



good morning



PIT AND FISSURE SEALANTS

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INTRODUCTION

- ❑ **Caries potential is directly related to the shape & depth of pit and fissures.**
- ❑ **Narrow isolated crevices and grooves that harbour food and microorganisms are important anatomical features leading to caries development.**
- ❑ **Success of fluorides in caries prevention is on smooth surfaces.**

HISTORY

- **Application of silver nitrate by Miller (1905)**
- **Prophylactic odontomy - Hyatt [1923]**
- **Enameloplasty - Bodecker [1926]**
- **Buonocore [1955] introduced method of adhering resin to acid-etched enamel surface.**
- **Bowen & associates [1962] developed Bis-GMA resin.**

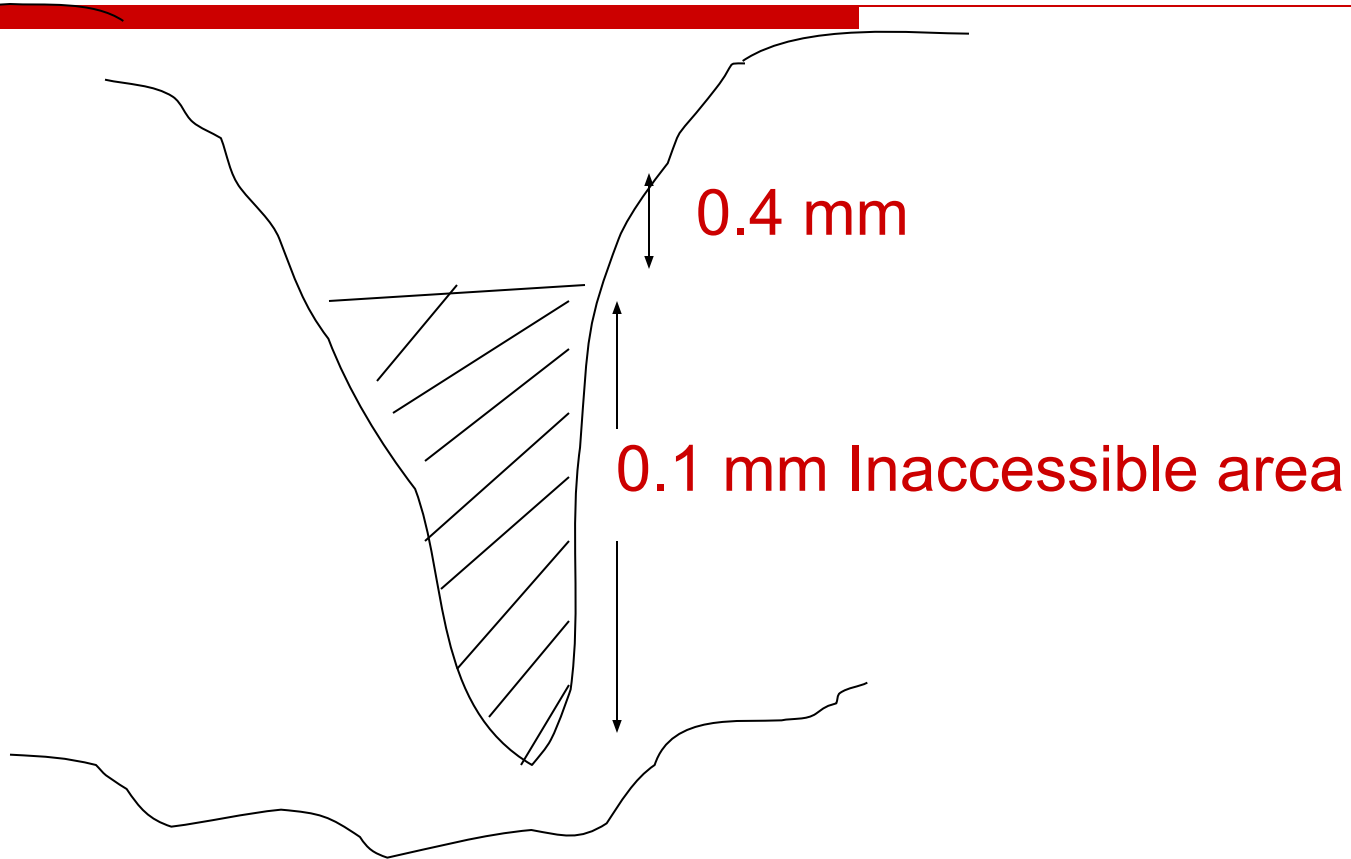
DEFINITION

- ❑ Pits are small pin point depressions located at the junction of developmental grooves or at the terminals of the grooves.
- ❑ Fissures are long clefts between cusps or ridges.

