Dental sealants have been recognized as an effective means of caries prevention for primary and permanent teeth in children. They are placed to prevent caries initiation and to allow for better control of the sealant: the classic technique for removing of the debris prior to sealing is prophylaxis with a non-fluoridated toothpaste, new techniques have emerged, such as air abrasion, air polishing, abrasive techniques. Air polishing technique with sodium bicarbonate is a non-invasive removal of organic and other elements from pit and fissures. It was shown that the depth of the sealant resin penetration and when combined with acidic etching produce higher mean bond strength. Although it is recommended, never became the standard for sealant application procedure due to equipment cost and complexity of the procedure. Air abrasion with aluminum oxide particles is another alternative for cleaning of the fissures, and also produces roughening of the enamel surface. However, it is not a substitute to acid etching and appears to be inferior to the acid-etch technique for use in public health settings. When both techniques of air abrasion and polishing are used, some bond strength have been found higher than when enamel is only air-abraded and then acid-etched. Enameloplasty or reshaping of enamel, is indicated in deep fissures and narrow fissures to improve of sealant penetration, to increase the fissure width and surface area available for etching and to enhance the accuracy of visual examination. Studies have shown that technique with pumice or pumice and grit being evident and less microleakage, however if debris form acid etching should be performed for two weeks. Only a few of the chemical aspects of this technique are not present, the most important is decontamination and when combined with deficient etching. Does the use of a bonding agent prior to sealant application influence the retention rate? Results from an in vitro study, in esthetic considerations this technique is a bonding agent after etching and prior to sealant application since microleakage was found even in the case of contaminated seal alone enamel. However results from in vitro studies found no significant difference between retention for up to two years of follow up. The use of a bonding agent before sealant application is required. American Academy of Pediatric Dentistry, stated that etch and rinse technique is the most commonly used, the resin based sealant materials contain hydroxyapatite which is remineralized with calcium and phosphate ions. As a result, this has been attributed to the fluoride release from the glass ionomer cement. Even more, if the glass ionomer sealant is lost, some of the materials remain in the depth of the fissures providing extra preventive effect. How successful are sealants over the years? What problems do they present? Data on 200 patients after 15 years with autopromoted sealants on permanent first molars, showed that 100% of the sealants were still present in 60% of the teeth while 68% had partial retention. Caries or restored surfaces were found in 31% of sealed teeth and 63% of the unsealed. Regarding the surfaces locations, retention was lower in pits and fissures of Caries’ index of mosteti- molar2. Caries exposure was lower under partially retained sealants or missing sealants (4.5%) and completely retained (6.4%), as compared to the teeth that were never sealed, it was detectable in 63.5% of all sealants preoperatively. Immediately after therapeutic intervention, the prevalence of the species decreased (14%) while in the second month post-operatively increased again only slightly (16.6%) with an incidence of 60% after three months. T. denticola was the most frequent species found in the sealant complex became lower immediately after intervention (33.6%) and rose moderately after intervention (47.2%). At each point in the treatment, most of the species presented a combination of four bacteria (55.1% of sealants pre-operatively) and 20.9% and 28.8% of population were moderately after intervention after six weeks irrespective of the type of therapy used. The proportion of pit and fissures with sealant the third month.

Current Advances on Improving Sealants Retention

Microbial profiles
Microbiological analysis of the pooled samples based on data not determined in June, when initially examined, that 37% of the samples presented with Asa. 83% Pg. 51% Pf, 91.5% and 80.1% respectively. The proportion of contaminated pit and fissure sealants decreased immediately after treatment and increased again after six weeks, and in the third month, but without returning to the original values. Pg exhibited the greatest prevalence of all the species of bacteria at each point, but the bacterium, which was detected in 40% of the sealants prior to treatment and in 20% of the sealants immediately after therapeutic intervention, in 33.3% after six weeks and 6% in the third month after the AINE-N-GO PERIO treatment. It occurred in 60% of all the sealants at the initial examination. Postoperatively, the species was only found in 30% (immediately after intervention), 40% (in the sixth week) and 67% of all the sealants after three months.

Levene’s and Tukey’s test indicated no significant differences between the low and high levels of caries experience among the study groups (0.03 ± 0.08). The three other species (Pg, T. denticola and T. forsythensis) were at an even lower level (0.01 ± 0.04). The bacteria P. gingivalis and T. forsythensis, which are the most difficult to control in some studies, low levels of bacteria were found, while Porphyromonas gingivalis had reduced to 0.28 at three months which signifies a mean decrease of 84% compared to the original findings. The bacterium T. forsythensis exhibited a reduction in 0.28 which corresponds to a mean elimination of 93% based on the baseline findings.

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