Reviewer’s report


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Reviewer: Mona Sayegh Ghoussoub

Reviewer's report:

Review 1

Dear Author(s),

After going over the article entitled "Evaluation of the changes of orbital cavity volume and shape after Tooth-borne and Bone-born rapid maxillary expansion (RME). A comparative CBCT study using surface-based superimposition and deviation analysis", I would like to address some observations related both to the form and content of the manuscript.

For the originality of the work, the research has a novel approach concerning RME; in one hand in the detection of the effect of this procedure on more distant structures such as the orbital cavities and on the other hand by comparing the impact using two treatment modalities the Tooth-borne and Bone-borne RME in adolescent patients. The literature review comprises a limited number of papers on this topic making the comparison of results somehow reduced. Nevertheless, the work undertaken is of high interest especially with the more frequent use of miniscrew-assisted expanders.

The purpose of this article is basically to assess volumetric and morphological surface changes of the orbital cavity in adolescent patients after RME performed either with tooth-borne or bone-borne appliances. The hypotheses should be formulated as null hypotheses where no changes are expected after expansion neither in the shape or volume of the orbits.

The background is expected to be more elaborated; but some limitations could be eligible seeing that the theme was not much explored in previous researches.

The materials and methods are well focused, expounded in detail and divided in many steps which would be helpful for further studies aiming to compare or complete this research. For the RME, some photos of the expanders could be worth showing to visualize the TB and particularly the BB devices in place. For the intra-observer reliability, it was developed and assessed properly using the intraclass correlation coefficient (ICC) while assessment of the method error was performed using Dahlberg's formula; but for more accuracy, the inter-observer one should have been performed.
Concerning the results, they are explained in a concise and clear fashion, but no data was presented concerning any asymmetry occurring between the right and left orbital side after expansion.

The discussion part compared the results obtained to those of other studies that doesn't have much similarities in objectives with the present one. At the end of this chapter, authors concluded with the statement that "clinicians should not concern with potential side-effects on circummaxillary structures of miniscrew-assisted maxillary expansions", this should be considered with caution because the long-term follow-up was not performed in this study and the BB-RME could be in some instances more aggressive and might have a greater impact on the orbital cavities. As stated previously, the null hypotheses should be stated clearly and answered confirming or not the impact of this procedure on these structures.

The conclusion should be more elaborated explaining the limitation of the study and future perspective. May be a collaboration with a specialist in ophthalmology could be beneficial to assess the clinical relevance.

CORRECTIONS TO CONSIDER:

1- Concerning the title, it is preferable to replace Bone-born rapid maxillary expansion by Bone-borne Rapid Maxillary Expansion (RME).

2- Page 1: In the abstract, for the study design, it will be advisable to add the malocclusion and age of patients briefly.

3- Page 2: Name of the author: Manuel Lagravère.

4- Page 3: line 20: 40 adolescents also add age and malocclusion.

   line 25: give more precision, 6-month after the end of expander activation or a 6-month after the beginning of expander activation

   line 49: do not affect the anatomy or the volume of...

5- Page 4: line 12: describe also the effect on the internasal suture which is important in RME.

   line 19: don't use "we".

   line 21: the effect of RME on orbital cavity should be explained more clearly, ie if it could have a negative effect according to the literature

   line 35: miniscrew in one word
Page 5: More comparison to other studies should be done and the background is not well elaborated in the introduction. In addition, a null hypothesis(es) could be added at the end of this paragraph.

line 34: More precision should be given on the bilateral crossbite, how many teeth at least?

line 39: Eligibility criteria instead of inclusion criteria.

line 39: Age should be figuring with approximately the stage of maturation of the intermaxillary suture.

line 55: Hyrax-type expander.

Page 6: line 5: Figure 1b not related to the expander? Better to add the photos of the expanders.

line 10: how the opening of the intermaxillary suture was confirmed? Clinically by the occurrence of an interincisal diastema, and/or by an occlusal Xray done to show the split, especially that the age goes to 15 years old.

line 17: How was the transverse retention ensured (composite or ligature) and what was the mean opening of the screw (number of turns and amount of mm)

line 25: Even with an ethical committee approval, the necessity of CBCTs at T1 and T2 should be justified. In this instance, the existence of a bilateral crossbite considered as a severe transverse skeletal discrepancy could justify the 3D acquisition (British guidelines and SEDENTEXCT Radiation protection).

line 32: thickness of slices to add.

Page 7: line 17: converted and rendered.

Page 8: line 34: workflow.

line 52: Interexaminer reliability would have been advised in this study.

Page 11: line 5: circumaxillary.

line 52: to affect the architecture of the orbits or the craniofacial anatomy.

Page 13: more caution should be taken because in some cases the expansion could be more much aggressive with regard to the type of Bone-borne RME expander used.

Conclusion: it should much more elaborated explaining the limitation of the study and future perspective. May be a team work with ophtalmologist for example could be more beneficial to assess the clinical relevance. A long follow-up of these patients could be also advised.
References: a pdf copy with all the above-mentioned corrections, in addition to the references one, will be sent to editor and author.

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