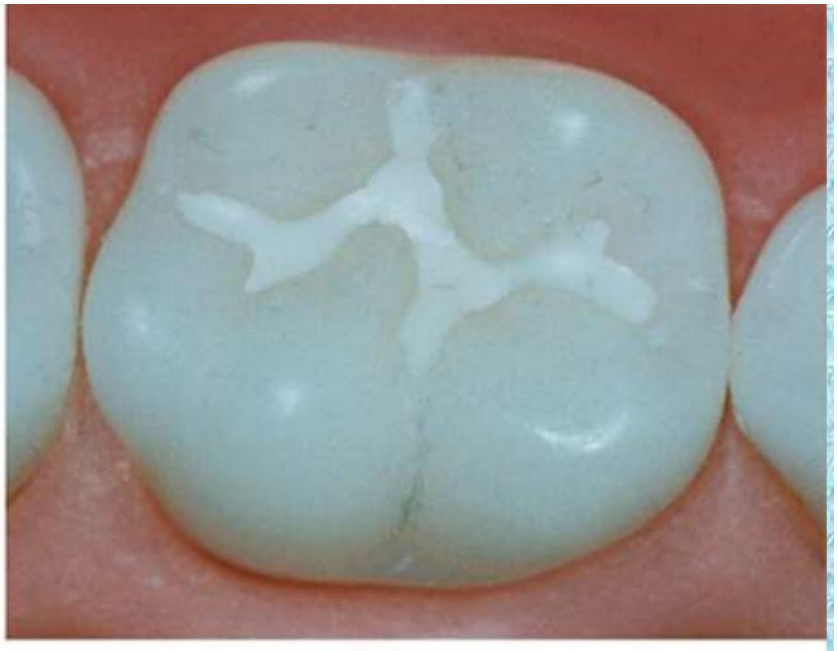
GOOD MORNING

Dr Kuldeep Singh Shekhawat, MDS
Associate Professor
Department of Public Health Dentistry
Sri Venkateshwaraa Dental College

PIT AND FISSURE SEALANTS

Prior to Sealing



After Sealing

CONTENTS

OBJECTIVES

- Why occlusal surface is susceptible to caries?
- To understand the importance of pit and fissure sealants.
- Indications and contra-indications of pit and fissure sealants.
- Steps in application of pit and fissure sealants.
- Effectiveness of pit and fissure sealants.

INTRODUCTION

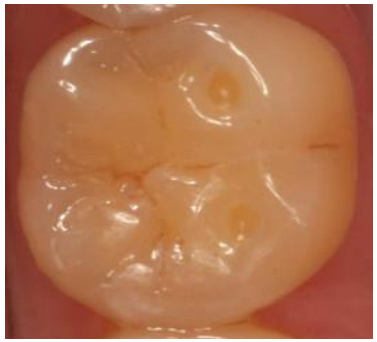
Susceptibility of Occlusal surfaces?

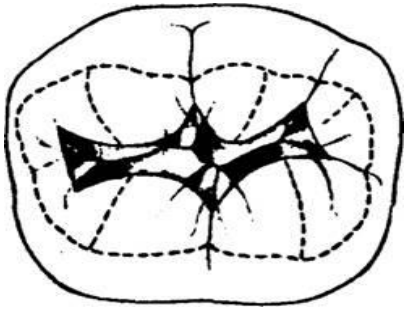
Presence of morphological defects.

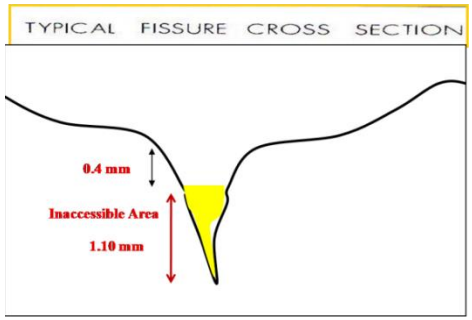
Occlusal platform - plaque stagnation areas.

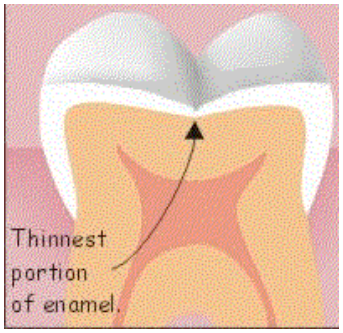
Non cleansing - cannot be mechanically cleaned.

