



Survey of pediatric dentists concerning dental sealants

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Extremely good dental sealant retention rates have been reported,^{1,2} however, some studies and private dental practices also report less favorable results.³⁻⁵ To improve retention rates, many variations of the original sealant procedure have been reported⁵⁻⁷ and many more have been experimented with in private practices. A water/pumice slurry to prepare the teeth for sealants is still the main cleaning method used today. Other methods are an air slurry polisher, H₂O₂ with an explorer,⁵ or an enameloplasty before sealant placement.⁶⁻⁸ Enameloplasty is the use of a small bur to deepen, widen, and explore the grooves in enamel of posterior teeth.

The use of a bur before sealant placement was first documented in the late 1970s and early 1980s. The empirical reasoning was to clean out debris, to "freshen" the enamel surface, to prevent surface contamination from fluid and debris in the deeper fissures, and to explore the fissures for caries. Simonsen⁸ first mentioned using a small round bur before sealant placement, Le Bell⁶ recommended a high-speed flame diamond, and Shapira⁷ mentioned using a low-speed No. 1 round bur. Shapira⁹ published the only controlled study using mechanical preparation of enamel before placing only a sealant. Shapira's⁹ overall six-year retention rates for teeth not mechanically prepared was 65%, and for mechanically prepared teeth 88%.

The purpose of this report is to present the results of a recent survey of pediatric dentists. The survey examined variables in the sealant treatment procedure, with special inquiry about enameloplasty.

Methods and materials

A survey was mailed to all northern California members of the California Society of Pediatric Dentists (anonymous response). A total of 156 surveys were mailed out with 141 returned—a response rate of slightly more than 90%. For this report only five of the more pertinent questions are presented.

Results

Fig 1 is a composite of three questions. The first question asked what percent of patients have had seal-

ants recommended by age 8 years. Thirty percent of the pediatric dentists recommended sealants for all patients, with almost 90% recommending sealants at least 50% of the time. The second question asked if the dentist would perform an enameloplasty on the first permanent molars, and gave the choices: "yes, no, or ___% of time enameloplasty done". Thirty-seven percent always did enameloplasty, 76% did enameloplasty at least sometimes, but 24% never did enameloplasty. The third question asked what percent of sealants that were placed by another dentist and have been in the mouth for more than 3 years have at least partially failed (failed = any major groove or pit not covered by sealant). This question was subjective and received a range of answers from 0% failures to 100% failures after 3 years.

Fig 2 shows that four bur types (1/4, 1/2, 330, and flame/pointed diamond types) predominate. Twenty-four percent of dentists used 13 other bur types.

Fig 3 gives an approximation of enameloplasty depth utilized. If only one depth was checked the percent is listed as "always used this method." For example, 50% of the pediatric dentists always used just a

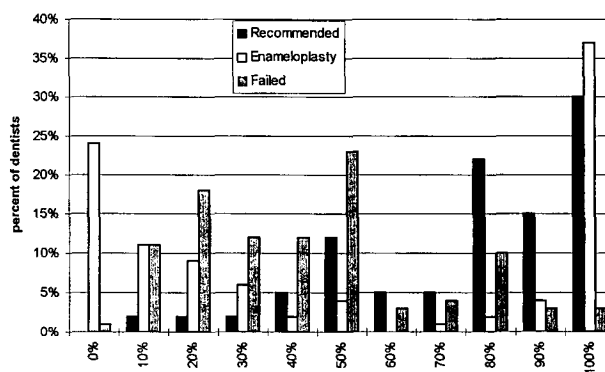


Fig 1. Recommended = Approximately what % of your patients you see regularly have had sealants recommended by 8 years of age?; Enameloplasty = Do you perform an enameloplasty on the first permanent molars? (yes, no, or % of time); Failed = Approximately what % of sealants placed by another dentist that have been in the mouth for over 3 years have at least partially failed (any major groove or pit not covered by a sealant)?

