Reviewer's report

Title: Three-dimensional quantitative analysis of adhesive remnants and enamel loss resulting from debonding orthodontic molar tubes

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Reviewer: Domenico Dalessandri

Reviewer's report:

The aim of this study, "Three-dimensional quantitative analysis of adhesive remnants and enamel loss resulting from debonding orthodontic molar tubes", is noteworthy and appropriate for publication in "Head & Face Medicine". Several authors investigated this topic, that is still debated and is of interest mainly for orthodontists.

Experimental methods seems to be adequate but not thoroughly described. Data soundness is strictly dependent on methodological accuracy. The discussion could be expanded, and conclusion better focused. It's not possible to clearly identify the main study aim from the title and abstract through the manuscript sections, and consequently writing could be improved, aiming at obtaining a smoother and more readable paper.

Major Compulsory Revisions:

It's important to clearly state main and secondary aims of this study: the main aim is to present a new method for quantitatively analyze dental surface after molar tube debonding? to evaluate enamel loss after molar tube debonding? This directly influence study design appropriateness evaluation.

Methods section need to be expanded, with an accurate description of sample size calculation method, sample selection criteria (enamel of teeth extracted for orthodontic reasons in 12 years old patients is different from enamel of teeth extracted for periodontal reasons in 70 years old patients, for example), sample preparation (teeth cleaning...), sample preparation (determination of the area to be etched, bonding procedure, setting time before storing...). Some pictures of before/after molar tubes debonding, scanning procedure and digital models software analysis and superimposition could be very helpful in clarifying the experimental methods followed.

Discussion section needs to be expanded and better structured: specify if the molar tubes in this study hold a wide or narrow base and discuss how this could impact on experimental results (adhesive thickness is also influenced by base fit to enamel anatomy); analyze how sample preparation, storage, and aging could affect experimental results; compare your results with the study of Ferreira et al. (Clin Oral Investig. 2013) "Qualitative and quantitative evaluation of human dental enamel after bracket debonding: a noncontact three-dimensional optical profilometry analysis"; present advantages and disadvantages of equipments found in the reviewed literature for evaluating debonding pattern and compare
them with the device utilized in the present study.

Minor Essentials Revisions:

Abstract: the "Clinical relevance" paragraph is not coherent with the Journal instruction for authors.

Introduction: every reference must be numbered in order of appearance (Strattman et al. 1996 must be labeled as number 1). The ARI acronym must be reported the first time the "Adhesive remnant index" definition is utilized. The article of Ferreira et al., where both enamel loss and resin remnants were volumetrically evaluated, must be cited after the David et al. (2002) study and discussed in the Discussion section.

Results: specify measurement error and adhesive remnant and enamel loss heights mean value±SD, with max and min value.

Conclusion: the statement "An alternative could constitute leaving composite remnants..." is not directly consequent to study results and must be removed. It could be briefly discussed in the Discussion section.

Discretionary Revisions:
Methods: insert the Company name after "GOM Inspect software".

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests