

# The principles of cavity preparation

↳ Increase the durability of the restoration.

ARE SOME FUNDAMENTAL PRINCIPLES WHICH MUST BE REALIZED IN PREPARING CAVITIES AND MUST BE APPLIED AND ADHERED TO IN ALL CASES SINCE FAILURE OF WHOLE PROCEDURE MIGHT OCCUR OF ONE OR ANY ONE IS VIOLATED



# Tooth preparation

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Tooth preparation is defined as the  
*mechanical alteration of a defective,*  
*injured, or diseased tooth to receive*  
*restorative material that re-establishes*  
*normal form, function and esthetics.*

- Caries - Fracture - abrasion - Erosion

Normal anatomy

- mastication  
- speech



# Objectives of Tooth Preparation

- i. Remove all defects and provide necessary protection to the pulp.  
\* Removing all carious lesion and infected dentin
- ii. Extend the restoration as conservatively as possible.  
- Not wide cavity (sound dentin provides support and protection)  
→ Amalgam needs more dentin to be removed - to provide proper thickness.
- iii. Prepare the tooth so that under the forces of mastication, the tooth or the restoration (or both) will not fracture and the restoration will not be displaced.  
- Achieved through 90° cavosurface angle.
- iv. Allow for the esthetic and functional placement of a restorative material.  
- Wide enough to allow placement of instruments inside.



# Steps of cavity preparation as suggested by Dr. Black are:

## a. initial cavity preparation

1. Obtain the required outline form.
2. Obtain the required resistance form.
3. Obtain the required retention form.
4. Obtain the required convenience form.

## b. Final cavity preparation

1. Remove any remaining carious dentin.
2. Finish the enamel wall.
3. Performing toilet of the cavity.



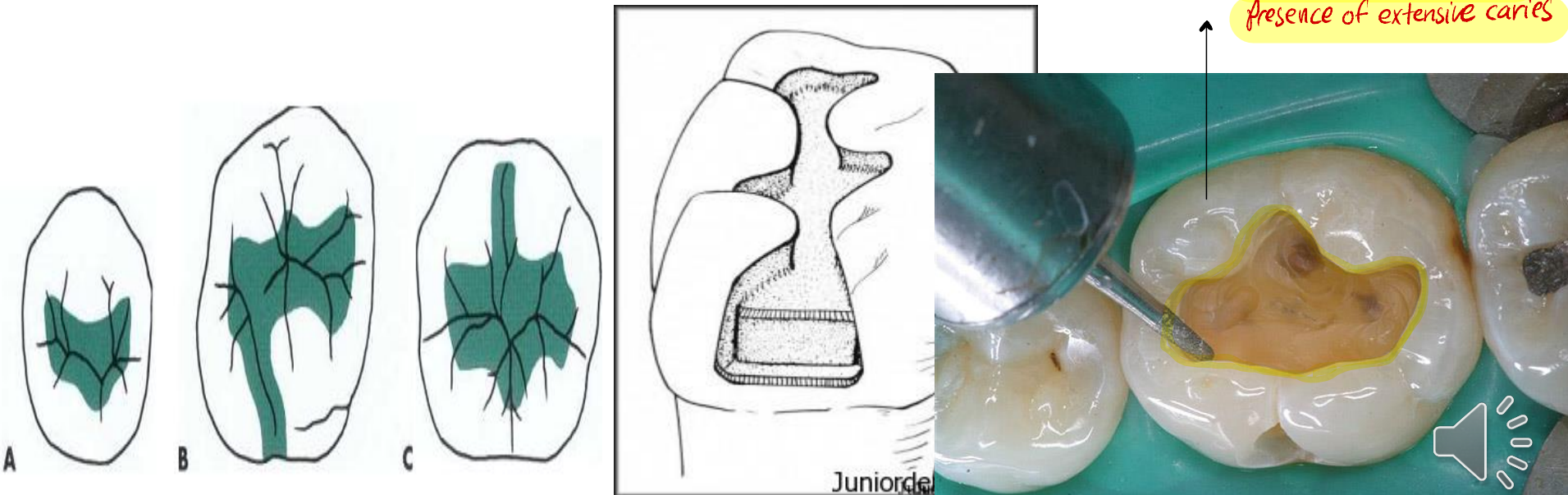
# 1. Obtain the required outline form.