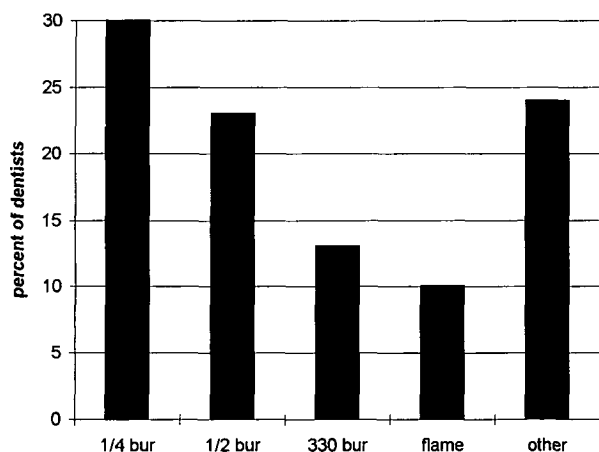


Fig 2. Type of bur used.

light sweep, whereas 29% made a definite preparation to remove all staining. If a percent was listed on the survey then the highest percent stated is charted as "most often used this method". If a dentist recorded using a light sweep 55% of the time, the recording was listed under column 'a'.

Discussion

The 90% response rate can be attributed to the specific group of dentists, a short and simple survey in which all the pediatric dentists had an interest, and an enclosed stamped return envelope.

Certain survey questions were specific and the answers relatively accurate, but many required a percentage as the answer and, therefore, represent an estimate. Many dentists are not doing the simple classical sealant but—to some degree—a preventive resin restoration (PRR).

Even with these complications, the survey does show some definite trends. First, all pediatric dentists were doing sealants, and almost 90% were doing sealants 50% or more of the time (Fig 1). Enameloplasties are done to some extent by approximately 75% of pediatric dentists (Fig 1). This is of interest because two current pediatric textbooks^{10,11} and most manufacturers' instructions do not mention enameloplasty prior to sealant placement. Fig 1 records the percent of failed sealants by other dentists and is subjective. Most dentists do not consciously observe and record failed sealants by other dentists; few pediatric dentists see sealants placed by other dentists and most would not know when those sealants were placed. Twenty-three percent (the highest value) of the respondents felt that 50% of sealants failed after only 3 years. The senior author has been systematically observing sealants done by other dentists for about 5 years, and believes the 3-year failure rate of sealants done in private practice to be at least 50%. The longevity of sealants done in private practice should be investigated systematically.

In the only controlled enameloplasty study,⁹ a #1 low-speed round bur was used. But in this survey only two dentists used only a #1 round bur and it was not

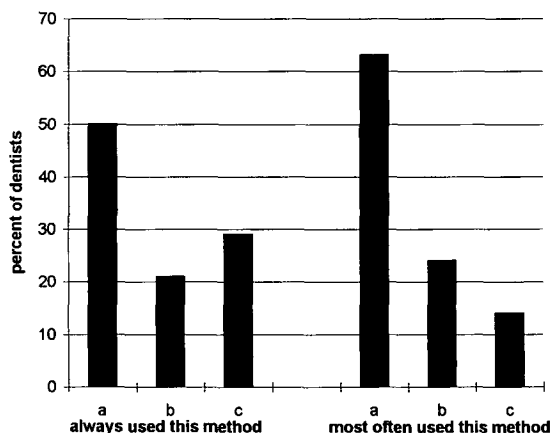


Fig 3. Depth of enameloplasty preparation (check or answer as a % of time). a. light "sweep" of grooves (< 0.5 mm); b. definite preparation of all grooves but do not necessarily remove all staining or "chalkiness" in deep part of grooves; c. definite preparation and essentially remove all staining and "chalkiness" in grooves. At times will touch DEJ or slightly enter into dentin.

stated whether with high or low speed. More than 50% (Fig 2) of the burs used were either a 1/4 or 1/2 round, but 17 types of burs were used.

The depth of enameloplasty preparation presents a subjective question. The tremendous range of enameloplasty depths in the answers reinforces the observation that dentists are not consistent with this procedure.

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