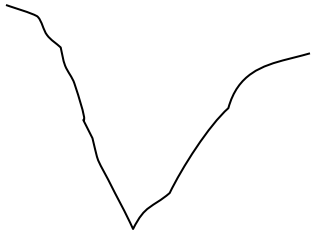


**UNPROTECTED MOLAR
PRONE TO DECAY**

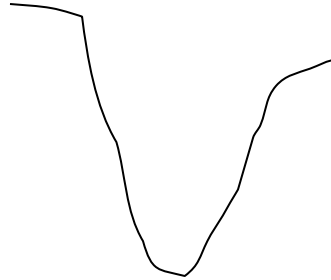
ANATOMY OF PIT AND FISSURES



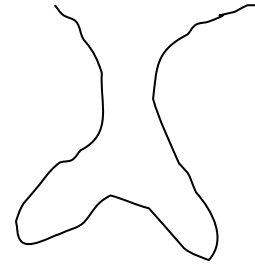
TYPES OF FISSURES



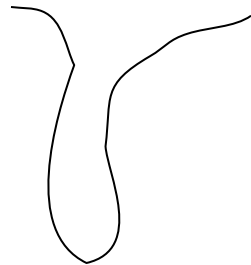
“V” TYPE



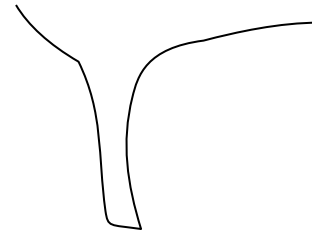
“U” TYPE



INVERTED – “Y” TYPE



HOUR GLASS TYPE



NARROW SLIT TYPE

PIT AND FISSURE SEALANTS

DEFINITION:

Fissure sealants are materials which are designed to prevent pit and fissure caries when they are applied to the occlusal surface of the teeth in order to obturate occlusal fissures and to remove sheltered environment in which caries may thrive.

- Roide House

CLASSIFICATION

| BASED ON | TYPES | CHARACTERISTICS |
|------------------------------|--|---|
| <u>I. GENERATIONS</u> | 1. First Generation Sealants. | -Activated by UV light (350nm wave length) -No more used, as a UV light is harmful to the body |
| | 2. Second Generation Sealants. | Chemical curing resins, based on catalyst-accelerator system. e.g. Concise(3M) |
| | 3. Third Generation Sealants. | Activated by visible light (430-490nm wave length) e.g. Fissurit, Delton |
| | 4. Fluoride containing Sealants | Double protection |

CLASSIFICATION

| | | |
|---|--|---|
| <u>II. FILLERS</u> | 1. Unfilled 2. Semifilled | Flow is better More resistant to wear |
| <u>III. COLOUR OF THE SEALANTS</u> | 1. Clear | Esthetic but difficult to identify at recall examination |
| | 2. Tinted | Can be easily identified |
| | 3. Opaque | Can be easily identified |
| | 4. Pink (Fuji VII) | |

MATERIALS USED AS SEALANTS:

- **Cyanoacrylates**
- **Polyurethanes Eg. Epoxylite**
- **Dimethacrylates Eg. BIS-GMA**
- **GIC**

Products: Helioseal F, Sealrite, Concise white, Baritone

INDICATIONS

- ❑ Presence of **deep pit and fissures** on occlusal surfaces of teeth.
- ❑ In cases of **suspected/ initial occlusal caries** in children and young adults.
- ❑ Children coming from **non fluoridated areas** with increased caries experience.
- ❑ In teeth especially palatal aspects of upper lateral incisors.
Sometimes deep palatal grooves of upper molars and buccal grooves of lower molars.

CONTRA INDICATIONS

- ❑ **Shallow** pit and fissures
- ❑ Well established carious lesions- **cavitations**
- ❑ Teeth with **proximal caries** are contra indicated, even if they have deep pits and fissures.
- ❑ Those teeth which are **partially erupted or not completely erupted**- such teeth are difficult from point of **isolation**.

PROCEDURE OF SEALANT APPLICATION

❑ **Selection of patient**

❑ **Cleaning and prophylaxis of fissure system**

(debris interfere with proper etching process & sealant penetration into pit and fissures)

❑ **Isolate and dry the tooth surface**



PROCEDURE OF SEALANT APPLICATION

□ Acid etching

- Use phosphoric acid 37%, 30-60 sec
- Remove organic material & debris from surface and produce micropores.

□ Rinse surface with running water [1/2 min]

□ Isolate and dry the tooth surface



PROCEDURE OF SEALANT APPLICATION

❑ Sealant application.

