

**THE USE OF PIT AND FISSURE SEALANTS
IN THE NORTH YORK PUBLIC DENTAL PROGRAM**

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Over the past two decades, the incidence of dental caries in schoolchildren has decreased significantly. Much of this decrease is due to a decline of carious lesions of smooth tooth surfaces, resulting in a proportional increase of pit and fissure lesions (Ripa 1985; Weintraub 1989; Mitchell & Gordon 1990; Truhe 1991). The decline in smooth surface caries has largely been attributed to the increased use of fluorides, which is believed to provide less protection to the occlusal surfaces of teeth. A proven method for reducing the incidence of occlusal, pit and fissure decay is the use of pit and fissure sealants. However, this procedure has not been widely adopted by the profession and is only practised on a minimal percentage of children (Kovar *et al.* 1988; Brunelle 1989; Simonsen 1989).

The North York Public Health Department's Dental Program currently indicates that sealants shall be placed on permanent molars of children with evidence of decay in at least one permanent tooth ($DMF \geq 1$) or with a def of 2 or more at the age of seven or less. With respect to the current knowledge of sealants and the changing caries experience of schoolchildren, it is appropriate that the North York Guidelines for sealant use be examined and modified if necessary.

Background

The fossa and groves of teeth are usually shallow and allow self-cleansing, but if the surfaces that make up the fossa and groves fail to fuse completely during tooth development, the fossa and groves will remain much deeper and become known as pits and fissures. Pits and fissures, which are actually a series of related pits (Rohr

et al. 1991), have a narrow width and an uneven depth, trapping cariogenic food, and making them susceptible to decay (Truhe 1991). An effective method of preventing this decay is to seal the pits and fissures before they decay using a resin based sealant (Ripa 1985; Kandelman & Lewis 1988; Weintraub 1989; Truhe 1991; Simonsen 1989).

An increasing proportion of the tooth decay in American schoolchildren occurs on the occlusal tooth surfaces (Ripa 1985; Weintraub 1989; Mitchell & Gordon 1990; Truhe 1991), with pit and fissure caries accounting for up to 90% of the new carious lesions (Ripa 1985; Truhe 1991). A survey of 1332 restorations placed in 1991/92 by 10 of the dentists in the North York Public Health Department showed that approximately 90-95% (459/492) of the restorations in permanent teeth were probably the result of pit and fissure decay. This figure was only about 40% (335/840) for primary teeth, but most children treated by the North York Public Health Department's Dental Program are between the ages of 5 and 13. Therefore, many of the susceptible pit and fissures of the primary teeth may have already decayed.

Sealants are a proven means of caries prevention, but their effectiveness is directly related to their retention (Ripa 1985; Weintraub 1989; Kandelman & Lewis 1988). Both Ripa (1985) and Weintraub (1989) reviewed the literature, and found that a one time application of sealants reduced occlusal caries by about 80% after one year and by about 40-50% after seven years. Ripa (1985) and Weintraub (1989) also estimated retention after one year to be about 80-90%, which decreased annually to about 50-60% seven years after placement. Ten years after a single application of

sealant, Simonsen (1987) reported that 56.7% of sealants were completely retained and 20.8% were partially retained. It is expected that the cariostatic effectiveness of sealants over long periods of time will increase if the sealants are monitored and reapplied if necessary.

Although sealants have been shown to be effective in preventing caries, few practitioners routinely practice sealant use (Kovar *et al.* 1988; Brunelle 1989; Simonsen 1989), and there is still no consensus as to the criteria for the use of sealants among schoolchildren. Individual-based (e.g. Simonsen 1984) and tooth-based (e.g. Ripa 1983) criteria have both been proposed, as well as a more liberal criterion of applying sealant to all molar teeth of all children (Ripa 1985; Truhe 1991). In determining the most cost-effective methods for a public dental program, and for good clinical practice, establishing criteria for sealant use is a necessity.

North York's current guidelines for determining which children and which teeth should receive occlusal sealants are listed below (North York Public Health Department, Dental Division Policy and Procedure Manual 1990):

Fissure sealants shall only be placed on permanent teeth, only within a 6 month period of eruption in accordance with the criteria (p.7.2.10).

