea and patients with non-supine-dependent sleep apnea. DESIGN: Prospective study. SETTING: Department of Respiratory Medicine, University Hospital, Umea, Sweden. PATIENTS: Twenty-six patients with obstructive sleep apnea. INTERVENTION: Individually fabricated and adjusted mandibular advancement devices. MEASUREMENTS: Overnight polysomnographic sleep recordings with and without the device. Supine-dependent sleep apnea was defined when the supine apnea-hypopnea index was > or = 10, together with a lateral apnea-hypopnea index of < 10. Non-supine-dependent sleep apnea was considered when the lateral apnea-hypopnea index was > or = 10. RESULTS: In 12 patients with supine-dependent sleep apnea, the device reduced the supine apnea-hypopnea index from a median of 41 (range, 16 to 70) to 5.9 (range, 0.0 to 15) (p < 0.01). In 14 patients with non-supine-dependent sleep apnea, the treatment reduced the supine apnea-hypopnea index from 44 (range, 1.8 to 73) to 21 (range, 6.3 to 60) (p < 0.05) and the lateral apnea-hypopnea index from 21 (range, 12 to 70) to 4.5 (range, 0.0 to 31) (p < 0.01). The odds ratio for a successful apnea reduction to an apnea-hypopnea index of < 10 in both the supine and the lateral positions was 30 for supine-dependent sleep apnea adjusted for age, obesity, mandibular advancement, and mandibular opening (p < 0.01). CONCLUSION: Successful apnea reduction with a mandibular advancement device is highly related to supine-dependent sleep apnea.

Abstract: The aim of the present study was to evaluate whether the outcome of treatment using an intraoral mandibular advancement device in patients with obstructive sleep apnoea is associated with the mandibular morphology. The effects of the device on apnoeas and sleep were evaluated in 32 men with obstructive sleep apnoea in continuous polysomnographic sleep recordings including body position, during one night without the device and one night with it. Mandibular morphology variables were measured on cephalograms. The odds ratio for a supine apnoea-hypopnoea index of below 15 during treatment was 17 for a mandibular plane angle of 38 degrees or below, and 26 for a lower anterior face height of less than 73 mm. The outcome of treatment in the lateral sleep position was unrelated to any mandibular morphology variable. Patients with supine-dependent sleep apnoea defined by a supine apnoea-hypopnoea index of 10 or above and a lateral apnoea-hypopnoea index of below 10 had an odds ratio of 7 to have an orthognathic mandible with an SNB angle of 78 degrees or above. The present study suggests that a successful apnoea reduction using a mandibular advancement device is associated with a normal mandibular plane angle and a small lower anterior face height.

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IS - 0909-8836 (Print)
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LA - eng
PT - Comparative Study
PT - Journal Article
PT - Research Support, Non-U.S. Gov't
SB - D
SB - IM


Abstract: OBJECTIVE: To evaluate the effects of a mandibular advancement device on apnoeas and sleep in mild, moderate, and severe obstructive sleep apnea. DESIGN: Prospective study. SUBJECTS: Forty-four of 47 patients included. INTERVENTION: Individually adjusted mandibular advancement devices. MEASUREMENTS: Polysomnographic sleep recordings for 1 night without the device and 1 night with it, with a median of 1 day and no changes in weight, medication, or sleep position between the recordings. RESULTS: The device reduced the median obstructive apnea-hypopnea index from 11 (range, 7 to 19) to 5 (range, 0 to 17) (p<0.001) in 21 patients with mild sleep apnea, from 27 (range, 20 to 38) to 7 (range, 1 to 19) (p<0.001) in 15 patients with moderate sleep apnea, and from 53 (range, 44 to 66) to 14 (range, 2 to 32) (p<0.05) in 8 patients with severe sleep apnea. The arousal index decreased and the sleep stage patterns improved in all severity groups. Twenty-eight of 44 patients were successfully treated with an obstructive apnea-hypopnea index of below 10 and a subjective reduction in snoring. Nine of 16 patients with treatment failure still reported a reduction in snoring. The success rate correlated inversely to the disease severity (r=-0.41; p<0.01). CONCLUSIONS: A mandibular advancement device reduces apneas and improves sleep quality in patients with obstructive sleep apnea, especially in those with mild and moderate disease. A follow-up sleep recording during treatment is necessary because of the risk of silent obstructive apneas without subjective snoring with the device.

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Abstract: Treatment options for obstructive sleep apnea (OSA) may involve potential side effects or discomfort; nasal continuous positive airway pressure (CPAP) may not be tolerated by 25% of patients. We therefore sought to determine the efficacy of mandibular advancement as a treatment for OSA, and to investigate whether clinical and radiographic parameters can predict the response to this treatment. Sixteen male and 3 female subjects with documented OSA who had failed or been unable to tolerate nasal CPAP underwent baseline polysomnography and cephalometry, and were then fitted with a removable Herbst appliance to achieve forward mandibular advancement during sleep. All subjects then underwent a second cephalometric evaluation and polysomnography with the appliance in place. Fourteen of 15 subjects demonstrated significant improvement in the degree of OSA, based on the apnea-hypopnia index (AHI) (34.7 +/- 5.3 to 12.9 +/- 2.4 events/h, p < 0.002). Comparison of pre- and posttreatment cephalometric values revealed no significant change in the posterior airway space (PAS) despite a reduction in mean AHI. There was a significant decrease in the mandible-hyoid distance (MP-H) with treatment for the group as a whole. When the study population was evaluated on the basis of a successful response to mandibular advancement (posttreatment AHI < 10), the baseline MP-H was found to be significantly shorter in the responders than in nonresponders. MP-H after mandibular advancement was likewise shorter in responders than in nonresponders. In addition, the soft palate length (PNS-P) showed a significantly greater shortening in responders after treatment.(ABSTRACT TRUNCATED AT 250 WORDS)