Enamel thickness



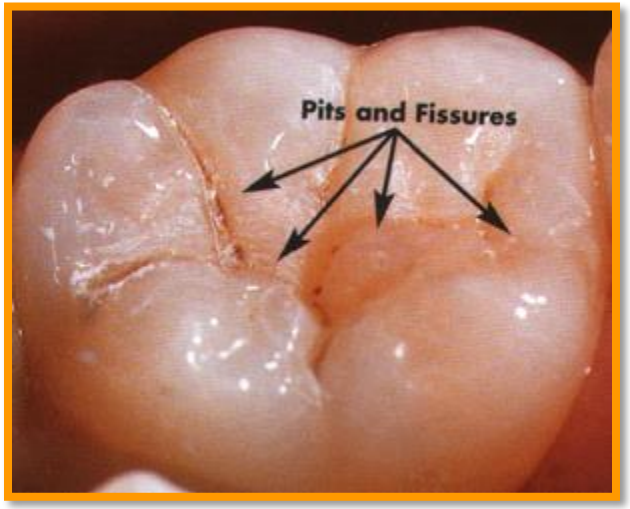






OCCLUSAL SURFACE

Most susceptible to Dental Caries



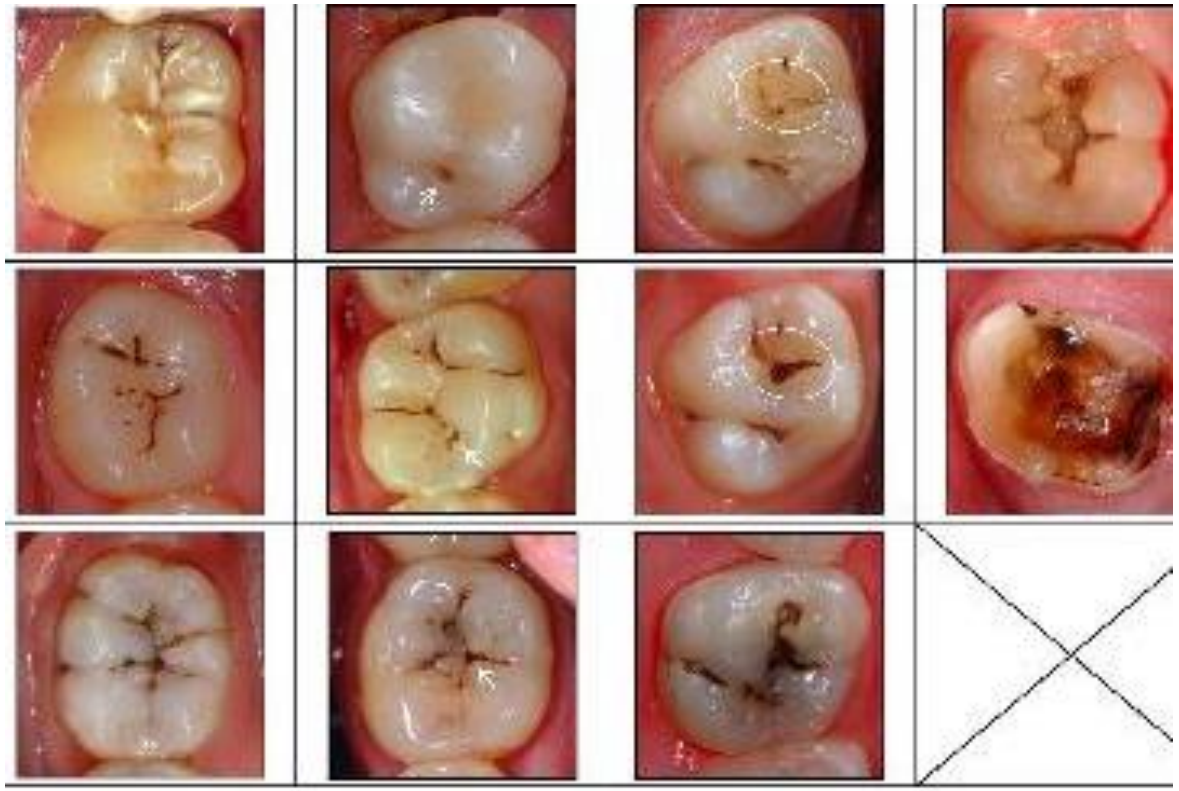
Least responsive to almost all preventive measures

Hence, high prevalence of Dental Caries.

Account for only 12.5% of total surfaces but nearly for 80% of caries attack.

PIT AND FISSURE CARIES

Contribute about 80% of total caries attack by 15 years of age.