-To avoid air bubbles drop it from cuspal heights

❑ Evaluate the sealant

❑ Check the occlusion

❑ Retention and periodic maintenance



SEALANT RETENTION DEPENDS ON

- **Type of sealant used**
 - 2nd > 1st generation superior retention & caries protection
- **Position of teeth in the mouth**
 - Better retention for anteriors & in mandibular arch
- **Clinical skill of the operator**
- **Age of the child**
 - Younger children difficulty in maintaining dry field (behavior problems)
- **Eruption status of teeth**

PREVENTIVE RESIN RESTORATION (PRR)

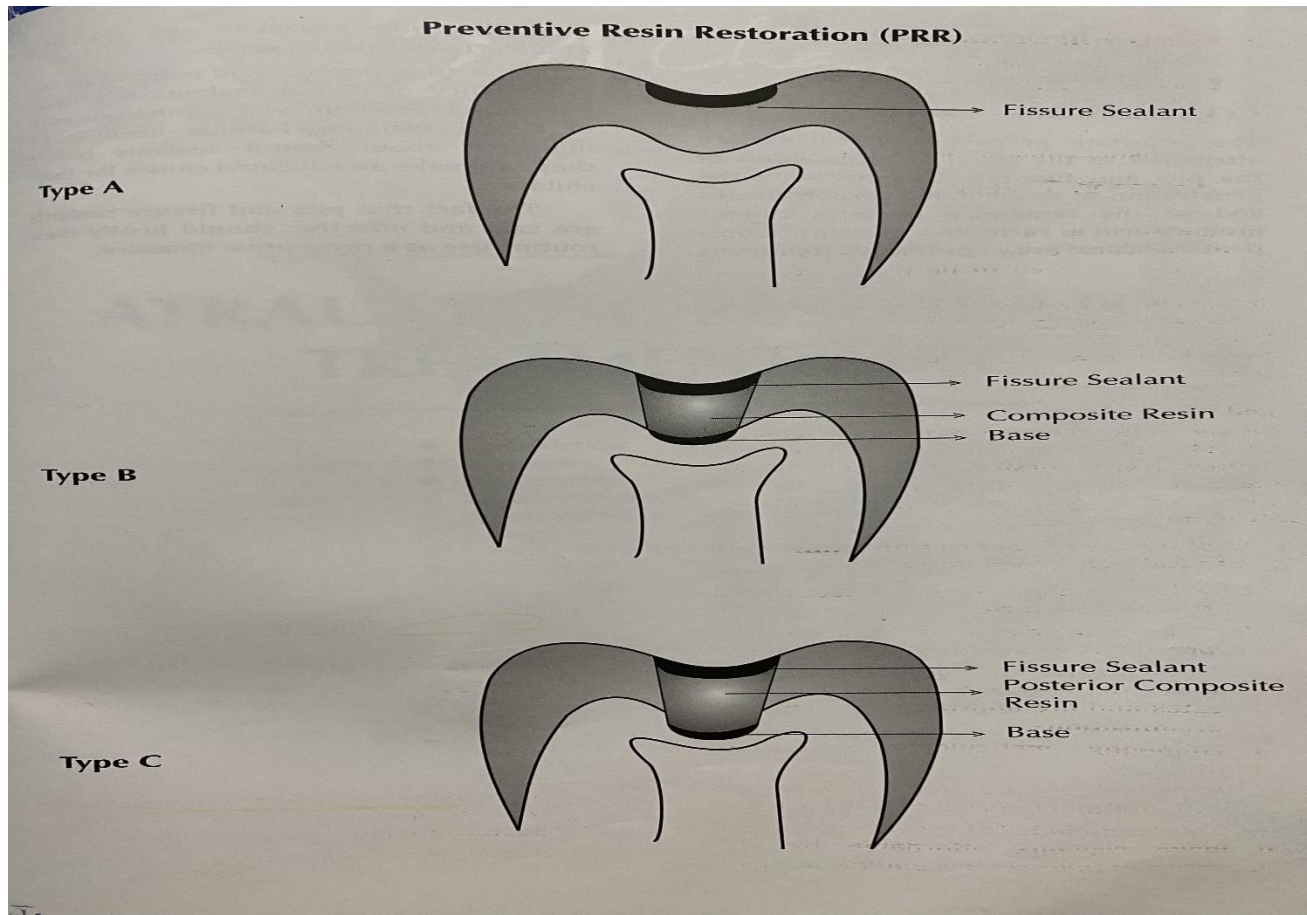
- ❑ Introduced by Simonsen and Stallard, 1978
- ❑ Natural extension of use of occlusal sealants
- ❑ Integrate :
 - Preventive approach of sealant therapy for caries susceptible pit & fissures

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Therapeutic restoration of incipient caries with composite resin



TYPES OF PREVENTIVE RESIN RESTORATION



STEPS IN PRR

1. **Limited excavation to remove carious tissue**
2. **Restoration of the excavated area with a composite resin**
3. **Application of a sealant over the surface of the restoration and remaining sound contiguous pits and fissures.**



COST EFFECTIVENESS

- Use of sealants will preserve sound tooth structure.**
- More tooth tissue will be lost later when amalgam restoration will be replaced at a later stage.**

CONCLUSION

- **Dental sealants are cost effective treatment modalities when placed on teeth of children at high risk for dental caries.**
- **Educating parents & patients on the importance of sealants is critical.**
- **Pit & fissure sealants are safe and effective, routinely used as a preventive measure.**

DOUBTS



REFERENCES:

Soben Peter: Essentials of Public Health Dentistry

(Community Dentistry). *6th Edition, 2017 ,pg*

372-379.



Thank You