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BOOK OF ABSTRACTS

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teeth. Furthermore, Pranoya exhibits effectiveness as an antibacterial toothpaste, comparable to other brands tested in the study.

Keywords: toothpaste, antimicrobial effect, salivary pH

SURFACE ROUGHNESS CHANGES OF VACUUM-FORMED RETAINER MATERIALS AFTER DIFFERENT MECHANICAL CLEANING PROCEDURES

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Background: The use of various clear Vacuum Formed Retainers (VFR) is widespread, but there are no comprehensive guidelines on how patients should clean their retainers for optimal aging and plaque removal. Direct comparisons between methods and materials have not been performed. **Objective:** We examined the change in surface roughness of polypropylene (PP) and thermoplastic polyurethane (TPU) materials undergoing various cleaning protocols. **Material and methods:** We conducted a study among individuals who wear vacuum-formed retainers, to understand their cleaning habits. After summarizing responses, we created 4 cleaning groups: toothbrushes only, two different types of toothpaste with toothbrushes, and electric toothbrush with toothpaste. We chose to compare the cleaning protocols used by patients under in vitro conditions to eliminate changes caused by human factors. Samples of retainer materials: Copyplast C and Erkoloc-pro were vacuum-molded onto type IV dental stone models. A self-designed and self-fabricated toothbrush simulator was used for 30 days of brushing, 30s each day. Surface roughness (Ra) of the inner surface was measured using a Mitutoyo SJ-310 profilometer. Statistical analysis included ANOVA and t-tests. **Results :** The initial surface roughness between TPU and PP samples was not significantly different ($p=0.199$). Use of the Colgate Soft toothbrush alone had a significantly different effect ($p=0.02$) on the TPU and PP samples, with the TPU material showing a significant change in surface roughness ($p=0.008$). In addition, the Curaprox Soft toothbrush with Colgate Max White Optic toothpaste significantly altered the surface of the TPU samples ($p=0.04$). Interestingly, the Colgate Max White Optic toothpaste visibly discolored the TPU samples. The Colgate Soft and Medium toothbrushes combined with Elmex Caries Protection toothpaste significantly abraded the surface of the PP samples, with the TPU material being significantly more wear-resistant to the same protocol. Notably, using the Oral-B Pro3 Cross Action electric toothbrush with Colgate Max White Optic toothpaste showed a significant difference between the TPU and PP samples. **Conclusions:** Our results showed that different cleaning procedures affected TPU and PP retainer materials differently. TPU samples generally showed a decrease in surface roughness after most cleaning procedures, while PP samples showed an increase in surface roughness. Curaprox Super Soft and Soft toothbrushes with Elmex Caries Protection toothpaste are recommended for optimal cleaning, as they produce less wear than Colgate toothbrushes. Medium and electric toothbrushes and whitening toothpaste should be used with caution. These findings underscore the importance of cleaning method selection to maintain VFR material integrity and hygiene, thereby improving patient satisfaction.

Keywords: polypropylene,, thermoplastic polyurethane,, retainer,, tooth brushing simulator

EVALUATION OF THE MECHANICAL PROPERTIES OF WHITENING TRAYS BEFORE AND AFTER USAGE

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Background: The mechanical properties of whitening trays are important to ensure comfort and treatment effectiveness. These properties include flexibility, resistance to breakage and durability. The whitening trays need to be flexible enough to adapt optimally to the teeth, yet strong enough resistance to repeated use without deteriorating. Additionally, a good understanding of these properties can help avoid gums irritations or other dental issues associated with the use of whitening trays. **Objective:** This study aims to evaluate the mechanical properties (compression characteristics) of whitening trays under different usage conditions. The secondary objective was to examine alterations in tray parameters based on usage conditions, specifically immersion in whitening solution versus exposure to artificial saliva. **Material and methods:** Twenty-one vacuum-formed trays were divided into three groups: one group immersed in artificial saliva with macrogols, another group treated with whitening solution, and a control group. After 35 hours of storage in sealed containers, the trays were

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