Lec. 1

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Conservative Dentistry

(Definition, Classification, Principles)

Definition of tooth preparation

Tooth preparation is defined as the mechanical alteration of a defective, injured, or diseased tooth to best receive a restorative material that will reestablish a healthy state for the tooth with normal form and function (**Sturdevant**).

Purpose of tooth preparation:

Restoration is usually required to repair a diseased, injured or defective tooth structure. The restoration helps in maintaining proper form, function, and aesthetics

Objectives of tooth preparation:

- Removal of all defects.
- Provide necessary pulp protection.
- Preservation of tooth structure.
- To allow for functional and aesthetic placement of restorative material.
- Prepare tooth such that under masticatory forces, the tooth and restoration do not fracture and restoration does not get displaced.

Nomenclature: Nomenclature refers to a set of terms used in communication by persons in the same profession that enables them to better understand one another.

Cariology

It is a science which deals with the study of etiology, histopathology, epidemiology, diagnosis, prevention, and treatment of dental caries.

Definition of Caries

- An infectious microbiological disease of teeth that results in localized dissolution and destruction of calcified tissues (**Sturdevant**)
- A microbial disease of the calcified tissues of the teeth, characterized by demineralization of calcified tissues and destruction of the organic substance of the teeth (**Shafer)**

Clinical presentation of dental caries: carious lesions originating on

1- Pit and Fissure Caries
2- Smooth Surface Caries
3- Root Surface Caries

Classification of dental caries:

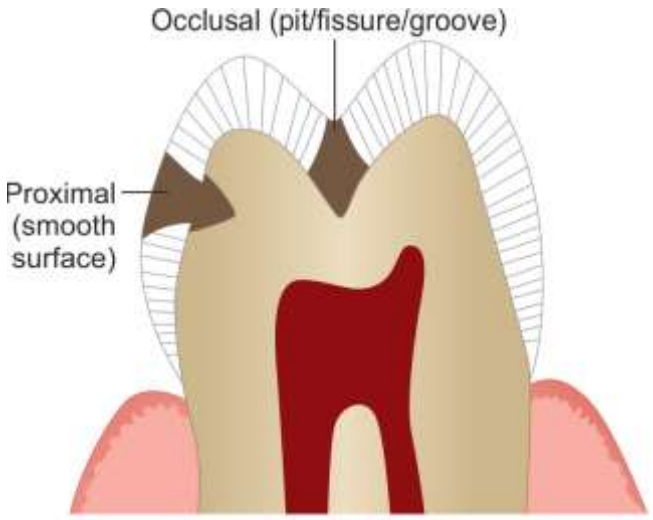
Carious lesions can be classified in different ways

1- Based on Anatomical Site:

A. **Pit and fissure Caries**: Shape of pits and fissures contributes to their high susceptibility to caries because of entrapment of bacteria and food debris in them. Initially, caries of pits and fissures appear brown or black in color and with a fine

explorer, a “catch” is felt. Enamel at the margins of pits and fissures appear opaque bluish-white. At dentinoenamel junction, caries spread laterally rather than pulpally giving it triangular in shape. In longitudinal sections, it appears as triangular in shape with the apex facing the surface of tooth and the base toward the DEJ.

B. **Smooth Surface Caries**: Smooth surface caries occurs on gingival third of buccal and lingual surfaces and on proximal surfaces below the contact point. The caries forms a triangular pattern or cone-shaped lesion with the apex toward DEJ and base toward the tooth surface. At DEJ, it spreads laterally than pulpally. In dentin, it forms cone shape with base toward DEJ and apex toward pulp (Double inverted cone).



C. **Root Surface Caries**: Root caries are seen in older individuals of those having gingival recession exposing the cementum, thus increased prevalence of root caries. Root caries is found at CEJ or apical to CEJ.



2. Based on Whether Lesion is New One or Attacking:

A. **Primary caries:** It denotes lesions on unrestored surfaces



B. **Recurrent/secondary caries:** Lesions developing adjacent to restorations are referred to as either recurrent or secondary caries.



3. Based on Treatment and Restoration Design:

Class I: Pit and fissure caries occur in the occlusal surfaces of premolars and molars, the occlusal two-third of buccal and lingual surface of molars, and palatal surface of maxillary incisor.

Class II: Caries on proximal surface of premolars and molars.

Class III: Caries in the proximal surface of anterior teeth, not involving the incisal angles.

Class IV: Caries in the proximal surface of anterior teeth involving the incisal angle.

Class V: Caries on gingival third of facial and lingual or palatal surfaces of all teeth.

Class VI: Caries on incisal edges of anterior and cusp tips of posterior teeth without involving any other surface



Tooth preparation terminology:

Simple Tooth Preparation: A tooth preparation involving only one tooth surface is termed simple preparation, for example, occlusal preparation

Compound Tooth Preparation: A tooth preparation involving two surfaces is termed as compound tooth preparation, for example, mesio-occlusal or disto-occlusal preparation.

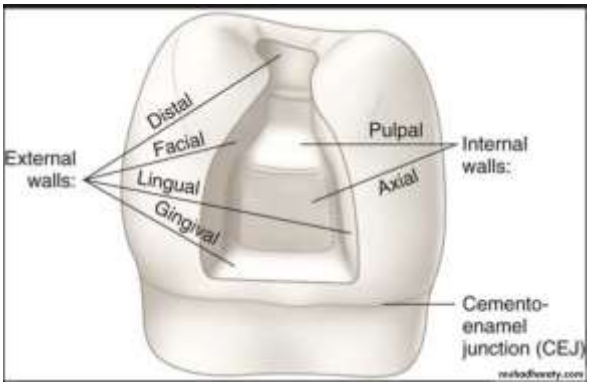
Complex Tooth Preparation: A tooth preparation involving more than two surfaces is called as complex tooth preparation, for example, MOD preparation.