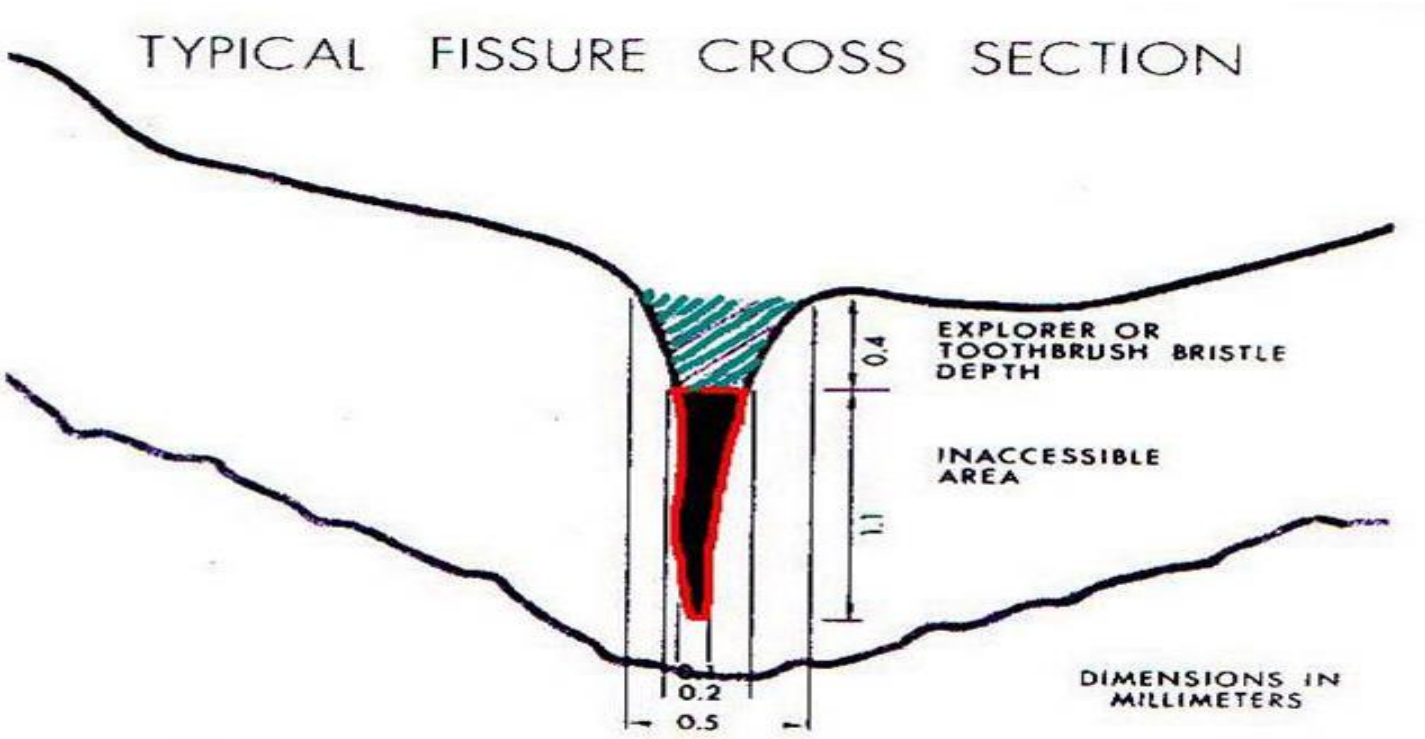
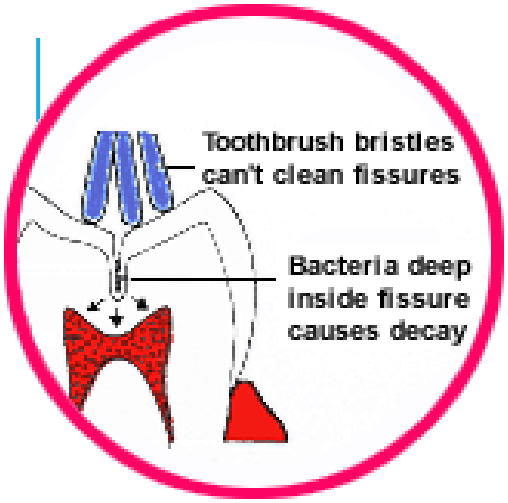


FIGURE:Cross section of an occlusal fissure showing the inability of an explorer or toothbrush bristle to reach the base.

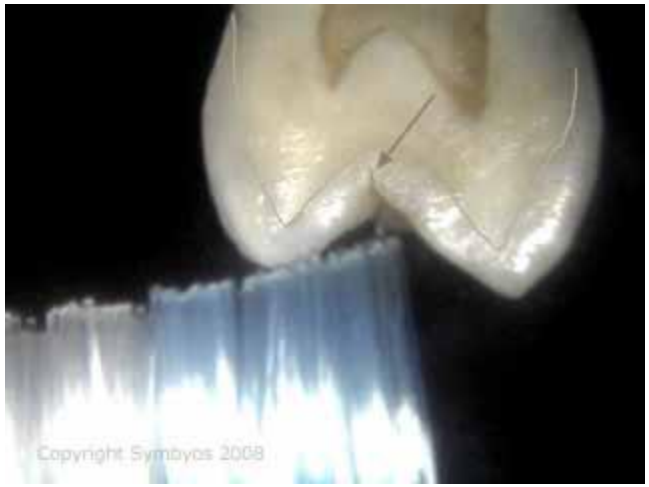
WIDTH OF OPENING OF FISSURE = 0.1 mm

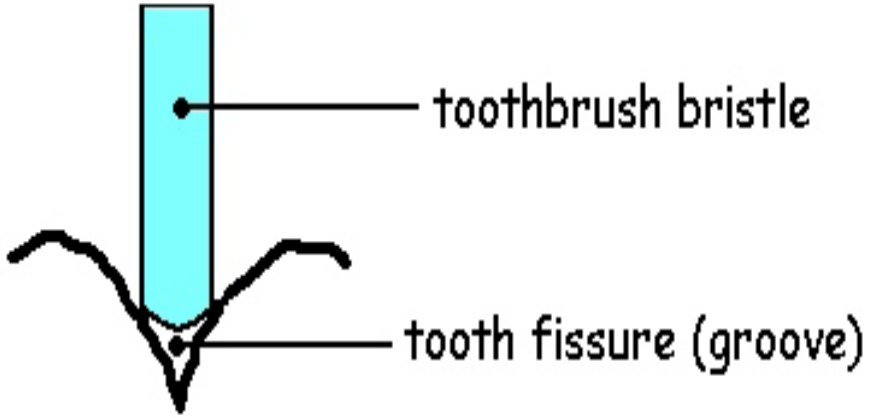
CROSS SECTION OF OCCLUSAL FISSURE

Diameter of Dental Probe = 0.2 mm
Diameter of Bristles = 0.2 mm
Diameter of Fissure = 0.1 mm

