



**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.

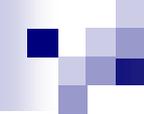
❖ Stained pits and fissures with minimum decalcification and no softness at the base of the fissures.

❖ 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