CLASS II CAVITY PREPARATIONS

CONTENTS

- *DEFINITION*
- *DIAGNOSIS*
- *CONSERVATIVE APPROACH FOR PROXIMAL CARIES*
- *GENERAL CONSIDERATION IN CLASS II CAVITY PREPARATION*

- *GENERAL MODIFICATIONS IN DECIDOUS TEETH*
- *SPECIFIC MODIFICATIONS*
- *STEPS IN CAVITY PREPARATION*
- *MATRIX BAND,WEDGES & RETAINERS*
- *MATERIALS USED*
- *BIBLIOGRAPHY*

CLASS II CAVITY

According to G.V.Black,

Cavity preparations done on proximal surface of posterior teeth are known as CLASS II CAVITIES.

DIAGNOSIS

- *Class II leisions occur after primary molar contacts have been established .*
- *Occlusal leisions are more prevalent than interproximal leisions in a very young child .*
- *Incipient leisions in primary molars are diagnosed only with bitewing radiographs .*
- *Flat broad elliptical contact areas of these teeth defy clinical exploration .*

CONSERVATIVE APPROACH FOR PROXIMAL CARIES

- TUNNEL PREPARATION
- SLOT PREPARATION
- PROXIMAL APPROACH

TUNNEL PREPARATION

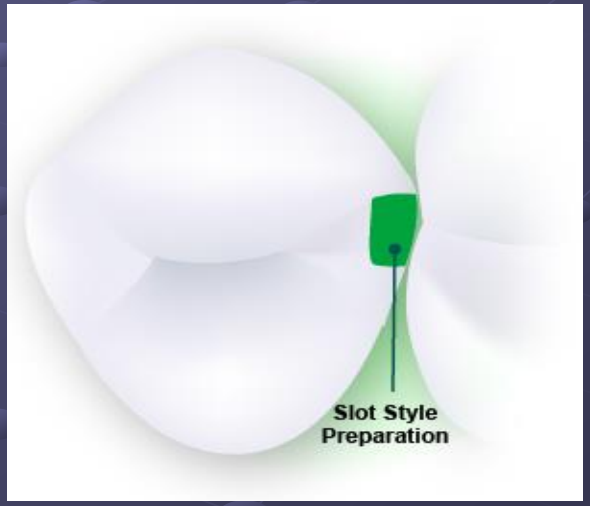
- *Type of cavity preparations made when caries are located in the proximal surface more than 2.5mm from marginal ridge*
- *Proximal surface is reached from triangular fossa in the occlusal surface without cutting marginal ridge .*
- *Reccomended for glass ionomer restorations .*

ADVANTAGES

- *Small conservative cavity preparation .*
- *Preservation of intact marginal ridge .*
- *Preservation of interproximal contact*

SLOT PREPARATION

- *Cavity outline is like a box .*
- *No step such as for gingival seat is present*



PROXIMAL APPROACH

- *It is done when there are proximal caries and no adjacent teeth are present.*
- *Cavity is prepared by direct visualization of caries approaching from the proximal side itself .*

GENERAL PRINCIPLES IN CLASS II CAVITY PREPARATION

OCCLUSAL

- *Outline form should be dove tailed to prevent tipping of restoration by occlusal loads including all fissures areas of caries,enamel pits and developmental grooves.*
- *Occlusal portion usually extends about half the buccolingual width of molars.*
- *For maxillary molar cavity preparation,oblique ridge is not included unless it is undermined with* ***caries.***

- *Cusps and marginal ridge should be preserved.*
- *Walls converge towards occlusal surface with the greatest width at the pulpal floor.*
- *Cavosurface margins should be sharp.*
- *Angles of walls should be slightly rounded.*
- *Axiopulpal line angle should be gently rounded.*

- *Desired depth is 0.2-0.8mm in dentin.*
- *When cavity margin exceed that of ideal one particularly in case of mandibular first molar,prepare overlay of distobuccal cusp.*
- *Weakened cusp is reduced to the level of the pulpal floor of the occlusal preparation.*
- *Mesiodistally cusp should be reduced not more than one third the crown's mesiodistal length.*
- *Convenience form should be present.*

