

**PIT
AND
FISSURE SEALANTS**

DEFINITION

FISSURE SEALANTS are the fluid materials which undergo polymerization when they are used for occluding the caries susceptible occlusal pits and fissures on the premolar and molar teeth.



RATIONALE

- ❖ Pit and fissure areas are highly susceptible for caries.
- ❖ The occlusal caries in the pits and fissures represent 50% of the caries in human dentition.

HISTORY

HYATT (1923) recommended prophylactic odontotomy.

BODECKER (1929) proposed fissure eradication technique.

BUONOCORE (1955) advocated the use of bonded resin for filling the pit and fissure areas.

MID 1960s cyanoacrylates were used as fissure sealant materials.

BOWEN (1965) reported the development of BIS-GMA material which is the base resin in most of the commercially available pit and fissure sealants used today.



CLASSIFICATION

BY *Mitchell and Gordon (1990)*

Based on the polymerization methods

- ❖ Self activated
- ❖ Light activated

Based on the resin system

- ❖ BIS-GMA
- ❖ Urethane acrylate

Based on the filler

- ❖ Filled
- ❖ Unfilled

Based on the color

- ❖ Clear
- ❖ Tinted



IDEAL REQUISITES

BRAUER (1978)

- ❖ Sufficient flow to allow easy penetration into deep and narrow pit and fissure areas.
- ❖ Adequate working time
- ❖ Rapid cure
- ❖ Good and prolonged adhesion
- ❖ Low sorption and solubility
- ❖ Resistance to wear
- ❖ Minimum irritation to the tissues
- ❖ Cariostatic action



Approach for selecting the patient

SIMENSON (1983) suggested the triaging of patients.

Most realistic approach is to select the patient based on the clinical judgment considering the

- ❖ Age
- ❖ Oral hygiene
- ❖ Past caries experience
- ❖ Present caries experience
- ❖ Family history
- ❖ Dietary habits
- ❖ Fluoride environment
- ❖ Tooth type and morphology



Guidelines for sealant application

Patient selection

Child with extensive caries in primary teeth- seal all the first permanent molars.

Children with special needs – medically compromised, mentally or physically handicapped, from a disadvantaged social background.



Tooth selection

Child with occlusal caries on one of the first permanent molars- seal the remaining the first permanent molars.

Occlusal caries on one or more of the first permanent molars- seal the second molars as soon as possible.

Tooth should be sealed within 2 years of eruption.



Do not seal if, a) Pits and fissures remained caries free for 4 years

b) tooth cannot be isolated c) there is evidence of proximal caries.



Indications




❖ Newly erupted primary molars and permanent molars and premolars with deep pits and fissures in the occlusal areas.


❖ Stained pits and fissures with minimum decalcification and no softness at the base of the fissures.

❖ The tooth in question should have erupted less than four years ago.




Contraindications

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- ❖ Individual with no history of previous caries experience.
 - ❖ Radiographic or clinical evidence of caries on the proximal surface.
 - ❖ Wide and self cleansable pits and fissures.
 - ❖ Tooth that has been partially erupted or that cannot be isolated.
 - ❖ Pits and fissures that have remained caries free for four year or longer.



**Technique
Of
application**

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- ❖ Cleaning
 - ❖ Washing and drying
 - ❖ Etching
 - ❖ Washing and drying
 - ❖ Application of the material
 - ❖ Curing
 - ❖ Recall