



CFAO GRADUATE STUDENT POSTERBOARD ABSTRACTS

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Effect of Fixed Orthodontic Appliances on the Presence of Cariogenic Bacteria

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Introduction: The purpose of this study was to use a chair-side saliva test to determine the overall prevalence of high *Streptococcus mutans* levels in orthodontic patients and to determine the prevalence of high *S. mutans* levels as a function of dental crowding and bracket type at four time-points throughout orthodontic treatment.

Methods: 100 patients undergoing orthodontic treatment were selected, among which 35 used conventional brackets and 65 used self-ligated brackets. The chairside saliva assay Saliva-Check Mutans was used to measure each subject at four time-points: immediately prior to bonding - baseline (T0), and at 3 months (T1), 6 months (T2) and 12 months (T3) into treatment. Bacteria levels as well as the amount of crowding were recorded at each time-point. Of the 400 anticipated data collection points, 8 were not recorded due to 6 patients being lost to follow up. A repeated measures model was used to investigate the relationship between bracket type, crowding, and the risk of high bacteria levels. Specifically, a generalized linear mixed-effects model (GLMM) was used to account for the fact that the risk of high bacterial levels intrinsically varies between patients.

Results: Bracket and crowding effects on bacteria levels were found to be non-significant ($P > 0.05$). Only the effect of time was found to be significant, specifically, that 12 months (T3) was different from T0, T1 and T2 ($P < 0.0007$). The overall prevalence of high *S. mutans* levels was found to be 81% at baseline (T0), 78% at 3 months (T1), 68% at 6 months (T2) and 47% at 12 months (T3).

Conclusions: The overall prevalence of high *S. mutans* levels immediately prior to bonding orthodontic brackets was 81% using the Saliva-Check Mutans chairside saliva assay. This prevalence decreased as orthodontic treatment progressed with a statistically significant drop at the 12 month time-point. The effects of bracket type and crowding on high bacteria levels were found to be non-significant. The Saliva-Check Mutans chairside saliva assay may be an effective tool to measure an orthodontic patients' *S. mutans* level prior to treatment.