Sealant Criteria (p.7.3.21)

- (1) Sealants will be placed only in permanent molars and pits on maxillary laterals.
- (2) Sealants are placed for children:
 - up to and including seven years of age if there is evidence of decay in a permanent tooth or at least 2 carious, filled or extracted deciduous posterior teeth; i.e. DMF > 1, or def > 2 at age 7.
 - up to grade 8 who are 8 years of age and older, if there is a decayed, restored, extracted or sealed permanent molar; i.e. DMF > 1.

Purpose

Based on the current literature and the levels of dental decay in North York, certain aspects of the North York Guidelines need to be examined. These aspects will be addressed as three general questions:

- (1) Which teeth should be sealed, molars, premolars, permanent, primary?
- (2) How soon after eruption should sealant be placed on teeth?
- (3) What criteria should be used to determine who receives sealant?

Methods

The literature review included in this paper is not intended to represent an exhaustive search of the literature. The intention of the literature search performed for this paper was to review any current standards and opinions found in the literature. Effort was made to verify that any standards and opinions were based on scientific evidence, but not to include all the published articles, and studies that support or review these standards and opinions. Therefore, reference will not be made to all recent publications dealing with pit and fissure sealants.

To identify references pertaining to pit and fissure sealants, their efficacy, and their indications for use, a computer-aided literature search was performed. Using MEDLINE and the Medical Subject Heading (MeSH) of pit and fissure sealants, the dental literature was searched from 1983 through 1991. The results of this search were limited by the computer program to review articles that were written in english and involved human subjects. Relevant papers were obtained and reviewed to locate

additional references.

The literature from the years of 1987 through 1991 was also searched using two other combined search strategies; (1) MeSH of pit and fissure sealant and the search term of "efficacy"; (2) MeSH of dental caries and MeSH of dental fissures. In both of these searches, the results were limited to english articles that involved human subjects. Relevant papers were obtained and reviewed to locate additional references.

Other relevant references were identified through an article by Kandelman and Lewis (1988) that was prepared for a Health and Welfare Canada Manual entitled Preventive Dental Services, Second Edition (1988).

A physical factor also limited the material that was included in this paper. To simplify and quicken the review and writing process, articles identified by the literature searches had to be available from the Faculty of Dentistry Library at the University of Toronto.

The initial computer-aided literature search of the years 1983 through 1991 yielded 41 citations. However, many of the articles cited reported very similar findings and recommendations; only 11 of the 41 citations were included in this paper. Preference was given to the most recently published articles and studies taking place in North America. References cited as support for recommendations within articles were examined. Preference was given to recommendations and opinions based on scientific evidence such as a clinical trial. Recommendations and personal opinions without any scientific basis were not included in this paper.

The second and third searches listed 42 possible articles, but few of these articles were included in this paper. Many of the studies not included in this paper tested specific products, studied the effectiveness of sealants over relatively short period of time (e.g. 2 years), or combined sealant use with other preventive programs such as fluorides.

Guidelines from the University of Toronto and the University of Western Ontario were also examined. Information on paediatric dentistry, restorative dentistry, preventive dentistry, radiology, and clinics was gathered using teaching manuals and interviews. Further mention of these guidelines is made only when they were found to present opposing views to the findings of the current literature. It should also be noted that the University of Western Ontario's Paediatric Dental Clinic guidelines follow the 1992 guidelines of the American Academy of Paediatric Dentistry.

Some data from North York's school-based dental program as well as data from the 1989-90 Ontario Health Survey, were also included in this study. North York data were acquired by examining dental records and program summaries.

Using the available scientific evidence, each of the questions posed in the paper's Purpose was answered and practice guidelines for the use of pit and fissure sealants were drafted. When scientific evidence was lacking, expert opinion and other existing guidelines were considered.

After drafting the revised guidelines, this literature review and its guidelines were reviewed by two panels. An internal (staff) panel, consisting of three dentists

and one hygienist, all of whom work in North York's school-based dental program, initially reviewed the critical appraisal of the literature and the recommended guidelines. Concerns and recommendations of the internal panel were discussed with members of the CDHSRU and necessary changes were made to accommodate those providing the dental services. The document was then reviewed by an external panel of experts consisting of a representative of the Royal College of Dental Surgeons (the 1991-93 President), a representative of the Ontario Dental Association (the 1992-93 President), an epidemiologist, an ethicist, a paedodontist, a general practitioner, and a member of the internal panel. Concerns and recommendations of the external panel were discussed with members of the CDHSRU and any recommended changes were made. The literature review and its respective guidelines were then finalized after approval by both the internal and external panels.

