

Letters to the editor*

Rapid maxillary expansion to treat halitosis in children: An alternative approach?

Regarding the article "Effect of rapid maxillary expansion on halitosis" published in *AJO-DO* in November 2018 (Sezen Erhamza T, Ozdiler FE. *Am J Orthod Dentofacial Orthop* 2018;154:702-6), we congratulate the authors for their innovative study. The use of a halimeter and organoleptic methods combined with acoustic rhinometry and plaque, gingival, and periodontal indexes to diagnose halitosis in children was very well addressed. Nevertheless, one of the references cited by the authors stated that "it is mandatory to perform a very good anamnesis/history and an objective test in all patients with halitosis complaint."¹ Therefore, we wonder whether the children's own halitosis complaint or the parents' report of their children's halitosis was investigated during the anamnesis to select the patients. If there were reports, for how long did they have halitosis? Did they have true halitosis? Were the children evaluated by an ENT specialist to exclude otolaryngologic and respiratory diseases? Were they selected solely based on the inclusion criteria (ie, maxillary constriction, deep palatal vault, bilateral crossbite, and presence of first premolars and first molars)? Was the halitosis just an additional finding in the case group? The main reason to carry out the rapid maxillary expansion in the patients of the case group was not clear: Was it the halitosis complaint or orthodontic requirements? Other information stated in another reference cited by the authors is that "oral malodour on awakening is common and generally not regarded as halitosis."² Why were all measurements performed in the morning before breakfast, without brushing the teeth? Could the patients have just transient oral malodor rather than true halitosis? In addition, when analyzing Tables I and III, it seems that the control group demonstrated lower scores for halimeter, organoleptic, plaque, and gingival indexes (89.56 ± 26.22 , 1 [1-3], 0.60 ± 0.43 , and 0 [0-1.31], respectively) compared with the case group. Should not both groups have been paired in T0? Although "all subjects received oral hygiene instructions to maintain their usual oral hygiene procedures at every appointment,"³ we hypothesized that perhaps the patients of

the case group were somehow more motivated to improve their oral hygiene because of their orthodontic treatment, as highlighted by the authors in the introduction when referring to citations 18, 19, and 20. We would like to respectfully clarify these questions before advocating rapid maxillary expansion as an alternate approach to treating halitosis in children, with or without orthodontic requirements.

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Am J Orthod Dentofacial Orthop 2019;155:455

0889-5406/\$36.00

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<http://dx.doi.org/10.1016/j.ajodo.2019.01.002>

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Authors' response

First, thank you for your time and consideration in reviewing our paper. Below, please find the requested explanations.

The inclusion criteria did not include halitosis. We only aimed to evaluate whether halitosis values changed. Because there was no previous study on this issue, we did not expect any change. Our findings, however, indicated a significant decrease in halitosis values. Therefore, as you mentioned, detailed research can be conducted with patients who present with halitosis complaints.

The aim of the study was to investigate whether maxillary expansion in patients with maxillary constriction would result in changed halitosis values. Rapid maxillary expansion (RME) was performed in patients with crossbite and maxillary constriction; that is, all were treated for orthodontic reasons, not for halitosis. Only children without respiratory problems (such as influenza, colds, or allergies) were included in the study.

In the literature, halitosis measurements are performed before breakfast and morning tooth brushing.¹⁻⁴

*The viewpoints expressed are solely those of the author(s) and do not reflect those of the editor(s), publisher(s), or Association.

In our study, individuals who met the inclusion criteria of maxillary constriction were selected by means of block randomization. Therefore, no grouping was performed according to halitosis values. Future studies on this subject could take initial halitosis values into account. In addition, oral hygiene training was provided by the same person in the same way regardless of group.

In the study, along with other treatment methods (eg, oral hygiene training, elimination of periodontal diseases, referrals to related medical doctors, providing psychologic support if necessary),^{5,6} the use of RME for patients with halitosis in the presence of maxillary constriction is emphasized. However, it is not recommended that RME be considered for patients who do not require orthodontic treatment. These are totally different statements. A similar example is the treatment of concomitant conductive hearing loss in patients with maxillary constriction. RME helps these cases of hearing loss,⁷⁻¹⁰ but it is not performed for all patients with conductive hearing loss. In conclusion, our findings suggest that we should consider RME as an alternate or additional treatment approach in patients with both maxillary constriction and halitosis.

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Am J Orthod Dentofacial Orthop 2019;155:455-6
0889-5406/\$36.00

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<http://dx.doi.org/10.1016/j.ajodo.2019.01.003>

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Low-level laser therapy increases interleukin-1 β in gingival crevicular fluid and enhances the rate of orthodontic tooth movement

We read with great interest the well performed study in the October issue, "Low-level laser therapy increases interleukin-1 β in gingival crevicular fluid and enhances the rate of orthodontic tooth movement" (Varella AM, Revankar AV, Patil AK. *Am J Orthod Dentofacial Orthop* 2018;154:535-44.e5), on the effects of low-level laser therapy on interleukin (IL) 1 β levels in gingival crevicular fluid and its correlation with orthodontic tooth movement.

As stated in the article,¹ orthodontic tooth movement is a highly complex process defined as an adaptive biologic response to interference in the physiologic equilibrium of the dentofacial structures by an externally applied force,² from both biomechanical and biologic points of view. This stress, which accumulates over time in the periodontal apparatus, can result in a significant reduction in the speed of the tooth movement and in the relative orthodontic treatment length, a condition that sometimes determines the success of the treatment. Among the possible agents for dental movement, low-level laser therapy (LLLT) has been shown to be a valid method that sustains tooth movement by means of the photobiostimulation effect which would allow a greater speed of orthodontic movement.³

The tissue-stimulating effect induced by LLLT is also due to the biologic growth and metabolic changes of soft and hard oral tissues, which stimulates, in the long term, a better bone and tissue neoformation process, which also facilitates a greater shift in the shortest time.⁴ Moreover, the use of LLLT in the orthodontic field has been shown to be effective in tissue biostimulation, with stimulating effects in tissue repair and dental displacement, as well as inhibiting the release of pain mediators related to analgesia.⁵

Therefore, due to the importance of the topic analyzed in the study, we have some comments about some missing points of their detailed and well performed analysis.

As reported by Varella et al,¹ their treated patient presented increased levels of IL-1 β in the experimental teeth treated with LLLT compared with the control canines, with a positive correlation between the IL-1 β levels and the amounts of tooth movement across all time intervals. In this regard, did the authors also analyze the IL-10 levels and the IL-1 β /IL-10 ratio?

Previous investigators have suggested that a higher IL-1 β /IL-10 ratio may be correlated with a