Maxillomandibular advancement for treatment of obstructive sleep apnea

I congratulate AlSaty et al for their article in October 2020 (AlSaty G, Xiang J, Burns M, Eliliwi M, Palomo JM, Martin C, et al. Follow-up observation of patients with obstructive sleep apnea treated by maxillomandibular advancement. Am J Orthod Dentofacial Orthop 2020;158:527-34). The research provides valuable information about the airway changes in patients with obstructive sleep apnea syndrome (OSAS) treated with maxillomandibular advancement (MMA).

The authors indicated that the aim of their study was to follow-up airway changes in patients with OSAS treated with MMA procedure with or without genial tubercle advancement. Although the article mentions the cone-beam computed tomography parameters, it does not reflect on the clinical improvement in their sample patients. What was the qualitative outcome of the patient? Because the main purpose of maxillomandibular advancement is to make an improvement in the sleep-disordered breathing and a better quality of life, it is not clear if a follow-up was done on that aspect?

In the discussion, the authors wrote, "The MMA procedure has a higher efficacy for lowering the apnea-hypopnea index."[1] However, they did not mention if the apnea-hypopnea index was lowered in their study sample along with the improvement in the airway observed in the cone-beam computed tomography. It would be more meaningful in terms of clinical application if the authors included how the patients improved clinically. In Table IV, we see that the difference in total airway volume and minimal cross-sectional area between T4 (Follow up visit) and T3 (Immediately after MMA procedure) is significant. So, how did it reflect clinically with the patient's condition? Was there any relapse of OSAS or return of symptoms?

Soumya Narayani Thirumoorthy
New York, NY

Am J Orthod Dentofacial Orthop 2021;159:407-408
0889-5406/$36.00

https://doi.org/10.1016/j.ajodo.2020.11.023

REFERENCE

1. Varghese R, Adams NG, Slocumb NL, Viozzi CF, Ramar K, Olson EJ. Maxillomandibular advancement in the management of obstructive sleep apnea. Int J Otolaryngol 2012;2012:373025.

Authors' response

We appreciate the interest and the insightful comments on our article.

In our sample, we had a total of 25 patients who were diagnosed with moderate to severe obstructive sleep apnea syndrome (OSAS). The inclusion criteria consisted of patients who had pretreatment sleep study reports to confirm the diagnosis of sleep apnea but not posttreatment sleep data. We strongly agree that including posttreatment sleep reports would be more meaningful in terms of clinical application. However, most of the patients in the study were not willing to pursue the posttreatment sleep study because the OSAS symptoms disappeared, and their quality of sleep was significantly improved after the surgical procedure. This was why we were not able to include the posttreatment sleep data in our article.

However, we can share one of the typical cases for which we have the pretreatment and posttreatment sleep report: a 55-year-old male with a chief concern of excessive daytime sleepiness and fatigue. The initial polysomnography (PSG) report showed a moderate OSAS with an apnea-hypopnea index (AHI) of 21.2 events/h, an Epworth Sleepiness Scale score of 12/24, and a body mass index of 25.6 kg/m^2. Two months after the maxillomandibular advancement procedure, another PSG study was performed. Based on the surgical criteria for successful treatment,[1] which includes a >50% reduction of baseline AHI and a posttreatment AHI <20, there was almost a complete resolution of the patient's OSAS with a postoperative AHI of 0.7 events/h and Epworth Sleepiness Scale score of 3. The lowest oxyhemoglobin saturation during sleep was elevated to 97%, and the body mass index decreased to 25.2 kg/m^2.

In our study, a partial loss in oropharyngeal airway space was found during the short-term follow-up visit after the edema regressed. However, all patients reported improvement in the quality of sleep. This finding is consistent with the cephalometric and PSG study by Conradt et al,[2] reporting success in maxillomandibular advancement treatment that was stable over 2 years.

Thank you again for the opportunity to discuss our study. We look forward to a follow-up study with a longer follow-up period and posttreatment sleep study data.