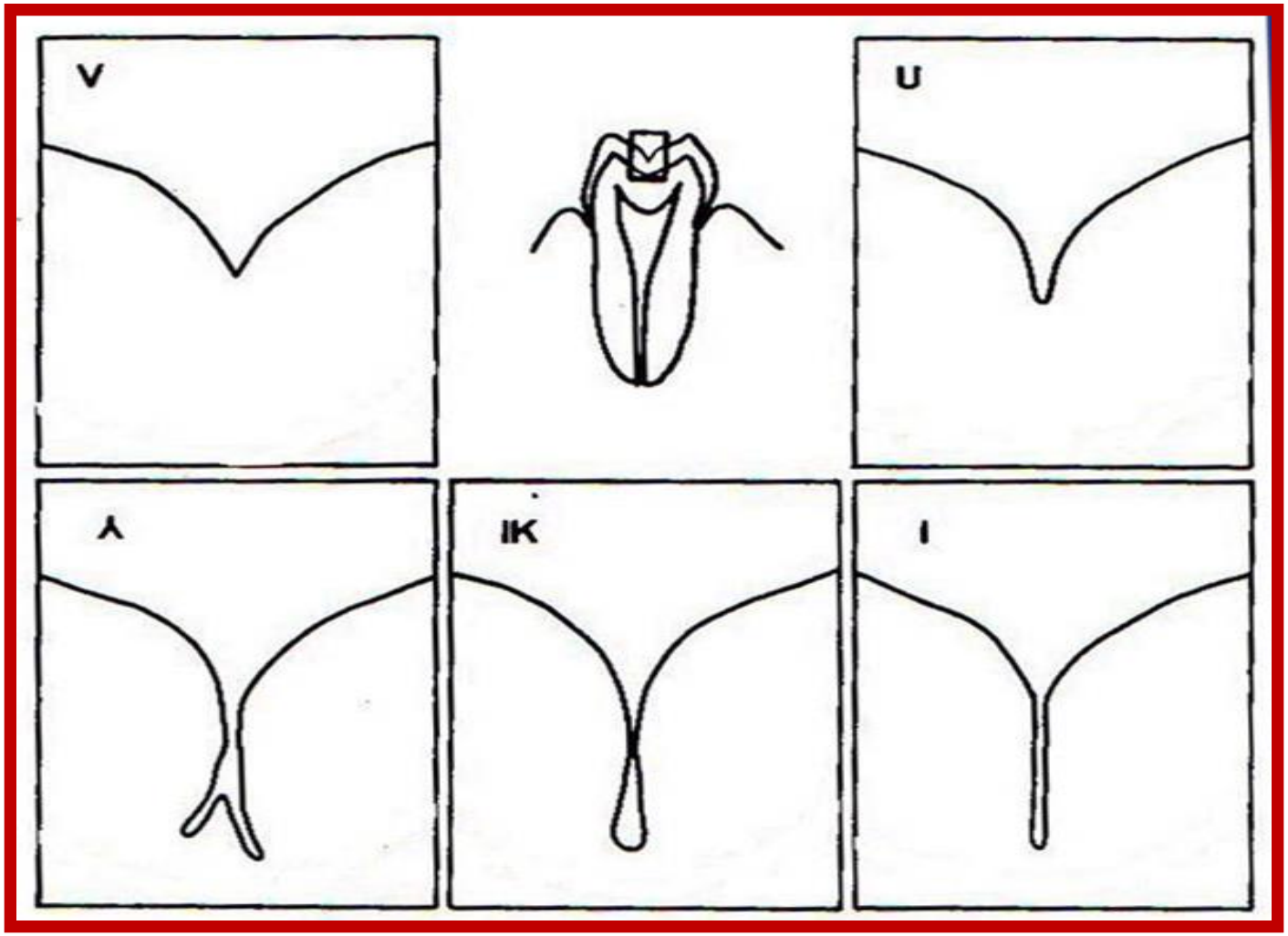


THE TOOTHBRUSH IS INACCESSIBLE TO THE OCCLUSAL PITS AND FISSURES OF THE TEETH.





MORPHOLOGICAL TYPES OF OCCLUSAL FISSURES



Pit and Fissure sealants play an important role in **occlusal caries prevention,** which are least benefited by fluorides or most of the other preventive measures.

DEFINITION (GORDON)

Fissure sealants are materials which are designed to prevent pit and fissure caries, when they are applied to the occlusal surfaces of the teeth, in order to obliterate the occlusal fissures and remove the sheltered environment in which caries may thrive, forming a mechanical physical protective layer against the action of caries producing bacteria and substrates.

REQUIREMENTS OF A SEALANT MATERIAL

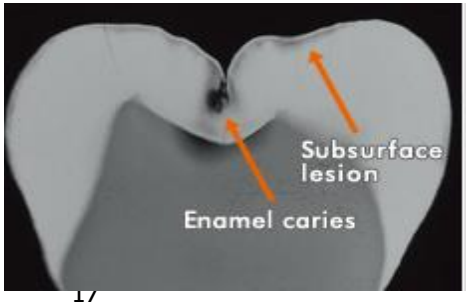
- Adhesion to enamel for extended periods.
- Simple clinical application.
- Non injurious to oral tissues.
- Free flowing.
- Rapidly polymerized.
- Low solubility in oral fluids.