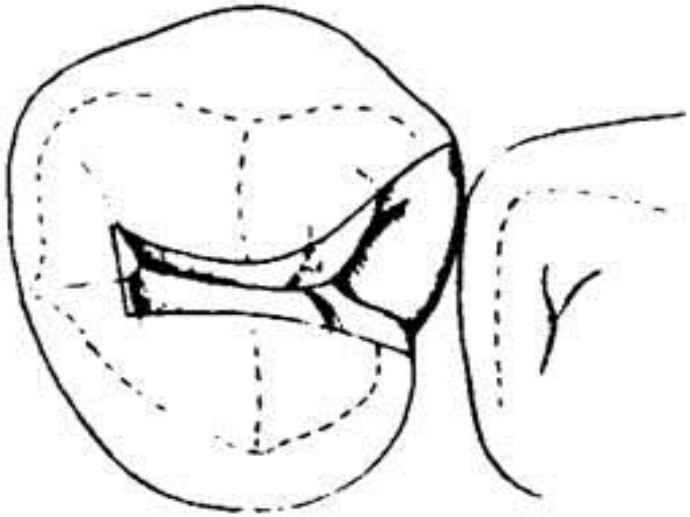


Fig. 25

Occlusal

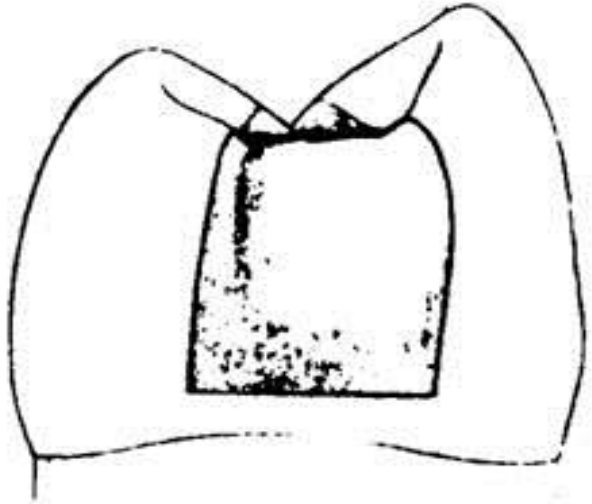


Fig. 26

Proximal

Class II Foil - Outline Form
Upper First Bicuspid

PROXIMAL BOX

- *Buccal and lingual walls should extend to self cleansing areas.*
- *Sharp 90 degree cavosurface angle is desirable.*
- *Buccal and lingual wall of proximal box should converge slightly from gingival floor to occlusal surface*

- *Walls should not be flared as it will lead into unsupported enamel.*
- *Gingival seat should be beneath the point of contact extending upto or just beneath gingival tissue.*

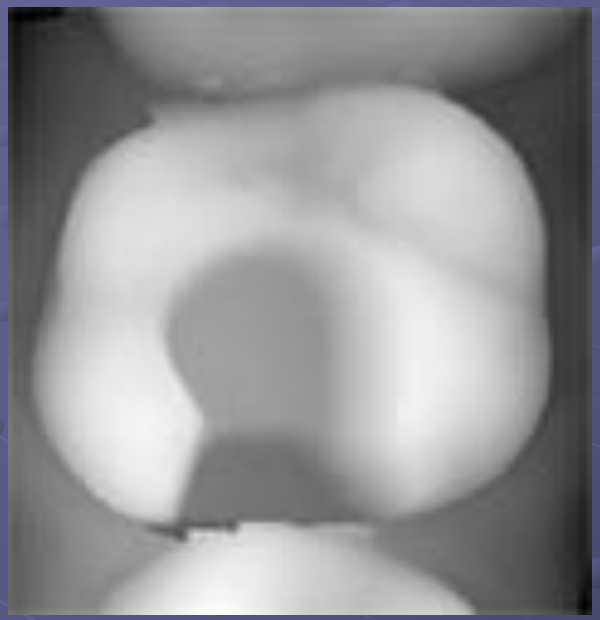
Width of gingival wall should be 1mm.

- *Axial wall should follow the contour of the tooth.*

It should be 0.5mm in dentin.

- *Due to high pulp horns care should be taken to prevent iatrogenic exposure of pulp.*
- *Retention can be improved by ‘U’ shaped groove along the amelodentin junction.*
- *Convenience form should be there.*

COMPLETED CAVITY



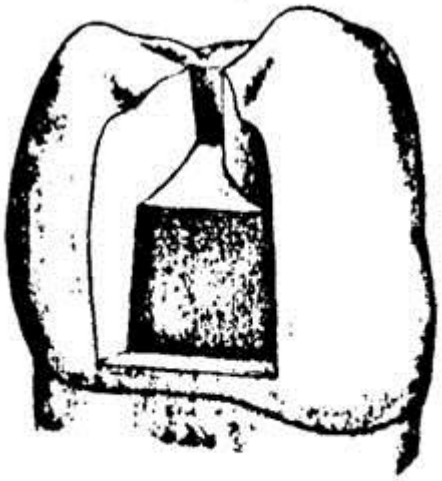


Fig. 29

Completed Preparation

GENERAL MODIFICATIONS IN DECIDOUS TEETH

- *Cavity preparation is smaller due to small crown size,shallower due to thin enamel and narrower due to narrow occlusal table.*
- *Pulpal floor is made saucer shaped due to high pulp horns.*
- *Occlusal cavity walls are less convergent than that of permanent.*