*The margins of the cavity in your mind before going toward preparation.*

## ● Outline form means:

Placing the preparation margins in the position they will occupy in the final tooth preparation except for finishing enamel walls and margins.

*wide cavity, the extension depends on the previous presence of extensive caries*



\* Put in your mind that amalgam needs thickness of at least 1.5 mm occlusally and 1 mm proximally

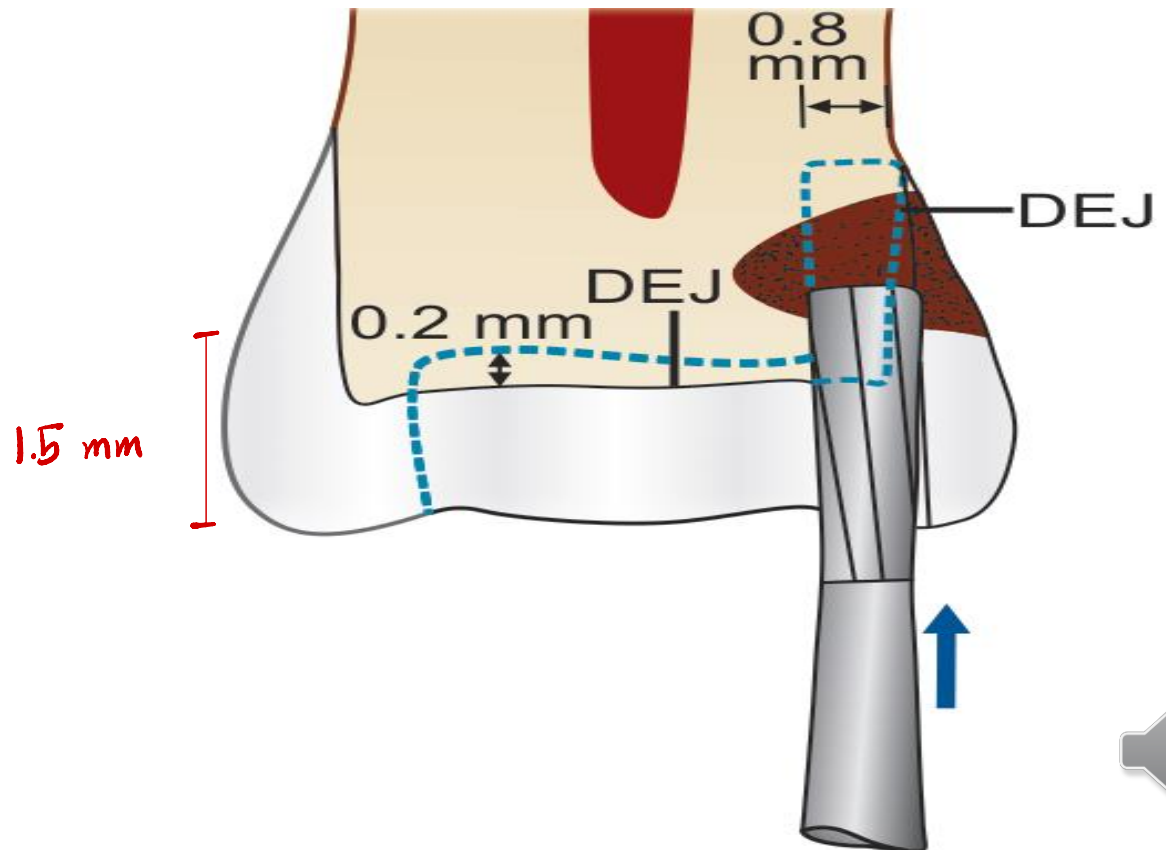
# Establishing the outline form means:

preparing an initial depth of 0.2 – 0.8mm pulpally of DEJ.