Findings

- (1) Which teeth should be sealed?

Sealant benefits are surface specific. The use of sealants is not appropriate if there are no pits or fissures at risk (Weintraub 1989). Kandelman and Lewis (1988) state that sealants may be selected for permanent molars and possibly premolars and primary molars, but based on the results of the National Preventive Dentistry Demonstration Program in the U.S., they suggest that sealing permanent molars should take priority. This national program showed that at age 13, only about 12% or less of the premolar teeth in non-fluoridated areas and 6% of teeth in fluoridated

areas were decayed, but 30-40% of second molars and 58-76% of first molars were decayed (from Kandelman & Lewis 1988). Ripa (1985) also identifies caries of pit and fissures of mandibular and maxillary molars to be most frequent. Ripa (1985), Mitchell and Murray (1989), and Truhe (1991), all suggest that molars need additional protection through the use of sealants.

The use of sealants on primary teeth is questionable. Routine sealing of primary molars is not advised by a number of authors (e.g. ADA Council on Dental Materials, Instruments, and Equipment 1983; Kandelman & Lewis 1988; Mitchell & Murray 1989; Truhe 1991), but is not ruled out. If there is a high probability of decay, the use of sealant may be more cost-effective and beneficial to the patient than restoring the tooth in the future. However, first and second primary molars usually erupt by the age of two years, and most children enrolled in the North York Dental Program are not examined until the age of five years or more. If the primary molars have not decayed by this time it is unlikely that they will (Kandelman & Lewis 1988), and if they have decayed a restoration will already be in place or will have to be placed. Therefore, use of sealant on primary teeth should not be considered for children enrolled in the North York Dental Program.

Conclusion: Only permanent molars should receive sealant.

(2) How soon after eruption should sealant be placed on teeth?

Sealing of permanent molars should occur as soon after eruption as possible (Ripa 1985; Kandelman & Lewis 1988), but retention may be reduced if sealing occurs

before the tooth has completely erupted. Over a three year period, Dennison *et al.* (1990) showed that 53.6% of the sealants that were placed on teeth with a tissue operculum extending over the distal ridge of the tooth had to be replaced. This value decreased to 25.8 % if the entire occlusal surface had emerged but the gingival tissue was still at the height of the marginal ridge, and decreased further, to 0%, for teeth that had erupted even more fully. Even though rubber dam or cotton roll was used to isolate the tooth, the decrease in retention may be a result of contamination of the tooth surface during the procedure, indicating the importance and difficulty of isolating the occlusal surface. Sealing of permanent molars should not take place until the entire tooth's occlusal surface is free of gingival tissue and can be adequately isolated (Mitchell & Murray 1989; Dennison *et al.* 1990).

North York guidelines state that sealant should only be placed within 6 months of eruption. Mitchell and Murray (1989) suggest that molars that have been caries free for two years may still be sealed. However, no evidence was found in the literature to support either of these statements.

A widely held belief in the dental literature is that the risk of a tooth decaying is inversely related to the time since the tooth erupted (Ripa *et al.* 1988). A recent study by Ripa *et al.* (1988), however, reported findings contrary to this belief. In their study the probability of first molar decay in children aged 11 through 16 years appeared to be constant but the data are inconclusive. If these results are substantiated by other studies the recommendation of sealing first molars only up to four years after eruption may have to be abandoned (Ripa *et al.* 1988). However, no

other studies to date have reported similar findings.

A suitable and justified criterion for how long after eruption sealants should still be applied may be investigated using caries progression records. Although great variation can exist between patients, Shwartz *et al.* (1986) estimated a mean time of 1.5 to 2 years for a proximal lesion to progress half-way through the enamel of premolars, and first and second permanent molars of 10-11 year old children. Pit and fissure caries may progress more rapidly than approximal caries however (Kidd 1984), and few estimates of the rate of pit and fissure decay exist. Based on a study by Backer Dirks (1961), Kidd (1984) stated that pit and fissure lesions may progress to cavitation in less than one year. However, Backer Dirks (1961) only examined pit and fissure lesions every second year and did not report results of individual lesions, so that no accurate estimate of the rate of decay can be made.

