不同表面处理方式对丙烯酸树脂表面性状和粘接强度的影响

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【摘要】 **目的**　探讨不同表面处理方式对丙烯酸树脂表面性状和粘接强度的影响。**方法**　制备硅橡胶与丙烯酸树脂构成的重叠联合模型。根据树脂条的不同表面处理方式，将模型随机分为 4 组：对照组、MMA 浸润组、喷砂组、MMA 浸润 + 喷砂组。用扫描电镜观察各组树脂处理后的表面形态变化，用粗糙度仪检测其粗糙度，万能材料试验机测定树脂条和硅橡胶之间的粘接强度。**结果**　1. 电镜观察显示，未经处理的树脂条表面打磨痕迹明显，经过 MMA 浸润后，表面出现溶解的痕迹，经过喷砂后，表面粗糙凸凹不平；2. 粗糙度：喷砂组（3.12±0.02）μm 和 MMA 浸润 + 喷砂组（3.11±0.01）μm> 对照组（0.73±0.01）μm 和 MMA 浸润组（0.71±0.01）μm，且差异有统计学意义（$P < 0.05$）；3. 粘接强度：MMA 浸润 + 喷砂组（2.34±0.03）MPa > 喷砂组（2.02±0.01）MPa >MMA 浸润组（1.81±0.02）MPa > 对照组（1.50±0.01）MPa，且差异有统计学意义（$P < 0.05$）。**结论**　MMA 单体浸润与喷砂的处理方式可以使丙烯酸树脂表面的形貌发生变化，更有利于硅橡胶与丙烯酸树脂的结合，获到良好的粘接效果，可在临床推广使用。

【关键词】 丙烯酸树脂　喷砂　MMA 浸润　表面性状　粘接强度　粗糙度

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The influence of various surface treatment methods on the surface properties and bonding strength of acrylic resin

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【**Abstract**】 **Objective**　To study the influence of four kinds of resin surface treatment methods on the surface properties and bonding strength of acrylic resin. **Methods**　First, the silicone rubber /acrylic resin overlap joint model was prepared. Acrylic resin were randomly divided into 4 groups: control group, MMA group, Sandblasting group, MMA infiltration + sandblasting group. The change of surface properties of each resin was observed by scan electron microscope (SEM). The roughness of each group was measured by Hommel W5 portable roughness instrument. The bonding strength between resin and silicone rubber of each group was detected by a universal material testing machine. **Results**　(1) SEM results showed that untreated resin surface had obvious grinding traces, and the trace was dissolved after the infiltration of MMA, and the surface was rough and uneven after sandblasting. (2) The roughness was as follows: the sandblasting group（3.12±0.02）, MMA infiltration + sandblasting group（3.11±0.01) >the control group （0.73±0.01）, MMA infiltration group（0.71±0.01）. The difference was statistically significant ($P < 0.05$). (3) The bonding strength was as follows: MMA infiltration + sandblasting group(2.34±0.03) > sandblasting group(2.02±0.01) >MMA infiltration group(1.81±0.02) > control group(1.50±0.01). The difference was statistically significant ($P < 0.05$). **Conclusion**　MMA monomer

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