# Principles Of Cavity Preparation
# 1 of 2

# LEARNING OBJECTIVE

- To understand the rationale behind the design features of a cavity preparation for amalgam

# CONTENT

- Definition of cavity preparation
- Objectives of cavity preparation
- Steps of cavity preparation
  - Outline form and initial depth
  - Resistance form
  - Retention form
  - Convenience form

# TOPIC DISCUSSION

# What is cavity preparation ?

**Tooth preparation is defined as the mechanical alteration of a defective, injured or diseased tooth to best receive a restorative material that will re-establish a healthy state for the tooth, including aesthetic corrections where indicated, along with normal form and function**

# Objective of cavity preperation

1. Removal of all defects with the protection of the pulp.

2. Extention of the restoration as conservatively as possible.

3. Under the force of mastication the tooth or the restoration or both will not fracture and/ or be displaced.

4. Allow for the esthetic and functional placement of a restorative material

# Steps of cavity preperation

- Initial steps
- ***Outline Form an  Initial Depth***
- ***Primary Resistance Form***
- ***Primary Retention Form***
- ***Convenience form***

*Final steps*

- ***Removal of Any Remaining Enamel Pit orFissure, Infected Dentin, and/or Old Restorative Material,if indicated***
- ***Pulp protection***
- ***Secondary Resistance and Retention Form***
- ***Finishing the External Walls of the Tooth Preparation.***
- ***Final Procedures: Cleaning, Inspecting, and Sealing.***

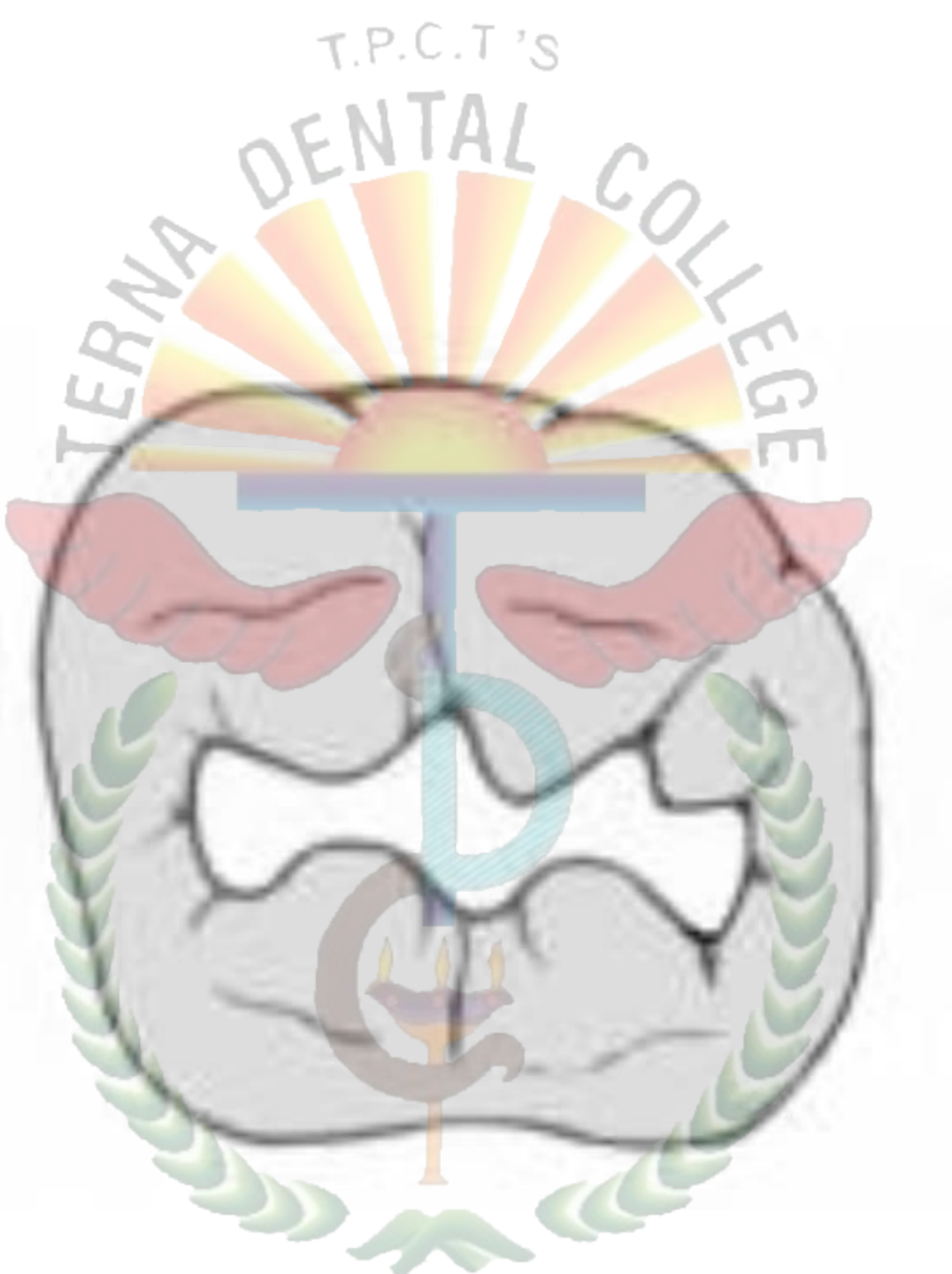
# Step-1, Outline Form and Initial Depth