Using a half mouth design, Mertz-Fairhurst *et al.* (1979a,b) examined the progress of sealed and unsealed occlusal caries. Changes in cavity depth were physically measured every 3 months for a maximum of one year. Their findings showed that sealed occlusal lesions progressed very little, if at all. Unsealed lesions however, progressed approximately 600 um over an average of approximately 9 months, and all unsealed lesions progressed further than any of the sealed lesions (Mertz-Fairhurst 1979a,b). On smooth tooth surfaces, approximately 1mm of enamel exists superficial to the dento-enamel junction, but much less enamel may exist at the base of a fissure (Pinkham 1988, p.383). Therefore, it appears that a pit and fissure lesion may progress through the enamel of a tooth within one year.

Children treated by North York's Dental Division will usually be seen only once per year, and the date of this visit may vary from year to year. Therefore, using the criterion of "up to 6 months after eruption" may be difficult to follow and this time period may need to be expanded to a period of at least one year.

Conclusions:

- (a) Sealants should be applied as soon as possible after the tooth's entire occlusal surface is free of gingival tissue.
 - (b) Sealants should be considered for unsealed teeth up to one year after eruption.
- (3) What criteria should be used to determine who receives sealant?

Determining which children should receive sealants has been done on a patient (e.g. Simonsen 1984; Weintraub 1989) and a tooth level (e.g. Ripa 1983; Truhe 1991). According to Simonsen's (1984) patient based criteria, patients who are judged to be at a moderate risk to decay should receive sealants, and children with no risk or a high risk to decay should not receive treatment. Treating children with no or a low risk to decay, or children with levels of proximal caries high enough to render the treatment ineffectual, would be overtreatment (Ripa 1985). The University of Toronto and the University of Western Ontario also suggest using sealants in moderation or not at all on children with extensive or rampant caries. Kandelman and Lewis (1988) also indicate that molars with proximal caries should not be sealed, as the sealant may have to be removed when the tooth is restored (Burt 1984). However, the decline in proximal caries, which now only represent a small proportion of the caries seen in the permanent teeth of children, makes this criterion no longer an issue for most children (Bohannon *et al.* 1984).

Ripa's (1983) tooth based approach selects teeth based on that tooth's probability of future decay. Carious occlusal surfaces cannot be sealed and must be restored, but questionable surfaces should be sealed and sound surfaces may be sealed. Questionable surfaces are surfaces where the operator cannot make a definitive decision if the surface is carious or not; the tip of the explorer sticks in the surface but other indications of caries, such as softness or a white halo, are absent (Ripa 1985). Selection for sealing a sound surface may be based on occlusal morphology, tooth age, status of proximal surfaces, and general caries activity of the mouth (Ripa 1985), and appears to be partially based on patient characteristics.

Two other options for patient selection have been proposed in the literature, selection based on both patient and tooth criteria (Kandelman & Lewis 1988; Mitchell & Murray 1989; American Academy of Paediatric Dentistry 1992), and sealing all permanent molars (Ripa 1985; ADA Council on Dental Materials, Instruments, and Equipment 1984). Ripa (1985) justifies sealing all permanent molars because upon high school graduation 89% of the children in the U.S. have one or more carious or restored teeth. Ripa (1985) uses this as evidence of dental decay and explains that up to 94% of this decay involves pits and fissures. However, in a public program "available resources will dictate the number of children to be accommodated" (Bohannon *et al* 1984). If many of these children only experience pit and fissure decay once in their lifetime, sealing all molars would not be the most cost-effective procedure. The 1992 Ontario Dentist' Association Fee Guide list the cost and time of a one surface amalgam for a permanent tooth as \$32.83 and 15 minutes, and the

cost and time of sealing one permanent tooth as \$16.63 and 7.5 minutes. Sealing all teeth would therefore cost much more than placing one amalgam filling. Although this type of comparison is crude and simple, it does indicate that sealing all the teeth may not be appropriate, especially for a public dental program with limited funds.

Kandelman and Lewis (1988) suggest sealing newly erupted permanent molars with deep, narrow pits and fissures, for high caries-risk children. Selection for sealants based on these criteria is a possibility for a public dental program. However, defining teeth susceptible to pit and fissure caries, as was already discussed (Ripa 1985), is very subjective, and must be left to the dentist's discretion.