*Proximally*

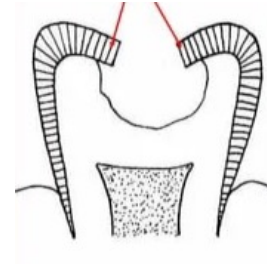


E



# principles

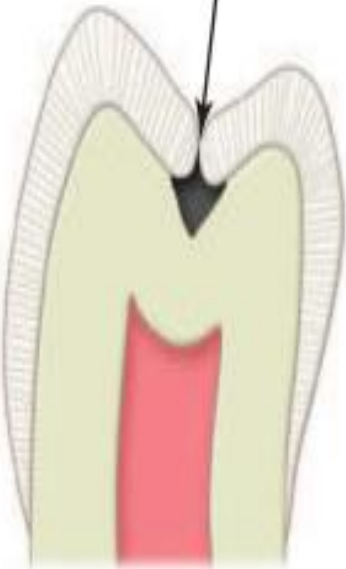
*supported by dentin.*



1. All unsupported or weakened (friable) enamel usually should be removed. *→ Affects the restoration, leads to exposed margin which harbors microorganisms and leads to recurrent caries.*  
*caries / unsupported enamel / primary pits and fissures*
2. All faults should be included.
3. All margins should be placed in a position to allow finishing of the margins of the restoration. *\*margins should be visible and accessible for finishing and polishing.*