INDICATIONS

Presence of deep pits & fissures on primary & permanent molars.

In susceptible areas of teeth.

In case of **suspected or initial occlusal caries.**



INDICATIONS

In children who are susceptible to occlusal caries.

Children coming from **Non Fluoride areas** with increased caries experience.

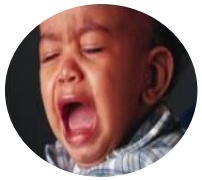
CONTRA INDICATIONS

Presence of shallow pit and fissures.

Well established caries lesion - **Cavitation.**

Teeth with proximal caries.

Teeth which are partially erupted or not completely erupted - difficult to isolate.



In uncooperative children.

SEALANT MATERIALS

The different types are :

FIRST GENERATION: UV light activated resins.

SECOND GENERATION: Chemically activated resins.

THIRD GENERATION: Visible light activated resins.

FOURTH GENERATION: Fluoride containing sealants

The different materials are:

1. Alkyl cyanoacrylates.
2. Poly urethanes. Ex. Elmer - Protector.
3. BIS GMA – Most popular and Currently used.
4. **Glass Ionomer cements** - used as sealants in fissure system wherein width of fissure **more than 100 µs**.

Advantages : No etch technique, chemical bonding, contains fluoride.

Filled and Non-filled

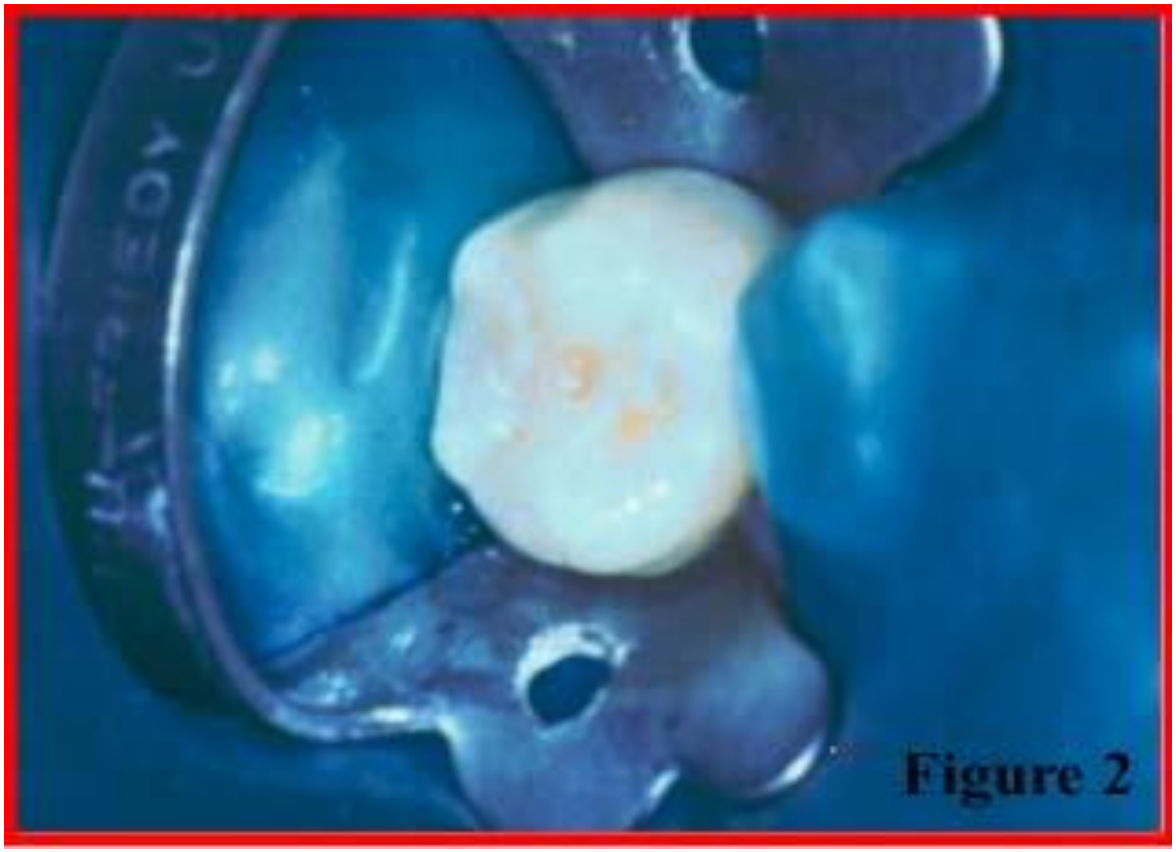
Clear and Tinted

TECHNIQUE OF APPLICATION

I. Selection of a patient and Selection of a tooth:

II. Clean the occlusal surface: All debris removed

III. Wash the tooth surface and then dry the tooth.



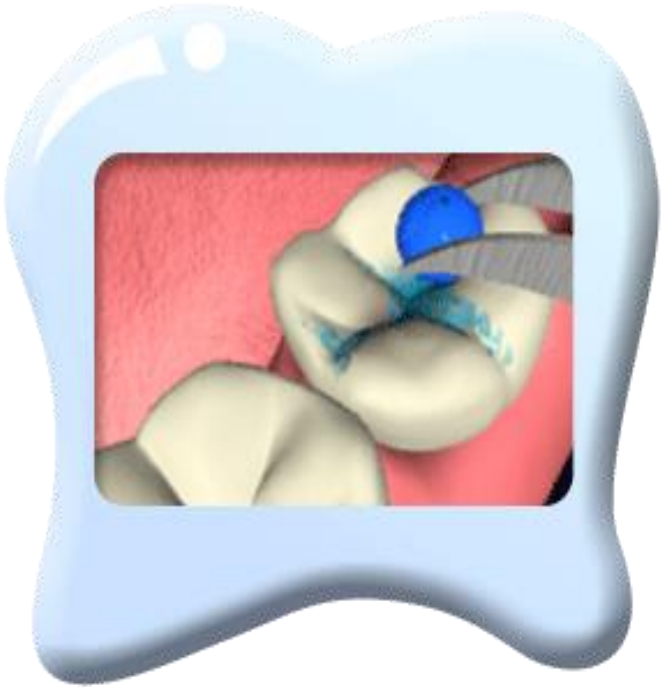
IV. Isolate the tooth : Saliva ejector and cotton rolls and preferably Rubber Dam.

RATIONALE:

* The Sealant application procedure is highly technique sensitive and hence isolation aspect is of prime importance.

V. Acid etching: 37% phosphoric acid for 15 seconds

White frosted appearance is obtained.

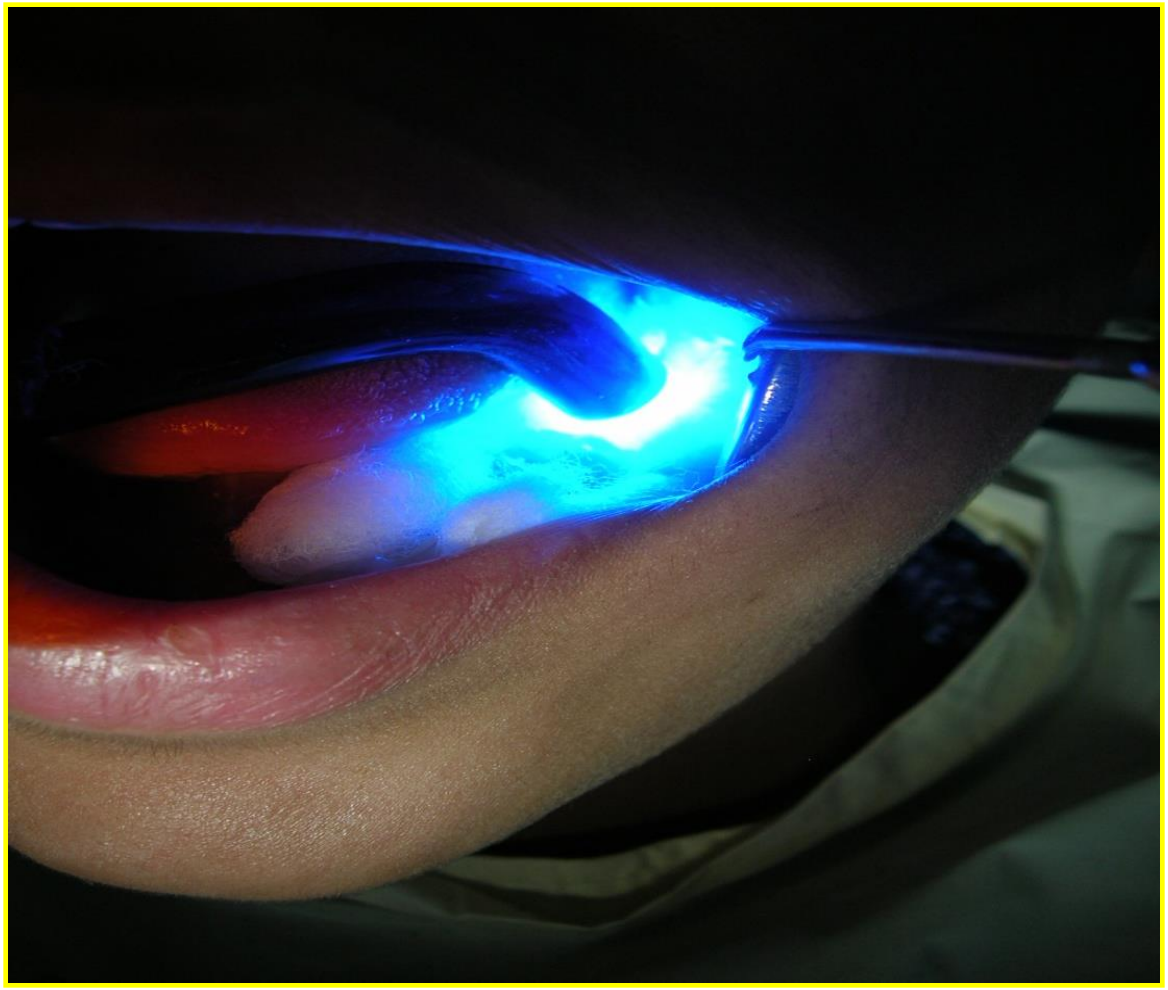


V I. Wash the surface with running water for 30 seconds.