Defining patients who are at high risk to future caries is often based on the child's past and present caries experience. The first permanent molar is one of the first permanent teeth to erupt, and so predicting decay of this tooth must be based largely on caries experience of the primary dentition. Greenwell *et al.* (1990) found that 84% of the children who were caries free in the primary dentition remained caries free in the mixed dentition. Gray *et al.* (1990) found the best predictor of permanent molar decay at the age of seven to be the presence of caries in three or more molars at the age of five. Using this relationship to predict molar decay at the age of seven resulted in a sensitivity of 0.68 and a specificity of 0.81 (Gray *et al.* 1990).

Data from children enrolled in the North York Dental Program in 1990 show that only 24% of the children with a def/DMF of 0 prior to the 1990 exam had new decay, but this value increased to about 42% for children with a previous def/DMF

of 1 or more. If a child has a def/DMF of 1 or more there appears to be a higher probability of future decay than if the child has a DMF of 0.

Mean def and DMF values for children in the North York area are given in Table 1. The Ontario Ministry of Health's (OMH) data for the North York area represents the average North York child and includes children who visit private dentists and children enrolled in the North York Public Health Department's public dental program. The North York Public Dental Program data represents just those children enrolled in North York's school-based public dental program. Children in North York's Public Dental Program appear to experience greater levels of dental decay than the average OHS child and could be considered as higher risk children than the average child in North York.

TABLE 1. Caries experience and mean def/DMF teeth of North York children based on data from the Ontario Ministry of Health (1989-90) and data from North York's Public Dental Program (1990).

AGE (years)	ONTARIO MINISTRY OF HEALTH			NORTH YORK PUBLIC DENTAL PROGRAM		
	def + DMF	def	DMF	def + DMF	def	DMF
5	1.07	1.07	----	1.51	1.51	----
7	1.96	1.76	0.20	2.73	*2.45	*0.28
9	2.55	1.88	0.67	3.05	*2.25	*0.80
11	1.11	----	1.11	2.60	----	----
13	1.97	----	1.97	----	----	----

* value based on the ratio of def/DMF from the OHS values from that age class

The North York guideline that children aged 7 or less with a def ≥ 2 may receive sealant on permanent teeth seems appropriate. A def of 2 for a child 5 years-old is greater than the average def for a child that age. Therefore, these children could be considered high caries-risk. Children aged 7 with a def of 2 are above the OMH average but below the North York Public Program average. However, sealing a few teeth unnecessarily seems more acceptable than neglecting to seal some teeth that will decay. Therefore, a def criterion of 2 or more for 7 year-olds may be more appropriate than raising the criterion to 3, especially for a child with deep pits and fissures in the first molars.

The second North York criterion, a DMF ≥ 1 for children 8 years of age or older, is more difficult to evaluate. A DMF of 1 at the age of 7 or 9 would be higher than the average for those ages shown in Table 1, suggesting a higher caries risk. However, a DMF of 1 at the ages of 11 and 13 would be below average. Therefore, a DMF criterion that changes with age may be more useful when identifying high risk children than a fixed criterion for all ages. Children aged 8 and 9 years with a DMF of 1 or more, and children aged 10 and 11 with a DMF of 2 or more may be a more appropriate recommendation for the application of sealant.

No DMF value for 13 year-olds was available from the N.Y. Public Dental Program (Table 1), but the OMH found an average DMF of 1.97. From the data given in Table 1, it could be assumed that the N.Y. Public Dental Program's mean DMF would be over 2 but how much over 2 is unknown. A DMF criterion of 3 for 13 year-olds may be too high, leaving many children's permanent second molars

unsealed and at risk to decay. Therefore, setting the DMF criterion at 2 for 12 and 13 year old children may be more appropriate. If a child has 2 occlusal restorations in his/her first permanent molars and has deep pits and fissures in his/her second permanent molars, the second permanent molars should probably be sealed.

DMF/def based criteria should be used to initially classify children as possible sealant candidates, before any sealant is ever applied. If this criteria were used for a child who received sealant on his or her first molars at age 7, thus reducing first molar decay, the child may not meet the criterion for sealant use on his or her second molars. Therefore, sealant application to teeth of children who already have sealant present on some teeth, such as the first molars, may have to be assessed more using tooth morphology rather than DMF scores.

Applying the above DMF guidelines to the 1990 North York Dental Program data, the approximate percentage of children targeted for sealants is (no data was available for 12 and 13 year-old children):

38% of children aged 5-7 with a def \geq 2;

65% of children aged 8 and 9 with a DMF \geq 1;

54% of children aged 10 and 11 with a DMF \geq 2.

