

Short Communication

Fissure sealants in a group of 3–4-year-old children

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Retention of sealant material is the main determinant for the caries preventive effect of sealants. This may partly explain the low interest in using fissure sealants in young children, where sufficient moisture control may be difficult to obtain. Consequently, almost no data are available in the literature on the effect of fissure sealants in young pre-school children. The purpose of the present communication is to report the retention of a light polymerized fissure sealant (Prisma-Shield[®]) and an autopolymerized sealant (Delton[®]) in primary molars of young children.

The study included 52 children (25 boys and 27 girls) with a median age of 3 years 7 months (range 2 years 11 months to 4 years 11 months) who were attending municipal dental clinics for regular dental care in and around the municipality of Århus and in the paediatric dentistry section of the department.

All children were examined by the same dentist (E.H.), who also placed all the sealants. Caries was diagnosed at the cavitation level and only children with pairs of sound primary molars were included. The teeth within each tooth pair were randomly assigned to sealing with Delton[®] or Prisma-Shield[®]. The manufacturer's instructions were carefully followed for both materials. Mean follow-up period was 2.8 years (range 2.0–3.3 years), at which time 20 pairs of upper second molars, two pairs of upper first molars, 28 pairs of lower second molars, and one pair of lower first molars were re-examined.

Complete retention was found in 70.6% of the teeth sealed with Delton[®] and in 76.5% of the teeth sealed with Prisma-Shield[®] (Table 1). The slightly better retention of the light polymerized fissure sealant could be due to the shorter period of

Table 1. Distribution of 52 pairs of primary molars according to retention of the material.

Delton [®]	Prisma-Shield [®]			Total
	Full retention	Partial retention	Complete loss	
Full retention	28	7	1	36
Partial retention	8	1	0	9
Complete loss	3	0	4	7
Total	39	8	5	52

moisture control needed for placing a light polymerized sealant. However, McNemar's test showed that the difference was not statistically significant in this group ($P = 0.49$).

Table 2 shows that caries development after sealing was low with both types of materials (5.9% for Delton[®] and 9.8% for Prisma-Shield[®]). 67% (four out of six) of the pairs with different caries development in the two teeth developed caries in the tooth sealed with Prisma-Shield[®], but not in the tooth sealed with Delton[®]. The 95% confidence limits for this parameter calculated according to the method described by Armitage & Berry [1] were 0.045 and 3.49 and included the value 0.5, indicating no difference in caries development after the two sealants.

Table 2. Distribution of 51 pairs of primary molars according to caries status at the follow-up examination. One pair was omitted because the control tooth had been extracted.

Delton [®]	Prisma-Shield [®]		Total
	Sound	Caries or filled	
Sound	44	4	48
Caries or filled	2	1	3
Total	46	5	51

The rate of complete retention obtained in the present study after 2–3 years is similar to the overall rate of complete retention of 67% obtained after only 6 months in a previous study on pre-school

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children using an early light-cured resin (Nuva Seal[®]) [2]. This indicates a better retention of the recently developed resin sealants.

The retention rates obtained in the present study are comparable to those obtained in many studies on permanent teeth after a 2-year observation period [3] and indicates that fissure sealing of primary molars in young pre-school children may be an effective method of preventing caries in this age group. However, further studies are needed to estimate the caries-preventive effect of the procedure.

References

- 1 Armitage P, Berry G. *Statistical Methods in Medical Research*, 3rd edn. Oxford: Blackwell Science: 514.
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- 3 Weintraub J. The effectiveness of pit and fissure sealants. *Journal of Public Health Dentistry* 1989; **49**: (Special Issue): 317–330.