*Establishing the outline form means*

Deciding the final position of *preparation margins* except for finishing enamel walls and margins,

and

preparing an *initial depth of 0.2 to 0.8 mm pulpally of the DEJ*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# Principles of Outline Form and Initial Depth

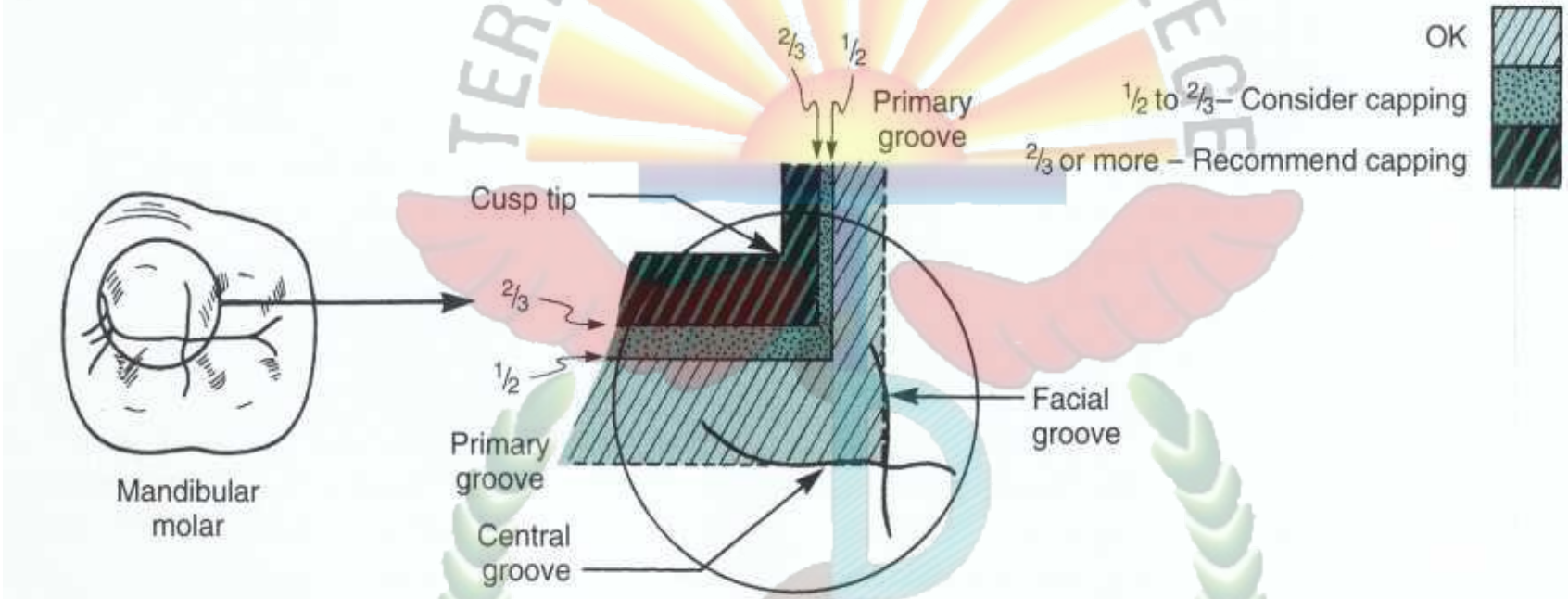
1. All friable and/or weakened enamel should be removed