However, eruption of the permanent molars in most children is expected to occur in most children around the ages of 6-7 and 10-13. Therefore, the 8-9 year-old criterion would, for the most part, be irrelevant.

The cost of sealing North York children may appear high but it must be compared to the possible restoration costs if the teeth decay. In the U.S., over 50%

of all first molars had decayed by the age of 11 and 17-44% of all second permanent molars had decayed by the age of 13 (Bohannon *et al.* 1984). Conservatively estimating all of the necessary restorations as single surface amalgams, the Ontario Dental Association's suggested cost per amalgam is \$ 32.83, requiring 15 minutes to place. The cost and time per sealant is only 16.63 requiring 7.5 minutes (1992 ODA Fee Guide). Therefore, if all molars are left unsealed and only half of them decay, the cost of restoring these molars would be the same as the cost of sealing all of them. (It should be noted that costs and times used are not intended to estimate the actual costs, but only to compare costs of two services).

The cost and time comparison above is very simple and crude, but other factors should also be considered. The sealant cost assumes that 100% of the sealed teeth will not decay; this may not be valid, but an estimate of 90% or more is not unrealistic if the sealant is monitored and reapplied if necessary (Ripa 1985; Weintraub 1989). Therefore, some decay and resealing will increase the cost of sealing teeth, but additional factors associated with restoring teeth must also be considered. Placing two surface amalgams (\$65.65 per amalgam, requiring 30 minutes), or one surface composite resins (\$59.09 per composite, requiring 33.75 minutes), is not unlikely and this will increase restorative costs. In 1991, 50% of the amalgam restorations placed by North York were two or three surface amalgams. A number of studies have also shown that many restorations will eventually have to be replaced (e.g. Mjor *et al.* 1990; Norman *et al.* 1990), especially children's restorations (Dawson *et al.* 1981; Hunter 1985; Walls *et al.* 1985; Holland *et al.* 1986). No

estimate can be made for the value of a sound tooth along with patient satisfaction and comfort. Dentists are required to place all restorations, but dental hygienists or assistants should be selected to perform sealant application (ADA Council on Dental Materials, Instruments, and Equipment 1983; Ripa 1985; Kandelman & Lewis 1988; Mitchell & Murray 1989), reducing costs in a dental program that pays its staff hourly wages.

Conclusions: Selection for sealants should be based on tooth morphology and patient risk to caries.

- (a) Consideration for initial sealant application should be given to children with teeth that have deep and narrow pits and fissures, especially those who are high risk to caries. High risk is defined as children who are:
 - aged 7 years or less with a def/DMF ≥ 2 ;
 - aged 9 years or less with a DMF ≥ 1 ;
 - aged 10-13 years with a DMF ≥ 2 .
- (b) Children with sealant already present on some of their teeth, and with a DMF less than the high risk definition above, should be also considered for sealant use, based mostly on tooth morphology and oral hygiene.
- (c) Children with rampant proximal caries/restorations in the permanent dentition should not receive sealant.
- (d) Teeth indicated for sealant that have a proximal lesion should not receive sealant.

Recommendations for the Use of Pit and Fissure Sealant

- (1) For a child who has never received sealant, selection should be based on tooth morphology and patient risk to caries. Sealant should be given to children who have teeth with deep and narrow pits and fissures and who are:
 - aged 7 years or less with a def/DMF ≥ 2 ;
 - aged 9 years or less with a DMF ≥ 1 ;
 - aged 10-13 years with a DMF ≥ 2 .
- (2) Children with sealant already present on some teeth, and with a DMF less than the high risk definition above, should be also considered for sealant use, based mostly on tooth morphology.
- (3) Children with rampant proximal caries/restorations in the permanent dentition should not receive sealant.
- (4) If a proximal lesion exists on a tooth indicated for sealant, this tooth should not receive sealant.
- (5) When needed, sealant should only be applied to permanent molars, as soon as possible after the occlusal surface is completely free of gingival tissue.
- (6) Sealant may be placed up to one year after tooth eruption. In very special circumstances, that must be recorded on the patient's chart, sealants may be placed on permanent molars more than one year after eruption.
NOTE: The purpose of this recommendation is to prevent routine sealing of the first permanent molars that have been present for many years. For example, if 12-13 year-old first-time patient meets the criteria for sealing his/her second molars, but the first permanent molars are also not sealed, the first molars should remain unsealed. Any first molars that have not decayed by this time are unlikely to.

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