For communication and records purpose, the surface of tooth preparation is abbreviated by capitalizing the first letter. For example,

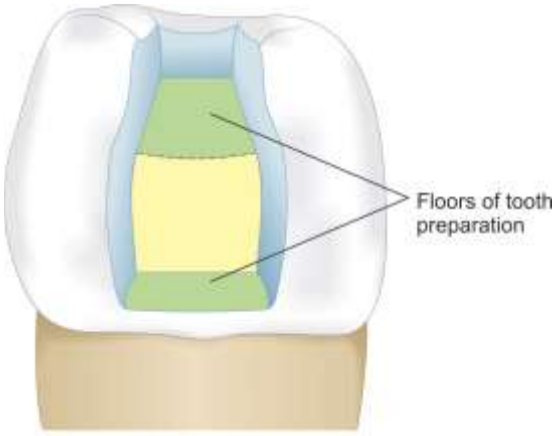
- Preparation on the occlusal surface as "O".
- Preparation on the distal and occlusal surfaces as "DO".
- Preparation on mesial, occlusal and distal surfaces as "MOD".

Tooth preparation walls:

A. **External Wal:** An external wall is a wall in the prepared tooth that extends to the external tooth surface. External wall takes the name of the tooth surface toward, which it is situated.
B. **Internal Wall**: It is a wall in the preparation, which is not extended to the external tooth surface.
C. **Pulpal Wall**: A pulpal wall is an internal wall that is toward the pulp and covering the pulp. It may be both vertical and perpendicular to the long axis of the tooth and occlusal on the pulp.
D. **Axial Wall**: It is an internal wall which is parallel to the long axis of the tooth.

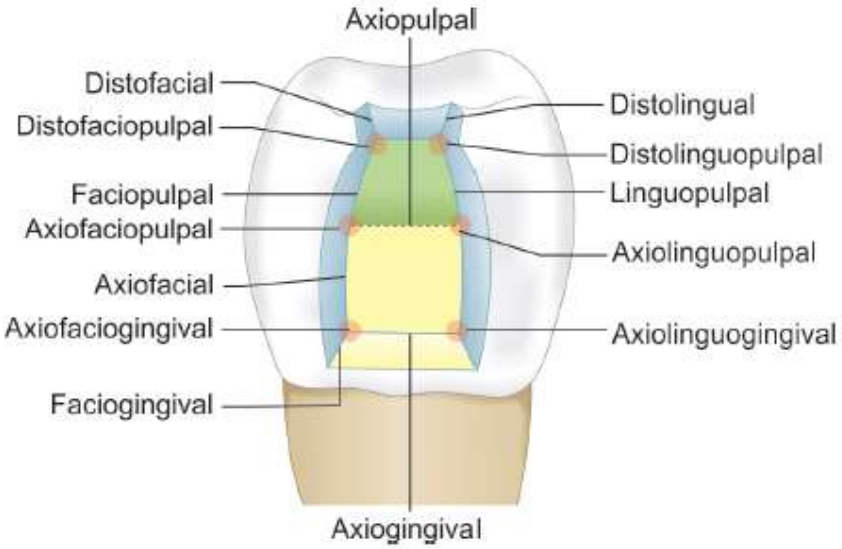


Floor: The floor is a prepared wall that is usually flat and perpendicular to the occlusal forces directed occluso-gingivally, for example, pulpal and gingival floor

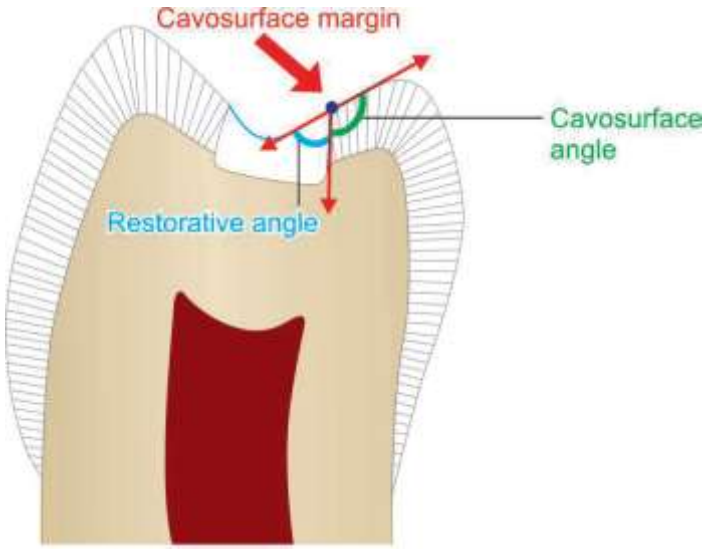


Tooth Preparation Angles: the junction of two or more prepared (cut) surfaces is referred to as an angle.

A. **Line Angle:** A line angle is the junction of two planal surfaces of different orientation along a line. An internal line angle is a line angle whose apex points into the tooth. An external line angle is a line angle whose apex points away from the tooth.
B. Point Angle: It is a junction of three plane surfaces or three-line angles of different orientations. Its name is derived from its involved surfaces or line angles.



C. **Cavosurface Angle and Cavosurface Margin:** The cavosurface angle is the angle of tooth structure formed by the junction of a prepared (cut) wall and the external surface of the tooth. The actual junction is referred to as the cavosurface margin



Proximal surface: is the surface that face the adjacent tooth.

Marginal ridge: are defined as rounded borders of enamel which form the mesial and distal margins of occlusal surfaces of premolars and molars and mesial and distal margins of lingual surfaces of the incisors and canines.