2. All faults should be included, and

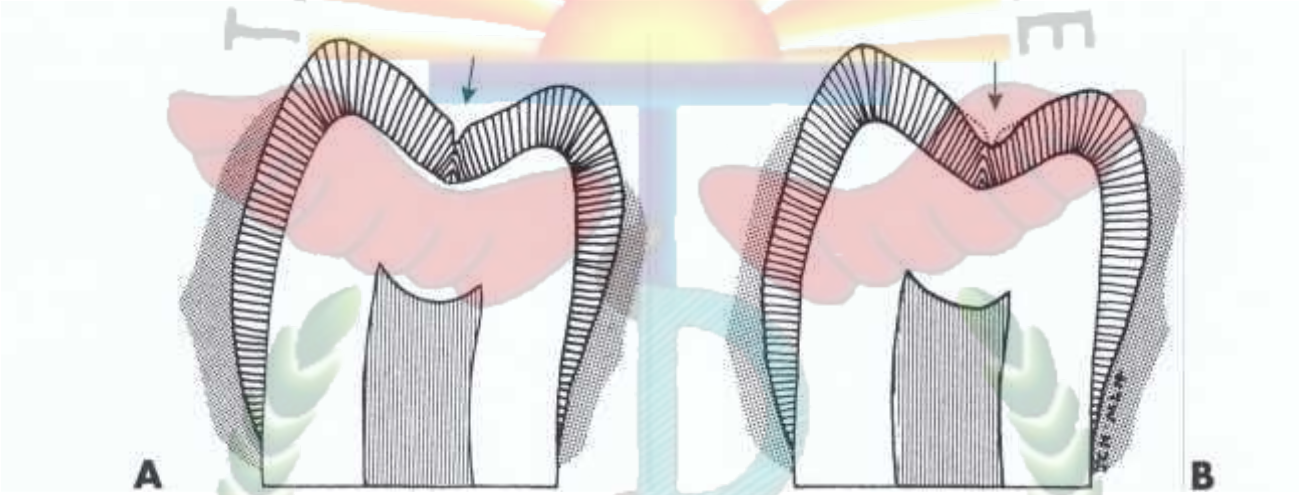
3. All margins should be placed in a position to afford good finishing of the margins of the restoration

# *Rules for establishing outline form*

1. Extend the preparation margin until sound tooth structure is obtained and no unsupported and/or weakened enamel remains.
2. Avoid terminating the margin on extreme eminences such as cusp heights or ridge crests.
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*


2/3
1/2
Primary groove
OK
1/2 to 2/3– Consider capping
2/3 or more – Recommend capping
Cusp tip
2/3
1/2
Facial groove
Primary groove
Central groove
Mandibular molar

*4.Extend the preparation margin to include all of the fissure that cannot be eliminated by appropriate Enameloplasty )*




*A, Enameloplasty on area of imperfect coalescence of enamel. B, No more than one third of the enamel thickness should be removed*

*5.initial pulpal depth -- maximum of 0.2 mm into dentin (except when –*

*(1) for a gold foil restoration, in which case the initial depth is 0.5 mm into dentin*

*(2) when the occlusal enamel has been worn thin (where total cavity depth is 1.5mm.)*