Axis of preparation

A

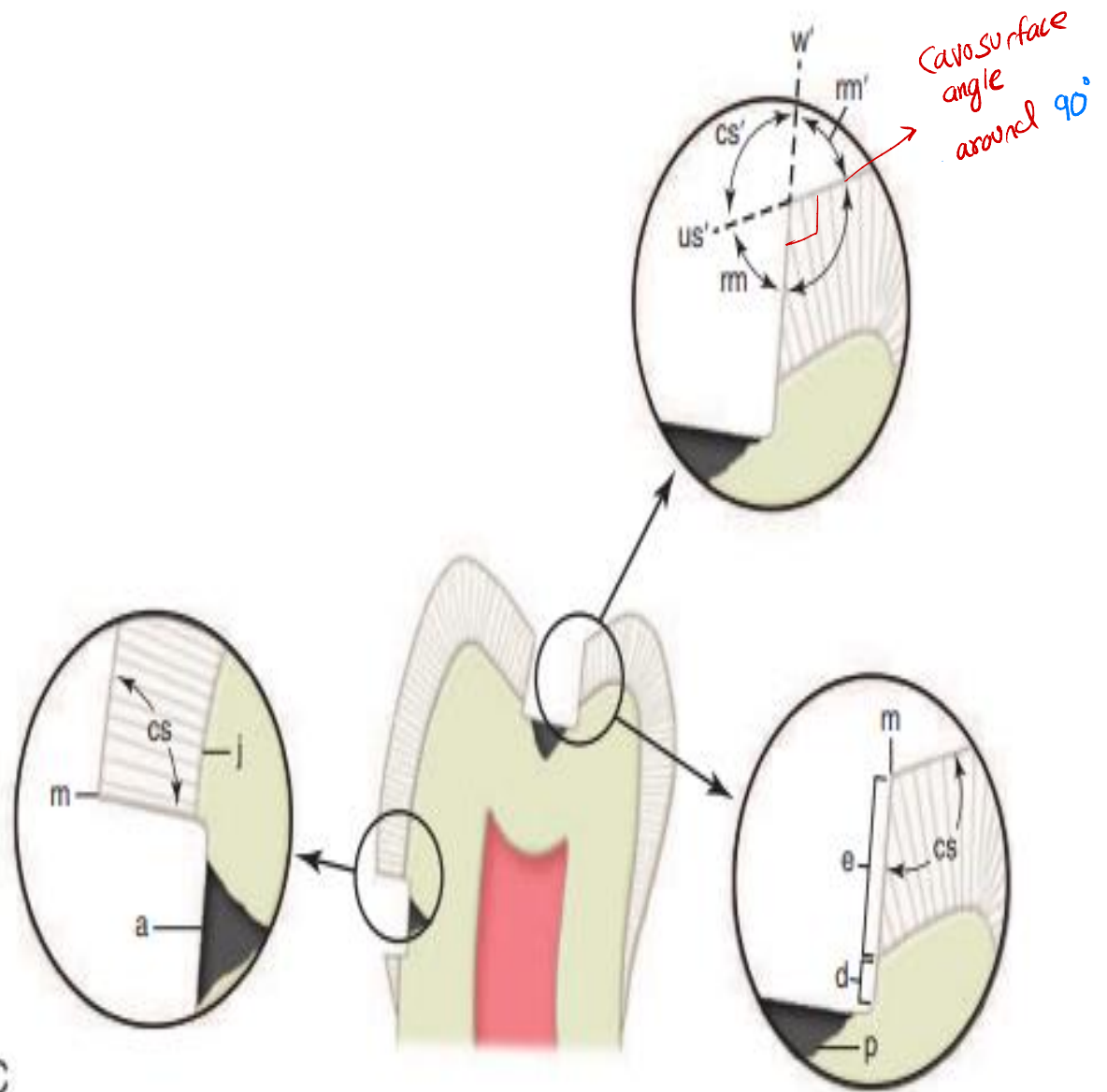


Axis of preparation

B



C





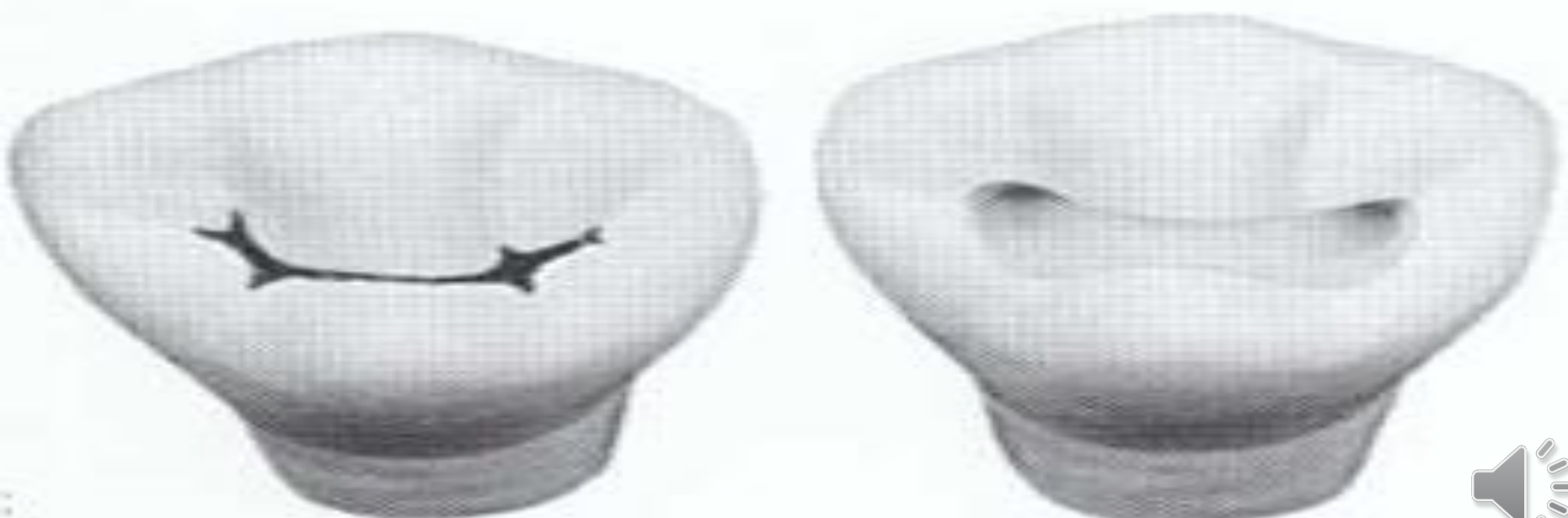
# General features of the outline form:

→ It will support the restoration strongly, bcz no restoration would give same properties of natural tooth

1. Preserving cuspal strength Don't undermine cusps by removing its supportive dentin.
2. Preserving marginal ridge strength
3. Minimizing facio-lingual extensions for preservation of cuspal strength.
4. Connecting two close (<0.5mm apart) defects or tooth preparations.
  - \* Bcz it is considered unsupported
  - In transverse and oblique ridge
5. Restricting the depth of the preparation into dentin.



- In natural teeth you should follow the carious lesion.



# Outline form and initial depth in pit-and-fissure preparations are controlled by three factors:

1. Extent to which the enamel has been involved by the **carious process** *Amalgam → Extension for prevention* *composite → prevention of extension*
2. Extensions that **must be made** along the fissures to achieve sound and smooth margins
3. Limited bur depth related to the tooth's original surface (real or visualized if missing because of disease or defect) while extending the preparation to sound external walls that have a **pulpal depth** of approximately **1.5-2 mm** and usually a maximum depth into dentin of **0.2mm occlusaly**.

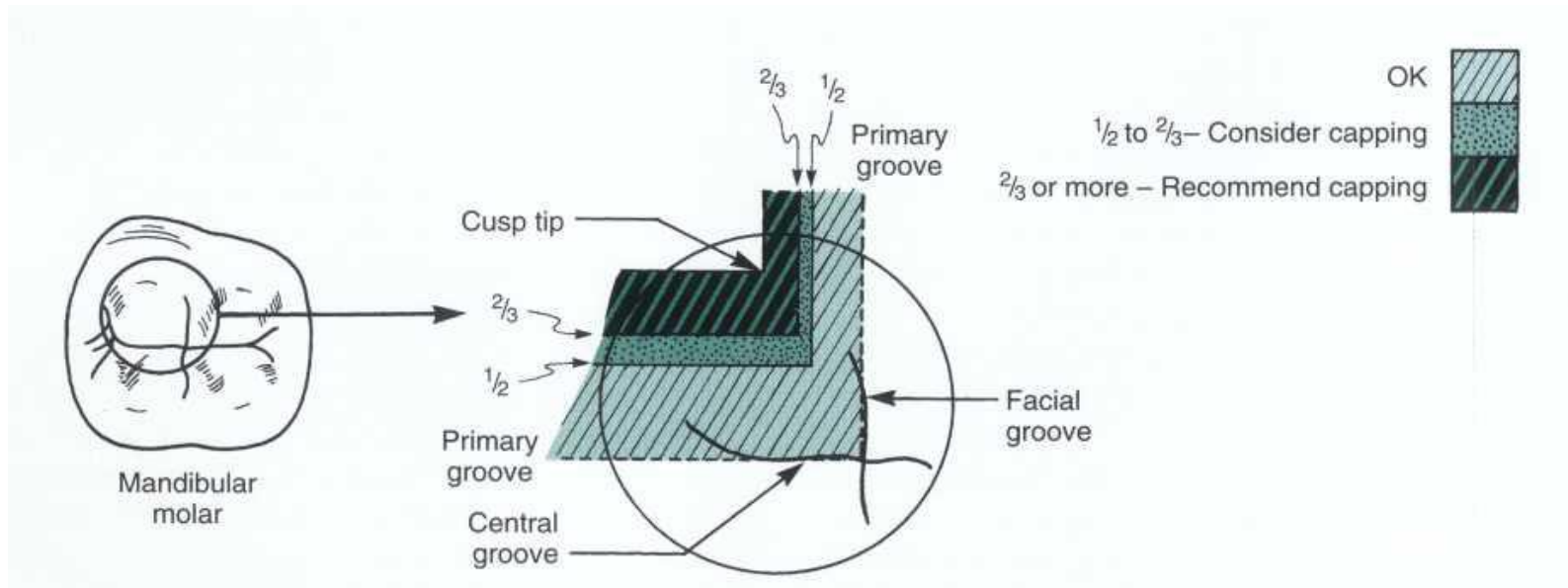
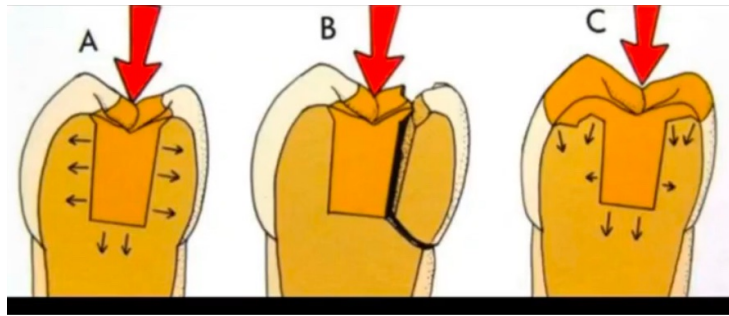
*from DEJ*