VII. Dry tooth & examine the etched enamel surface for **white frosty appearance.**

VIII. Apply the fissure sealant with a fine brush and the material has to be placed at an angle from the cuspal slopes.

IX . Curing for 15 -30 seconds.

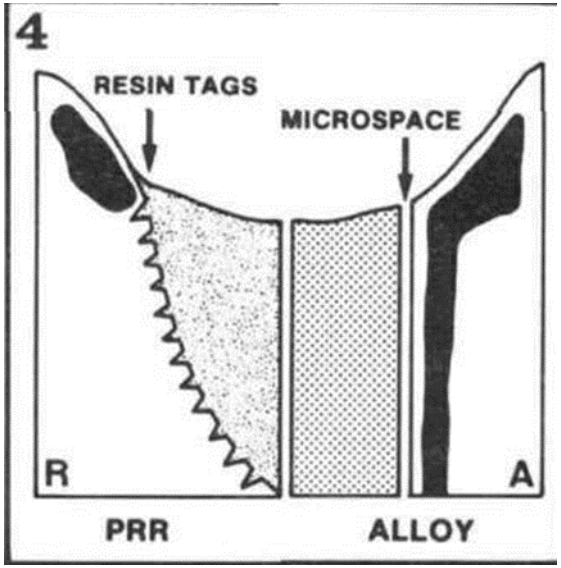


X. Check for integrity and surface topography including air bubbles

Check for occlusion.

XI. It is advisable to apply topical fluoride on rest of occlusal surface.

INCIPIENT FISSURE CARIES AND SEALANTS



The bacterial count is reduced by-

- Acid pretreatment
- Impenetrable marginal seal

So it plays an important role in neutralizing incipient carious lesions.

PREVENTIVE RESIN RESTORATIONS

PRR is an extension of a sealant technique that allow for caries control with minimum loss of tooth structure.

Indicated where caries has just reached the dentine.

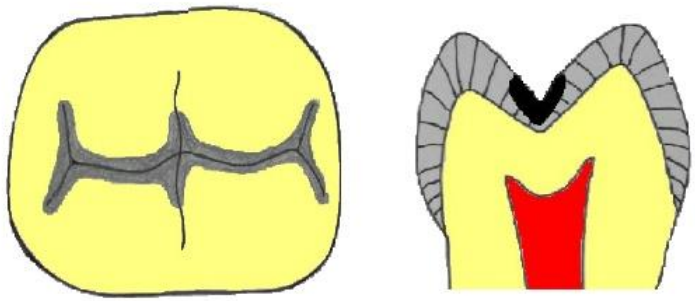
The areas of tooth affected by caries are removed , filled with restorative material and finally covering the remaining fissured anatomy with sealant.

TYPE OF PRR

Based on the extent and depth of carious lesions. They are classified as:

TYPE A

Preventative resin restoration



Caries is incipient and limited to enamel

A slow speed round bur is used

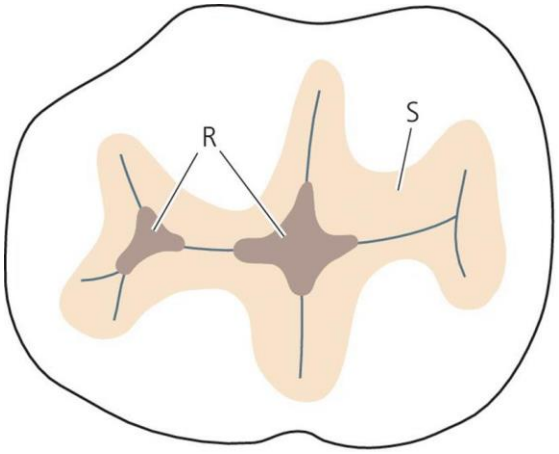
Unfilled resin or sealant is used to restore