6. Connecting two close ( < 0.5mm apart ) fault or cavity preperation.

7. Extend the outline form to provide convenience form.

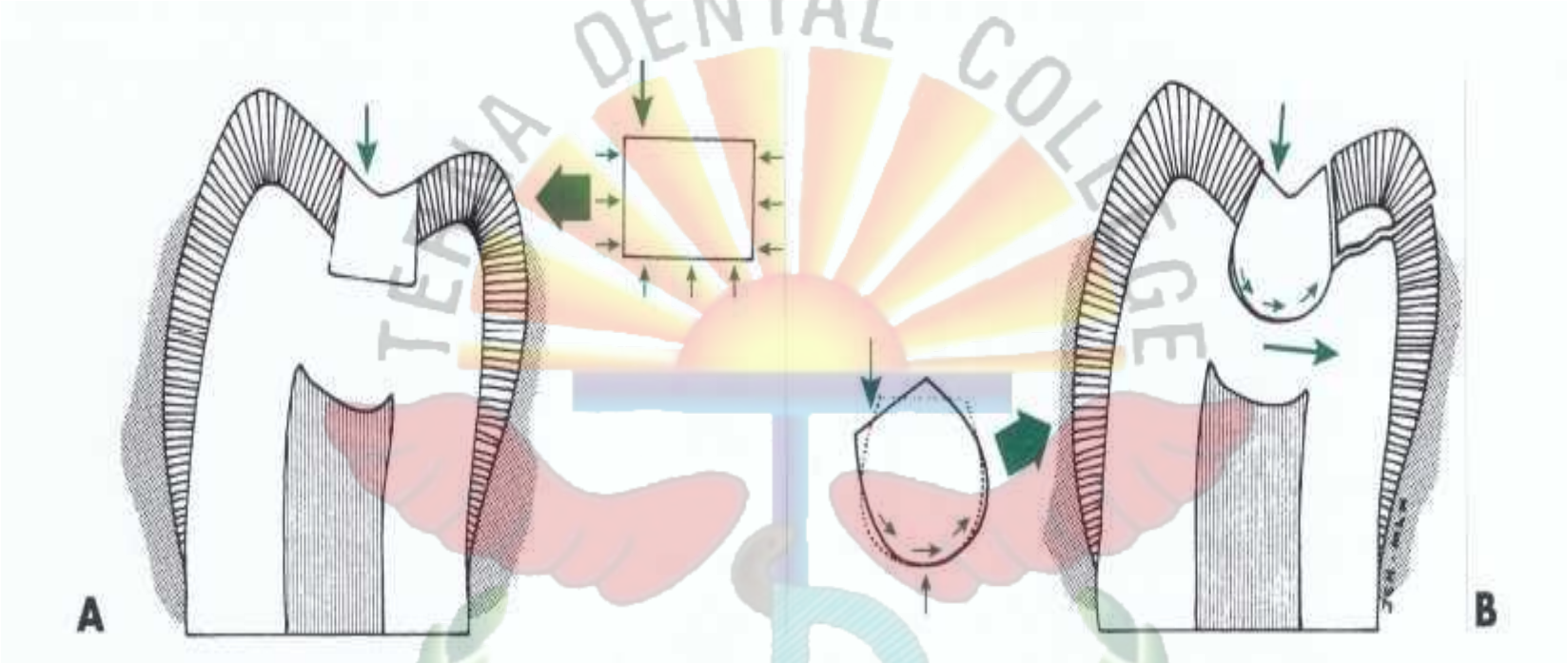
## Step-2, Resistance form

- *Definition.*

*Primary resistance form may be defined as that shape and placement of the preparation walls that best enable both the restoration and the tooth to withstand, without fracture, masticatory forces delivered principally in the*