Ghaddy AlSaty
Jun Xiang
Mary Burns
Manhal Eliliwi
Juan Martin Palomo
Chris Martin
Bryan Weaver
Peter Ngan
Morgantown, WVa, and New Hope, Pa, and Cleveland, Ohio

Am J Orthod Dentofacial Orthop 2021;159:407-408
0889-5406/$36.00

https://doi.org/10.1016/j.ajodo.2020.12.005

REFERENCES

1. Elshaug AG, Moss JR, Southcott AM, Hiller JE. Redefining success in airway surgery for obstructive sleep apnea: a meta analysis and synthesis of the evidence. Sleep 2007;30:461-7.
2. Conradt R, Hochban W, Brandenburg U, Heitmann J, Peter JH. Long-term follow-up after surgical treatment of obstructive sleep apnoea by maxillomandibular advancement. Eur Respir J 1997; 10:123-8.

What about the curve of Spee?

A case report by El-Bokle and Abbas (El-Bokle D, Abbas NH. A novel method for the treatment of Class II malocclusion. Am J Orthod Dentofacial Orthop 2020;158:599-611) in the October issue reported 2 cases of Class II malocclusion in which the patients were treated with inclined bite raisers beveled 45° combined with short light Class II intermaxillary elastics, showing improvement in the occlusal and profile relationships in both patients at the end of the treatment. The article was quite interesting and appreciated by us, but we have some doubts. In the bonded inclined bite raisers elastics construction section of the manuscript, it was highlighted that the choice of teeth for the bite raisers depends on the overbite that the patient presents at the beginning of the treatment. In case of a deepbite, the authors suggest placing the bite risers in the premolar region to facilitate the extrusion of the molars. One question would be regarding the Spee curve. Andrews,[1] in his study of the 6 keys of normal occlusion, observed that a normal occlusal presents a flat curve of Spee. This way, a flat occlusal plane should be a treatment goal, and deep curves of Spee are usually corrected in the alignment and leveling phase of treatment. Patients with Class II Division 1 malocclusion have a deep curve of Spee[2] that is associated with an increased deep overbite. So, would posterior bite raisers' placement in the premolar region not make it difficult to correct the curve of Spee because the occlusal forces would create an intrusive force vector? How do you correct the curve of Spee with this method using bonded inclined bite raisers elastics?

Bruno Vieira
Karina Maria Salvatore Freitas
Bauru, São Paulo and Maringá, Paraná, Brazil

Am J Orthod Dentofacial Orthop 2021;159:408
0889-5406/$36.00

https://doi.org/10.1016/j.ajodo.2020.11.025

REFERENCES

1. Andrews LF. The six keys to normal occlusion. Am J Orthod 1972; 62:296-309.
2. Veli I, Ozturk MA, Uysal T. Curve of Spee and its relationship to vertical eruption of teeth among different malocclusion groups. Am J Orthod Dentofacial Orthop 2015;147:305-12.

Authors' response

We thank the authors for their letter and interest in our article. They questioned whether leveling the curve of Spee would be compromised because of using bonded inclined bite raisers on premolars in patients with Class II malocclusion with a deep overbite because of an intrusive force vector on the premolars.

The bite raisers' main effect is a sagittal correction because of their complementary inclination and adjunctive use of short Class II elastics. Therefore, when placed on the first premolars, any intrusive component would be minimal, unlike the use of a flat bite raiser. After correction of the sagittal relationship, the bite raisers are gradually reduced, and seating elastics are used for settling the occlusion during the finishing stage. Therefore, a level curve of Spee is easily established at the end of treatment.

Dalia El-Bokle
Noha Hussein Abbas
Sheikh Zayed City and Cairo, Egypt

Am J Orthod Dentofacial Orthop 2021;159:408
0889-5406/$36.00

https://doi.org/10.1016/j.ajodo.2020.12.006

Bonded occlusal bite raisers for Class II malocclusion

It was a pleasure reading the case report in the October issue reporting a novel method for treating Class II malocclusion (El-Bokle D, Abbas NH. A novel method for the treatment of Class II malocclusion. Am J Orthod Dentofacial Orthop 2020;158:599-611).