

渗透树脂和多乐氟处理脱矿釉质后的抗酸性和再矿化能力比较

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【摘要】目的 通过观察渗透树脂与多乐氟处理脱矿釉质后其牙齿表面显微硬度和粗糙度的变化, 对两种材料在釉质抗酸性和再矿化能力方面的性能进行评估。**方法** 选择正畸拔除的健康前磨牙 48 颗, 建立釉质表面脱矿模型, 按照不同材料的处理条件随机分为 4 组, A (不做任何处理), B (渗透树脂), C (多乐氟); D (渗透树脂 + 多乐氟), 分别经脱矿液组 (1d, 3d) 和再矿化液组 (7d) 浸泡处理后, 测定牙齿表面的显微硬度和粗糙度。**结果** 不同材料处理脱矿模型后即刻, B、D 组的显微硬度、粗糙度均明显增加 ($P < 0.001$), B、D 组之间无统计学差异 ($P > 0.05$); 而 C 组显微硬度、粗糙度均明显减低 ($P < 0.001$)。继续脱矿 (1d, 3d) 后, 各组的显微硬度均下降, 而粗糙度却明显增加; 再矿化 7d 后, A、C 组显微硬度和粗糙度均显著增加 ($P < 0.001$), B、D 组增加不明显 ($P > 0.05$)。**结论** 渗透树脂具有良好的改善牙齿表面硬度的作用, 但在抗酸性和促进牙齿再矿化方面无明显优势。而氟化物则在抗酸性和促进再矿化方面有突出表现。当两者联合应用时, 可以起到较好协同作用, 明显增强牙齿的硬度、抗酸性和再矿化性能。

【关键词】 渗透树脂 多乐氟 脱矿釉质 表面粗糙度 显微硬度

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A comparative study on acid resistance and remineralization of demineralized enamel after infiltration resin and fluoride treatment

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【Abstract】Objective To evaluate effect of infiltration resin and fluoride treatment on the repair, acid resistance and remineralization of enamel based on the observation of the hardness and surface roughness of enamel carious lesions. **Methods** Used forty-eight human premolars extracted for orthodontic purpose to obtain artificial subsurface lesions. Then artificial enamel caries lesions were divided into four groups. Group A, no treatment; Group B, resin infiltration (Icon); Group C, Duraphat; Group D, resin infiltration + Duraphat. The micro-Vickers hardness test and Talysurf were used to investigate the change in hardness and surface roughness of enamel. Then, each group was randomly divided into two subgroups, one was soaked in demineralization buffer (2.2 mmol/L $\text{Ca}(\text{NO}_3)_2$, 2.2 mmol/L KH_2PO_4 , 50 mmol/L ethylic acid, 1.0 mmol/L NaN_3 , 0.1 mmol/L NaF, pH=4.5) (1 d, 3 d) and the other in mineralization buffer (0.4 g/L NaCl, 0.4 g/L KCl, 0.795 g/L CaCl_2 , 1 g/L urea, 0.005 g/L $\text{Na}_2\text{S} \cdot 2\text{H}_2\text{O}$, 0.78 g/L $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$, pH=6.8) (7 d), and measure the Vickers hardness number (VHN) and roughness of enamel