Abstract

Investigation of the effect of different chlorhexidine mouthwash concentrations on discoloration of lithium disilicate based all-ceramic restorations and indirect composite restorations

Introduction: Chlorhexidine mouthwash is very effective in the prevention and treatment of periodontal disease and caries. It can also cause changes in the teeth. One of these side effects is tooth discoloration, which can cause cosmetic problems.

Materials & Methods: In this study, 72 samples were prepared in two groups A and B. In group A, 36 indirect composite samples were prepared. In group B, 36 samples of lithium disilicate ceramic discs were prepared. After preparation, the samples of groups A and B were randomly divided into three subgroups: 1- control group (distilled water); 2- in the presence of chlorhexidine mouthwash 0.2%; 3- in the presence of chlorhexidine mouthwash 0.12%; The color of the samples was measured and compared in 3 stages.

The samples were first dried with paper towels. Then the samples were placed against a white background and their color was measured initially using CIELab system and spectrophotometer and measuring 3 parameters L, a, b; In the second stage, the samples were placed in solutions and their color was measured in three time intervals of 30 minutes, 6hours and 12 hours.

Results: In indirect composite group, the highest amount of ΔE was equal to 1.17 at 0.2% and 1.11 at 0.12% concentrations($p<0.05$). In lithium di silicate group, the highest amount of ΔE was 1.15 at 0/12% and 0.75 at 0.2% concentration($p<0.05$). To compare the data in each group at different times, repeated sizes test and multivariate test were used. The results showed that except in the subgroup of 0.2% mouthwash in lithium di silicate group, there was no significant difference between the color changes created in different time intervals($p>0.05$). Bonferney's stalking test was used to further investigate the difference in color change in different time intervals in subgroup 0.2% in lithium di silicate group. The results showed that there was a significant difference between the color changes between the two periods of 30 minutes to 6 hours and 6 hours to 12 hours($p<0.05$). ANOVA test was used to compare the color change in different concentrations in both groups, and the results showed that there was no significant difference between the color changes caused by the two concentrations($p>0.05$). Also, ANOVA test was used to compare the color change between the two groups of lithium di silicate

and indirect composite, which showed that except for the period between the initial and 6-hour colors, there was no significant difference in color change between the two groups($p>0.05$). Although most of the ΔE values were significant($p<0.05$), all ΔE's were in a clinically incomprehensible domain.
Conclusion: considering the limitations of this study, it can be concluded that chlorhexidine mouthwash in different concentrations does not lead to color change in samples that is clinically percieptable.
Key words: Indirect composite, lithium disilicate, discoloration, chlorhexidine mouthwash