*\* According to the reference  
Point - cusps  
- central fissure  
...*



# Rules for establishing outline form for pit-and-fissure tooth preparation

1. Extend the preparation margin until **sound tooth structure** is obtained, and no unsupported or weakened enamel remains.
2. Avoid terminating the margin on extreme **eminences**, such as cusp heights or ridge crests. *\* Bcz of occlusal load on cusps and ridges.*
3. If the extension from a primary groove includes one half or more of the cusp incline, consideration should be given to capping the cusp. If the extension is two thirds, the cusp capping procedure is most often the proper procedure to remove the margin from the area of masticatory stresses.



# Enameloplasty<sup>Reshaping</sup>

Is the procedure of reshaping (saucering) the fissures to make them less prone to caries.

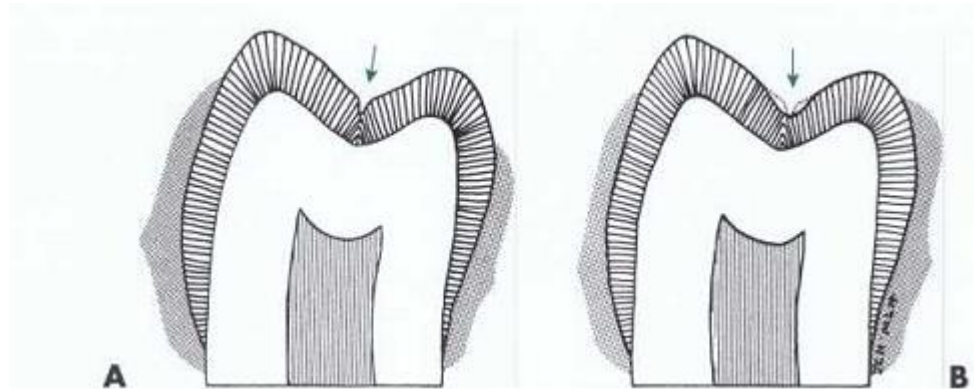
Used if caries involve not more than the outer third of enamel.

Enameloplasty does not extend the outline form. The amalgam restorative material is not placed into the recontoured area

## Objectives :

- Making these fissures accessible to brushing and flushing by saliva.

