

COMPARISON OF GIOMER AND FLUORIDE RELEASING RESIN SEALANTS IN CARIES PREVENTION AMONG PRIMARY MOLARS

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Abstract. Dental sealant is used to prevent caries progression. We aimed to compare the effectiveness of giomer and fluoride releasing resin sealants for preventing caries in primary molars *in vivo*. We conducted a randomized control trial among children aged 2½ -5 years. In each subject, the primary molars on one side of the mouth were treated with giomer sealant and the contralateral primary molars were treated with fluoride releasing resin sealant. The teeth of each child were examined at 1, 3, 6, 9, and 12 months after the sealant was applied. Sealant retention rates and the presence of caries were determined at each visit. Sealant retention was classified into complete retention, partial loss, and complete loss. Caries were classified as being present or not present. Study subjects were chosen from 2 kindergartens. A total of 116 subjects were included in the study. The percentages of subjects with giomer sealant who had complete retention were 73.3%, 39.1%, 19.0%, 16.4%, 14.7% while those with fluoride sealant with complete retention were 96.5%, 87.1%, 76.7%, 75.0%, and 72.4% at 1, 3, 6, 9, and 12 months, respectively. The percentages of subject with giomer sealant who had partial loss of sealant were 23.3%, 46.6%, 42.2%, 42.2% and 41.4% while those with fluoride sealant with partial loss were 3.5%, 12.1%, 21.6%, 21.6%, and 22.4% at 1, 3, 6, 9, and 12 months, respectively. The percentages of students with complete loss of giomer sealant were 3.4%, 21.6%, 38.8%, 41.4%, and 44.0% while those with fluoride sealant were 0%, 0.8%, 1.7%, 3.4%, and 5.2% at 1, 3, 6, 9, and 12 months, respectively. The subjects with fluoride releasing sealant had significantly higher ($p<0.05$) retention rates than those with giomer sealant. The percentages of subjects with fluoride releasing sealant who had progression of caries were 0%, 13.4%, 25.9%, 27.6%, and 28.1% while those who used giomer sealant were 3.2%, 6.3%, 17.1%, 20.7%, and 23.2% at 1, 3, 6, 9, and 12 months, respectively. The percentages of those with fluoride sealant who had caries regression were 0%, 46.6%, 51.9%, 44.8%, and 40.6% and those with giomer sealant were 19.4%, 39.3%, 50.0%, 47.4%, and 47.5% at 1, 3, 6, 9, and 12 months, respectively. Finally the percentages of those with fluoride sealant who had no change in the caries were 100%, 40%, 22.2%, 27.6%, and 31.3% and those who used giomer sealant were 77.4%, 54.4%, 32.9%, 31.9%, and 29.3% at 1, 3, 6, 9, and 12 months, respectively. The results show the fluoride sealant was

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significantly ($p < 0.05$) more effective at preventing caries than giomer sealant. Our results show fluoride releasing resin sealant is more effective at preventing caries and has better retention than the giomer sealant *in vivo* for primary molars.

Keywords: giomer, sealant, *in vivo* efficacy, primary tooth