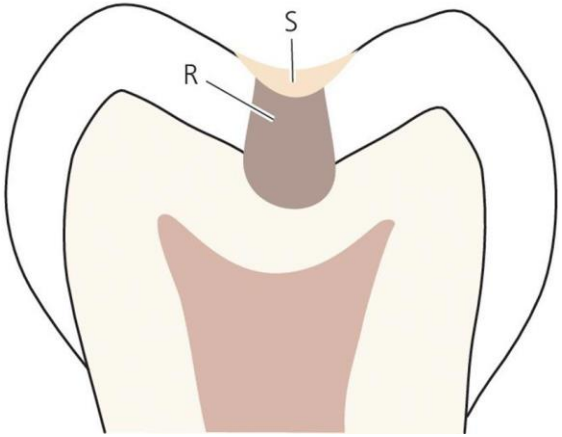
TYPE B

Minimal caries extending to dentin

Preparation is size 2 round bur

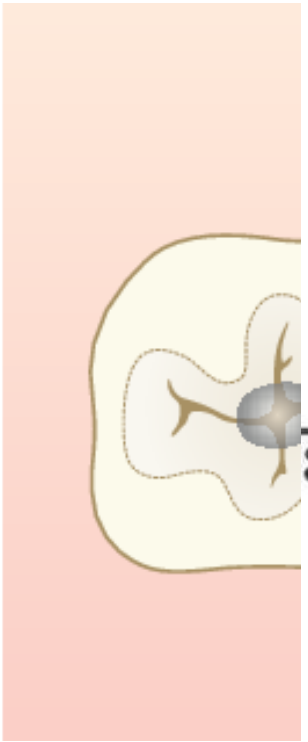
Requires filler to the unfilled resin

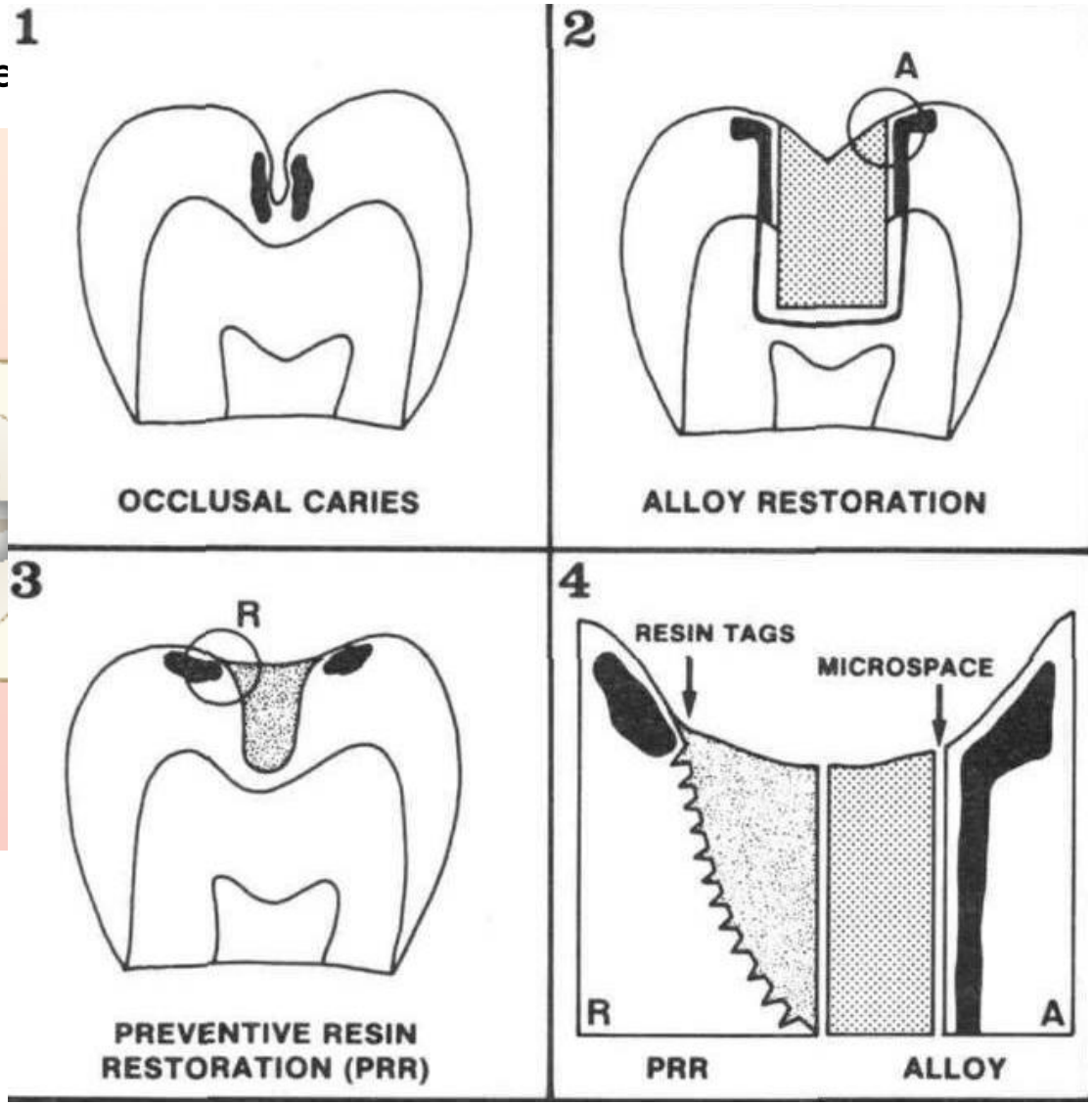




TYPE C

Need for gre





SEALANT AS A PREVENTIVE MEASURE

Expected caries protection is 100% on occlusal surface, as long as fissure sealant is retained on the tooth surface.

The caries reducing effectiveness of sealant is equally good in both primary and permanent teeth.

Sealant should be used as part of total caries preventive programmes like :

a. Good oral hygiene measures.

b. Use of optimum fluoride.

c. Reducing the frequency of sucrose intake.

CONCLUSION

Most of the carious lesions that occur in the mouth are found on the occlusal surfaces.

The pit and fissure sealant can be useful aid in preventing the occlusal caries.

Thus, the use of sealants must be related more to the ***preventive philosophy*** and conservation of tooth structure.

THANK YOU