

Table 1: Pit and Fissure Sealants in High Risk Children: Half-mouth Study Design

First Author	Pub. Year	Type of sealant	N at start	Age at start	Caries Risk Determination	Follow-up Years	% full retention (at final exam)	% Effectiveness (at final exam)
Buonocore	1970 1971	UV-light	60	4-15 (mean 9)	Caries-free individuals with well coalesced occlusal surfaces excluded	2	87%	99% - permanent teeth 87% - primary teeth
McCune Horowitz	1973 1976, 1977	UV-light Nuva- Seal	128 301 429	K, 1 st 6 th , 7 th grades, Total	Sealant placed on paired and unpaired teeth (usually homologue had already decayed)	5	42% (50% and 26% in paired and unpaired teeth after 4 years)	30% - younger group 38% - older group 98% - where sealant completely present 50% unpaired sealed teeth developed caries; 26% of paired sealed teeth, 41% paired control teeth
Brooks Mertz- Fairhurst	1976 1984	Nuva- Seal, Delton	385	6-8	Caries-free children excluded (about 48% of those screened.) 79% of possible first permanent molar pairs treated.	7	31% Nuva- Seal, 66% Delton	12% Nuva-Seal, 55% Delton (10% of completely sealed teeth became carious-combined data from both sealant types)
Sheyk- holeslam Haupt	1978, 1979 1983	Delton	205	6-10 (mean 7.5)	Evidence of caries and a pair of caries-free homologous first permanent molars (21% screened were eligible.)	6	58%	56%
Charbeneau	1977, 1979	Kerr, Chem- cured	143	5-8	81% of possible first permanent molar pairs included	4	52.4%	53.4%
McCune	1979	Delton	200	6-8	Child had at least one carious tooth	3	87%	85%
Thylstrup	1976, 1978	Concise Chem.- polymer.	217	7	40% one first permanent molar pair, 60%, two pairs	2	60%	98% - full 50% -partial 10% - lost
Richardson Gibson	1980, 1982	Chem- cure, pink colored	266	2 nd grade	80% of eligible molars, teeth sealed if sound or "sticky"	5	67.4%	51.2%
Vrbirc	1983, 1986	Contact Seal	244	6.8	76% of possible first permanent molar pairs	5	52%	55%

Table 2: Pit and Fissure Sealants in High Risk Children: Other Study Designs

First Author	Pub. Date	Study design	Control/ comparison	Type of sealant	N at start	Age at start	Follow-up years	Caries Risk Determination	Outcome	Conclusions
Leverett	1983	Half-mouth, benefit/cost analysis	Sealants on one side, restorative care on other	Nuva-Seal,	292	6-9	4	Caries-active (sealants placed on a carious surface) Caries-inactive (sealant placed on sound surface)	1 year retention – 52%, re-sealed; After 4 years, sealed surfaces 74% less caries increment than unsealed	Benefit cost ratios based on time or costs were more favorable for caries-active. Sealants should not be used unless evidence of past or current caries experience.
Weintraub	1993	Retrospective cohort, patient records, Life table analysis, cost-effectiveness	Children with none, any or 4 molars sealants; children with and without prior restorations	Varied	275	7.4	5.8 – mean (up to 11 years)	Restorations on first molars prior to sealant placement on remaining molars	8-year survival: sealed teeth with and without prior restoration – 85%, 94%; unsealed teeth – 23% and 46%	Cost savings from sealants was obtained within 4-6 years for children with prior restorations; after 8 years without prior restorations
Heller	1995	Retrospective cohort study, patient health center records	96 Children with and 17 without sealants, sealed and unsealed teeth	Delton	113	1 st grade	5	Tooth surfaces rated sound, “incipient”, or frank caries.	Decay rates for initially sound sealed and non-sealed surfaces were 0.81 and 0.125 (OR=1.63); for initially incipient surfaces, .108 and .518 (OR=8.88)	Initially sound teeth were unlikely to become carious in 5 years; sealants more effective in preventing further caries on surfaces initially with incipient lesions

Kumar	1997	Survival analysis	Sealed high risk first molars (65% sites) compared to unsealed low risk first molars (35% sites)	Helioseal, Delton	1,122	7-9	4	Eligibility required child's prior caries experience. Teeth with shallow anatomy, occlusal or proximal D or F excluded	Retention (with some resealing) – 65-82%; Time to restoration or caries similar for both groups. Cum. Survival rate for 4 years: .89-.94	Targeting approach was effective.
Carlsson	1997	Prospective study, tx based on caries risk assessment, radiographs used	High risk children (121) received sealant, low risk did not (83)	Helioseal-F (fluoride)	204	6-7	2	Risk based on salivary mutans streptococci, lactobacilli, buffer capacity, past caries experience, cariogenic diet	76.6% complete sealant retention, First molar DFS and dfs incidence lower for sealed group, but NS, enamel caries incidence sig diff in both dentitions	Two-year caries incidence was 11-70% lower in high risk sealed group (range based on dentition and outcome measure)
Maas	1998	Prospective study of two groups receiving sealants; sealant delayed 3 months on one side	Group 1 – mean deft =2.40 (low risk), Group 2 – mean deft = 6.60 (high risk);	Helioseal	52	6-8	0.5	Initially, deft “Microbial replica “ measured occlusal <i>S. mutans</i>	For both groups, <i>S. mutans</i> was sig. reduced immediately after sealing and lasted up to six months.	Sealants reduced bacterial levels for both low and high risk groups.
Weintraub	In press	Retrospective cohort, Medicaid claims, discrete time hazard model	Sealed and unsealed teeth	Dentists' choice	15,438	4-7	8	Low risk: no prior Caries-Related Service involving Occlusal surface (CRSO) Middle risk: 1 prior CRSO, High risk ≥ 2 prior CRSO	Unsealed molars 3x more likely to get CRSO than sealed molars. Low risk: sealants effective up to 4 years, Middle risk: lower odds for 6 years; High risk: reductions up to 7 years	Medicaid expenditure savings for high risk children within two years, not for low risk.