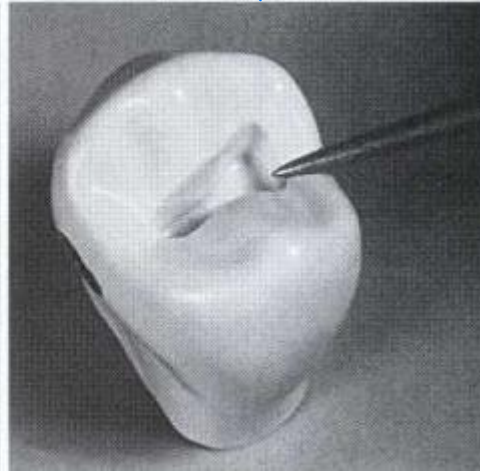
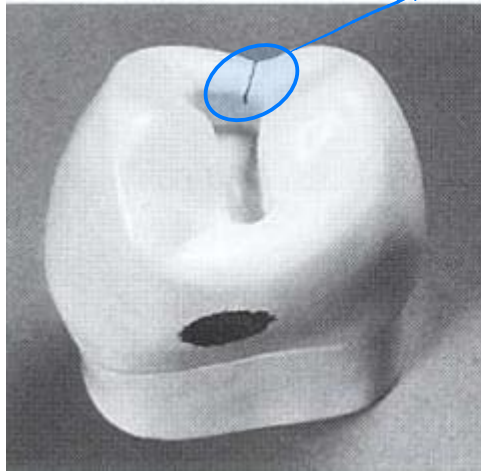
# Enameloplasty





# Enameloplasty

- slight caries in the outer surface of enamel
- no need to extend your prep toward the marginal ridge.

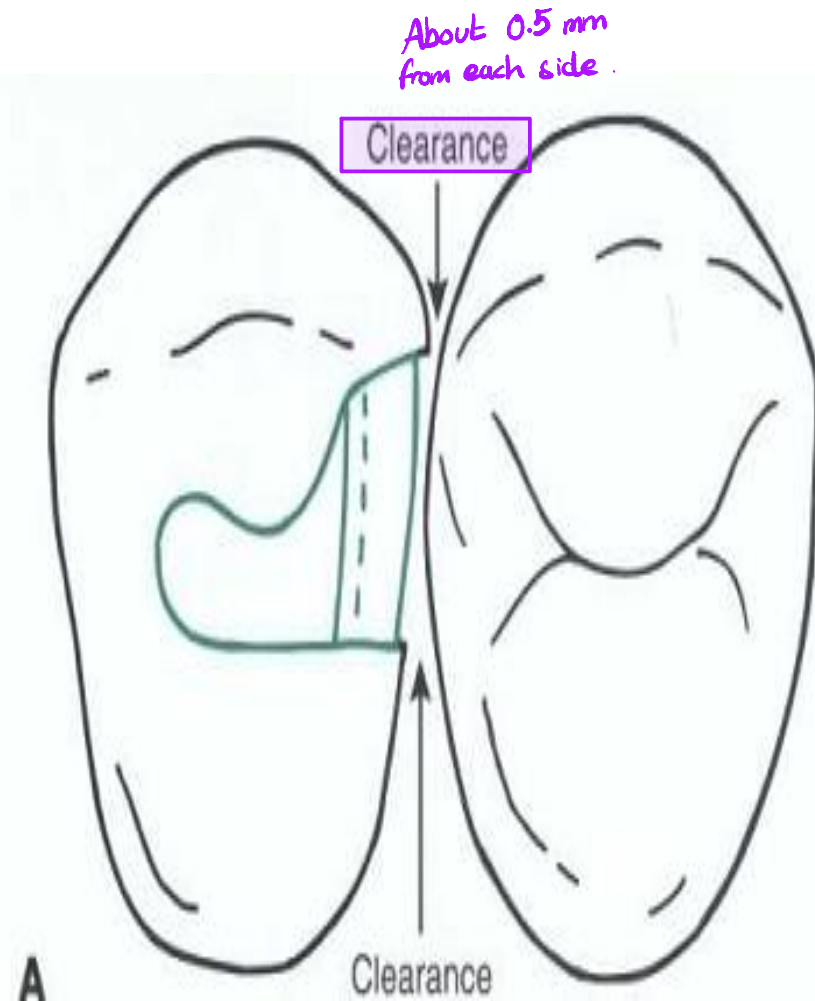


flame diamond bur

\* No need to restore these area, just make it smooth.