- *In proximal box preparation,buccal and lingual wall are more convergent occlusally.*
- *Due to presence of broad contact areas, proximal box is wider.*
- *Buccal and lingual retentive grooves are contraindicated generally.*

- *Bevel is not given at the gingival seat as enamel rods are directed occlusally.*
- *Width of isthmus is one third of the intercuspal distance which is one forth in permanent teeth.*
- *SSCs,stainless steel crowns are more durable and predictable for multiple surface restorations*

SPECIFIC MODIFICATIONS

DEEP PROXIMAL CARIES

- *If caries extend gingivally so far below the cervical bulge that a proper gingival wall can't be established, round the proximal box form at approximately right angles.*

  This permits good resistance form and same type of retention form normally not to be extended bucally and lingually so far.

SMALL FIRST MOLARS

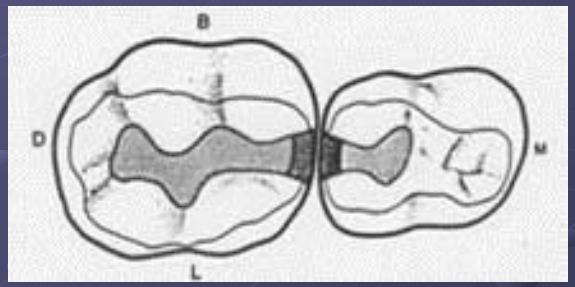
- *It can pose difficult problem solved by keeping gingival flare minimum.Since contact is a point proximal to the cuspid,this can be done and still be kept in a self cleansing area*

THIN CUSPS

- *These should be reduced to the level of pulpal floor and the cavity extended in this fashion.*

STEPS IN CAVITY PREPARATION

EXTERNAL OUTLINE FORM



Penetrate occlusal surface with a round bur from the distal pit to predetermined depth.

Extend outline form by straight fissure bur from distal pit proceeding mesially.

- *Include all the deep and defective grooves in the cavity preparation.*
- *Blend the outline to form smooth flowing curves.*
- *Contour the outline paralleling mesial and distal marginal ridges by maintaining the bulk of tooth structure on marginal rigdes.*
- *Maintain the width that is one third of the occlusal table.*

INTERNAL OUTLINE FORM

- *Penetrate 0.5-1mm in dentin.The straight fissure bur is good indicator of depth of the cavity.Depth should be approx. one-third of the length of the bur.*
- *Round the line angles to reduce the internal stress on the amalgam restoration and tooth structure.*
- *The cavity is wider at the pulpal floor than at occlusal surface.This convergence aids in retention of restorative material .*

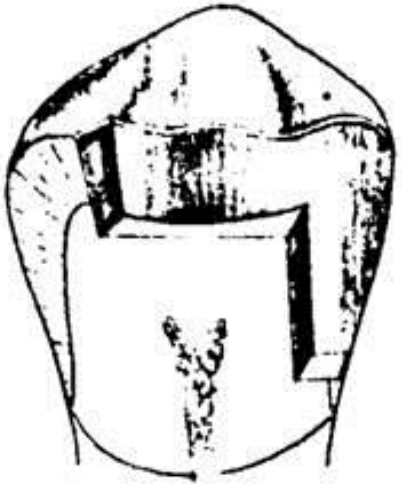


Fig. 27

Mesiodistal Section
Internal Form

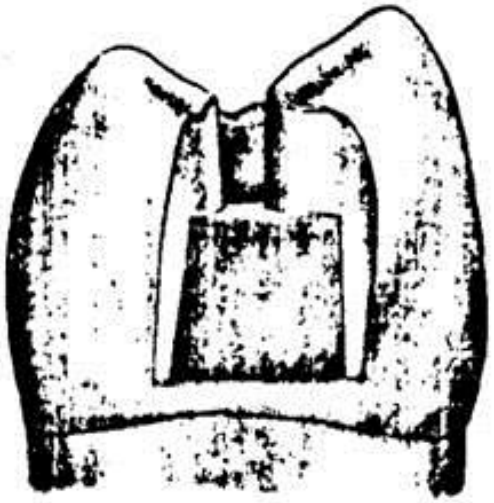


Fig. 28

Internal Form
Mesial View

- *Establish a sharp cavosurface angle along lateral walls with straight fissure bur.Walls should be parallel to the external tooth surface.Sharp cavosurface angle is an asset as it prevents marginal failure and improves finishing and polishing.*