# Principle of Resistance form

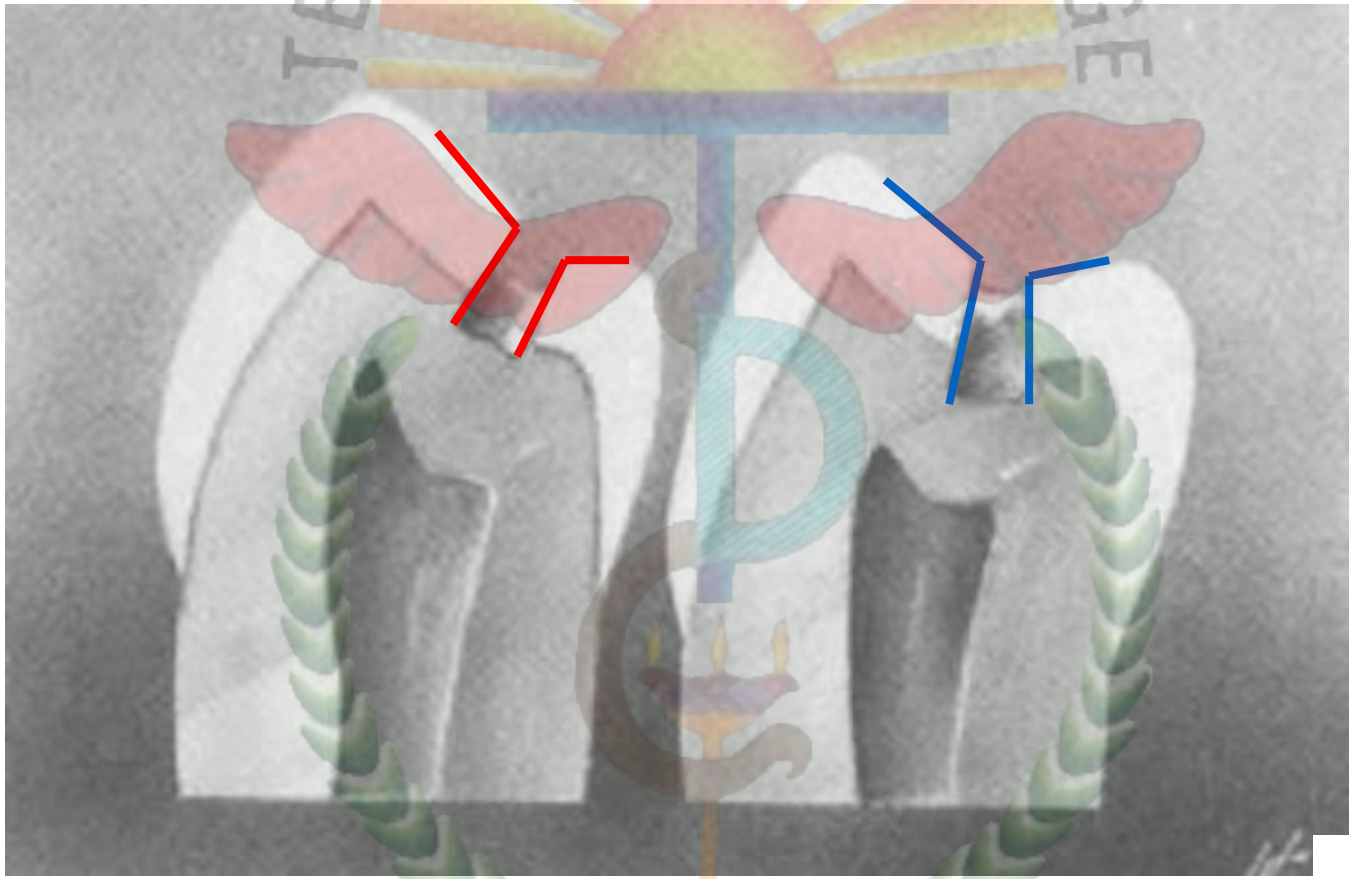
1. Adequate thickness of restorative material
2. Box shape
3. Flat floor




**Flat floor (A) will help prevent restoration movement, whereas rounded pulpal floor ( B) may allow a nonbonded restoration rocking action producing a wedging force, which may result in shearing of tooth structure.**

# Flat Floor

# Cavosurface Margin



1. No unsupported (undermined) enamel

2. Slightly-rounded internal  line angle

3. Cap weak cusps

4. Preserve cusp & marginal ridge if possible

5. Bonding of restorative material

## Step 3: Primary Retention Form

- Definition. Primary retention form is that shape or form of the conventional preparation that resists displacement or removal of the restoration from tipping or lifting forces