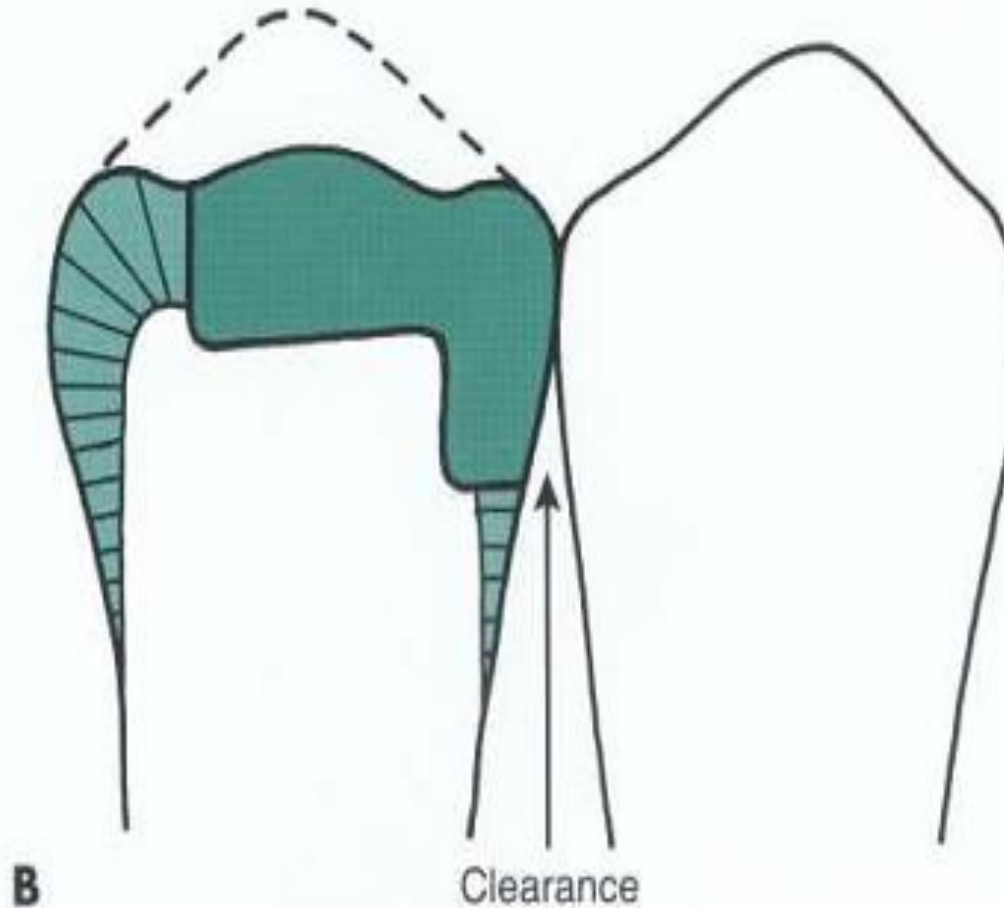
# The facial and lingual margins in proximal tooth preparations

usually are extended into the respective embrasures to provide specified clearance between the prepared margins and the adjacent tooth to place the margins away from close contact with the adjacent tooth so that the margins can be better visualized, instrumented, and restored.



# gingival margins of tooth preparations

Usually extended apically of the proximal contact to provide a minimum clearance of 0.5 mm between the gingival margin and the adjacent tooth.



Tip of the probe should pass through the clearance.



**Thank you very much !**