PROXIMAL

- *Use straight fissure bur to extend occlusal outline through the marginal ridge to create 90 degree cavosurface margins.*
- *Isthmus(narrowest part of occlusal outline near the proximal box) is about half to one-third the occlusal surface.*
- *Extend the round bur into proximal surface.Keep the bur parallel to the long axis of the tooth and move it in perpendicular motion from lingual to buccal.*

- *Extend the proximal box gingivally beneath the contact area .This area is determined by clearance of explorer tip.*
- *Gingival seat is made perpendicular to the long axis of tooth with inverted cone bur.*
- *Axial wall as determined by the depth of the carious leision should follow the contour of the tooth.*
- *Use the enamel hatchet to remove over the hanging enamel in the proximal box*

OCCLUSAL VIEW

- *Isthmus is the part of cavity preparation that connects the proximal box with the occlusal preparation. Curve the proximal wall gently creating 90 degree angle to the axial surface of tooth.Proximal extension is governed by the adjacent tooth and determined by the clearance of the explorer tip.*

PROXIMAL VIEW

- *Curves buccolingually to follow the contour of the proximal surface.*
- *Extends such that the explorer tip can pass through the embrasure.*
- *Have rounded line angles without bevel on gingival margin.*

CROSS SECTION OF PROXIMAL BOX

- *Gingival floor- should be at the level of or slightly below the gingiva as determined by carious lesion.*
  - *should be perpendicular to long axis of tooth.*
  - *should have rounded angles.*
- *Proximal box is roughly parallel to the long axis of tooth.*

BASIC STEPS

1. Excavat
2. Prepare
3. Etching,bonding,cementation
4. Insertion
5. Shape & contour

MATRIX BANDS WEDGES AND RETAINERS

- *Used to restore normal contact area of primary teeth and prevent extension of excess of restorative material beyond the band in gingival tissue during condensation of amalgam.*

MATRIX BANDS

Prerequisites :

- *Restore the contact area of primary teeth.*
- *Prevent extension of excess restorative material beyond the band on gingival.*
- *Should be convenient and easy to use during amalgam condensation.*
- *Should be easy to remove*

OBJECTIVES :

- *Displace the gingival and rubber dam away from cavity margins-Improves accessibility during restorative procedures.*
- *Assure dryness and non contamination of operative field.*
- *Provide shape to restoration during setting of restorative material.*

TYPES :

- *T Band*
- *Sectional Matrix*
- *Auto Matrix*
- *Spot Welded Matrix*
- *Tofflemire Matrix*

T-BAND CONSTRUCTION :

- *Short and long arms are welded into the shape of T.*
- *Flanges of short arm of T are bent up.*
- *Long arm is bent into circle.*
- *Short arm is folded over circle formed.Wings should be loose enough for a sliding joint.*

- *Matrix is placed on the tooth with folded joint on the buccal side of the tooth.*
- *Band is held with one finger and the tab is pulled tight around the tooth.*
- *Tab is folded back over the joint.*
- *Band is removed and flattened with the help of pilers.*

- *Band is replaced on the tooth wedge is placed and restoration is completed.*

- *When restoration is finished it is removed by raising the tab over the joint*

WEDGES

PURPOSE :

- *Prevention of interproximally overhanging restorations.*
- *To hold matrix band at cervical margins*
- *Separation of adjacent teeth and proximal box area.*
- *Retraction of interproximal gingiva.*

TYPES :

On the basis of :

I . Materials Used Plastic wedges

Wooden wedges

II . Cross Sectional Shape Round

Triangular

FAULTY WEDGING :

- *Concavity at cervical portion of proximal box can result if rubber dam displace wedge or if it is too large.*
- *Overhanging restorations if wedge is loose*
- *Open contact is caused by inadequate wedging pressure to separate the approximating contact*

FAILURE OF RESTORATION

- Sharp line angles & point angles.
- Delayed expansion-Creep-Marginal leakage
- Presence of impurities such as As in Hg – Pulp damage.

MATERIALS USED

- ***AMALGAM***
- ***COMPOSITES***
- ***GLASS IONOMER CEMENT***

AMALGAM

- *Most commonly used*
- *Material of choice to restore proximal lesions*
- *Much easier to pack effectively in proximal box without leaving further defects.*

COMPOSITES

- *Can be used to restore initial n moderate sized class II lesions*
- *It may have life time compared to amalgam if used as indicated-stated by ADA*
- *Cavity preparation is less complex*
- *It is insulative and repairable*

GLASS IONOMER CEMENT

- *Have dentin adhesion and fluoride releasing properties.*
- *Croll et al described a fine tipped-syringe system for use with light cured glass ionomer or composite material to overcome potential defects in proximal box.*

BIBLIOGRAPHY

- *STURDEVANT'S*
- *SHOBHA TONDON*
- *ARATHI RAO*
- *DAMLE*
- *KENNEDEY*
- *FINN*
- *PINKHAM*