Although resistance & retention form are separate entities  often  the features which enhance the retention form of tooth also enhance the resistance form

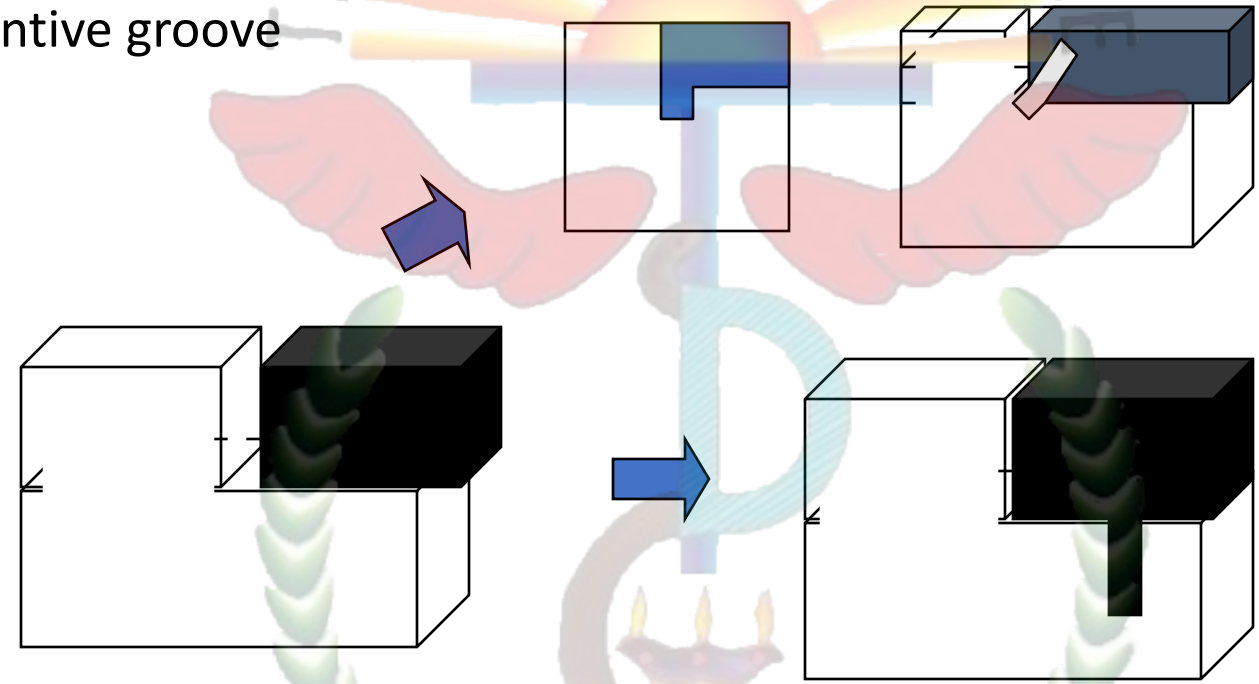
# Principles of Retention form

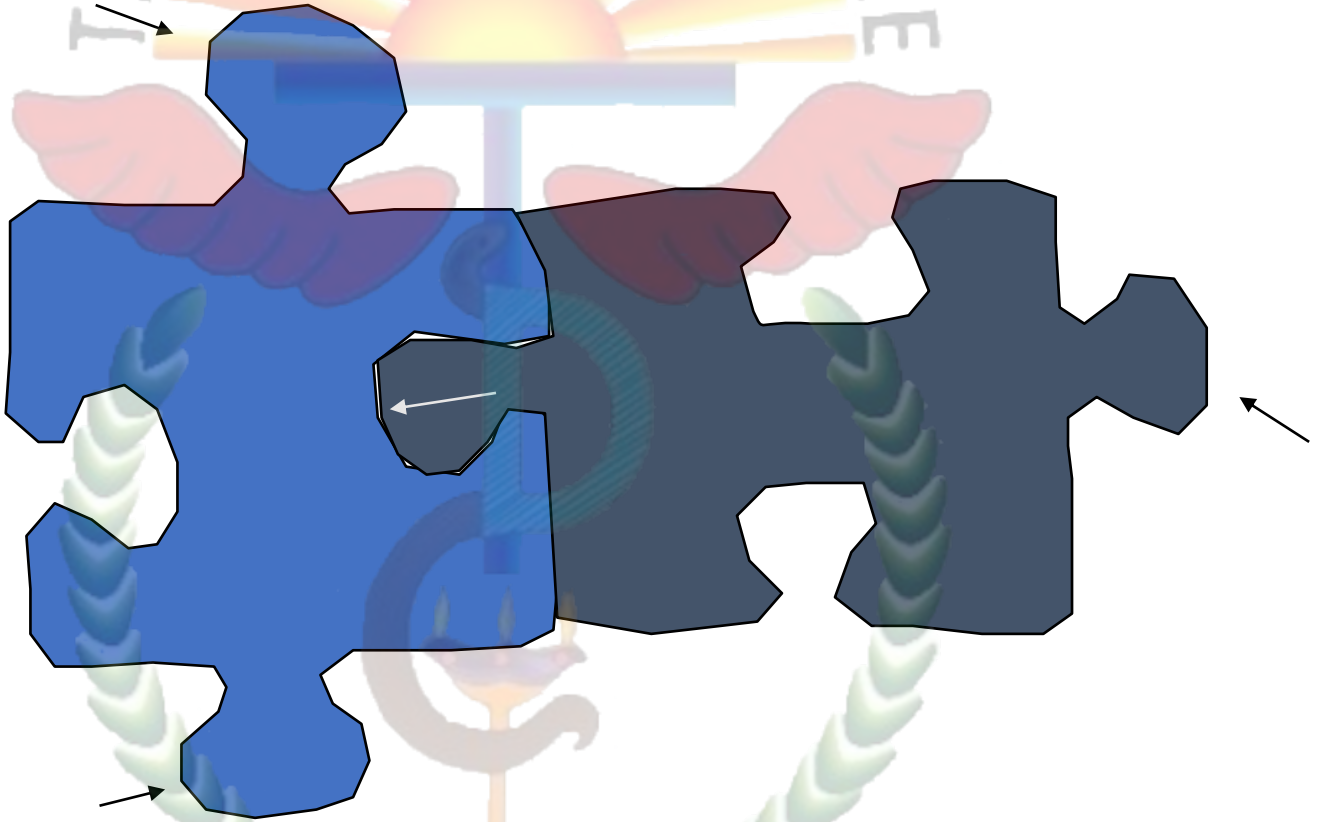
1. Box form
2. Convergence to occlusal surface (small undercut)
3. Retentive groove
4. Pins and slots
5. Dovetail
6. Acid etching (for resin composite restorations)


***Basic primary retention form in Class II tooth preparations or amalgam (A) with vertical external walls of proximal and occlusal portions converging occlusally and for inlay ( B) with similar walls slightly diverging occlusally.***

Retentive groove

Pins





# Step 4: Convenience Form

- Definition

  Convenience form is that shape or form of the preparation that provides for adequate observation, accessibility, and ease of operation in preparing and restoring the tooth.

# EXAMPLES OF CONVENIENCE FORM

On occasion, obtaining this form may necessitate extension of distal, mesial, facial, or lingual walls to gain adequate access to the deeper portion of the preparation.

In class II extending proximal preperation beyond proximal contacts.

For gold foil establishing convenience points for the starting of foil condensation

# CONCLUSION

- All the features of a good cavity for receiving an amalgam restoration are based on fulfilling the fundamental principles of cavity preparation

# TAKE HOME MESSAGE

- Thorough knowledge and application of the fundamentals are essential for creating a successful restoration which will last as long as possible and fulfil the requirements of restoring form and function

# PROBABLE SAQS AND LAQS

- Discuss the fundamentals/Principles of cavity preparation in detail - LAQ