

# REMOVAL OF EXTENSIVE CARIOUS LESION

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In an ideal prepared class I or II, a frank cavity (a carious lesion that minimally penetrates into the dentin) is completely removed during the sequence of procedures for cavity preparation. However, when there is an extensive carious lesion, the carious lesion beyond the ideal depth (**remaining carious dentin**) is removed after an ideal outline form has established and the initial cavity preparation is completed. Removal of the **remaining carious** dentin may be accomplished when:

- a. there is no decay or old restorative material left on the line angles, point angles or walls of the initial cavity preparation **OTHER THAN** on the pulpal or axial walls of the cavity preparation.
- b. all the enamel rods are supported by dentin.

By completing the initial cavity preparation before extending the cavity preparation pulpally or axially:

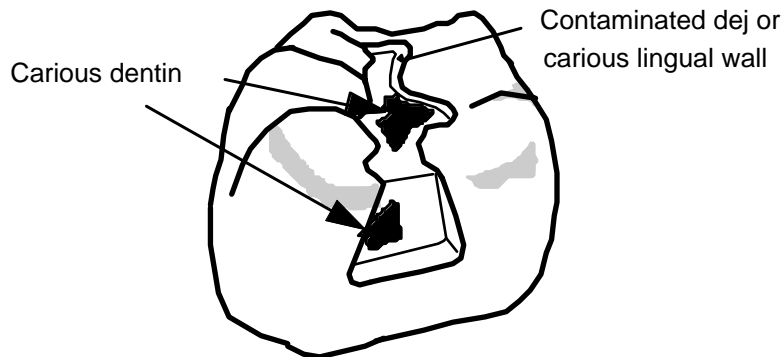
- a. The operator will have convenience, adequate access and visibility, for removal of the remaining carious lesion.
- b. The carious defect, especially in the case of a pinpoint pulpal exposure, may be immediately based and the restoration may be placed immediately. This minimizes trauma to the pulpal tissues from **desiccation, contamination by bacteria** and **reinfection** of the pulp by further preparation of the tooth.

## Removal of the Remaining Carious Dentin:

Deep caries removal should always be accomplished with the aid of a rubber dam to maximize convenience and to minimize contamination of the pulp in the event of a pulp exposure.

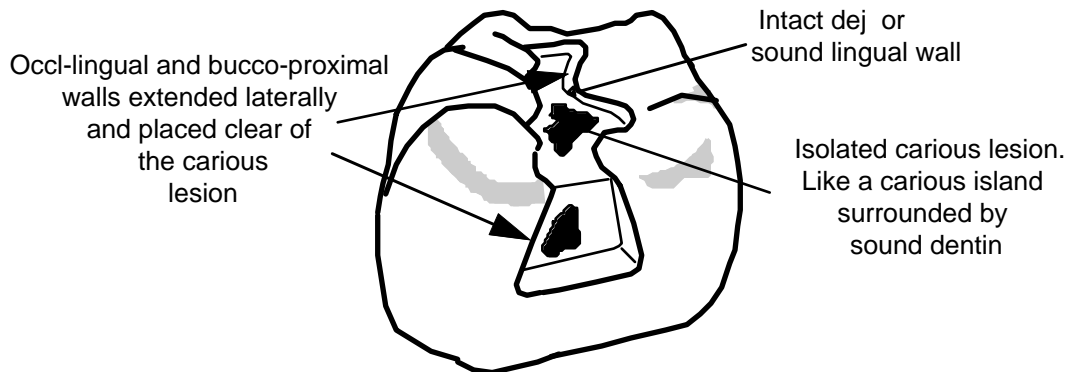
**A cavity with an extensive carious lesion is prepared in three stages:**

**Stage 1:** Penetrate with a high-speed handpiece, using an appropriate bur, to place the pulpal floor and/or axial wall 0.5mm. into the dentin. Establish an ideal external and internal outline. At this point, the operator will be able to observe the boundaries and extent of the carious lesion laterally on the pulpal floor and/or the axial wall.



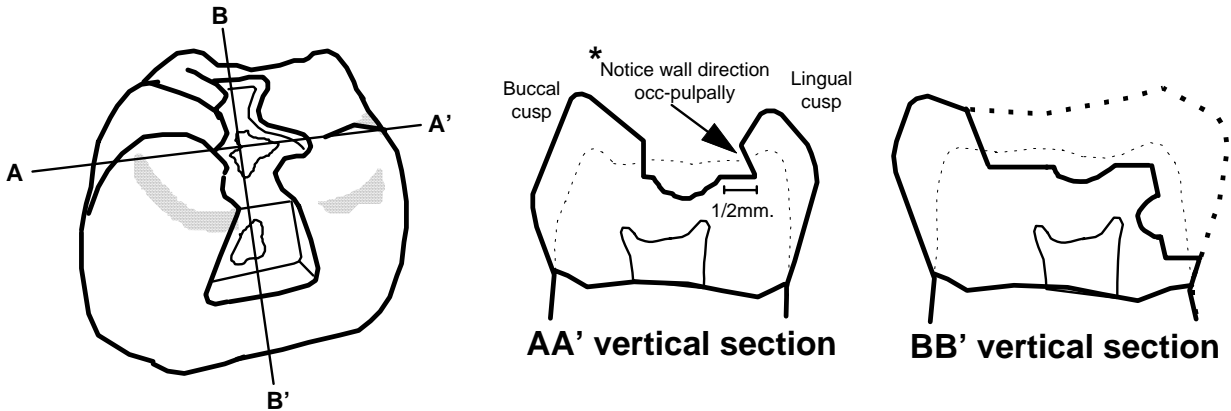
**Stage 2:** Extend the wall(s) laterally at the pulpal floor and axial wall depth to:

- a. isolate the carious lesion by moving and placing the walls 1/4 or 1/2mm. beyond the pulpal and axial boundaries of the carious lesion.
- b. place the wall(s) in an intact, stain-free dentinoenamel junction



The bucco-proximal and occluso-lingual walls are extended laterally and placed 1/4 to 1/2mm. clear of the carious lesion. The carious lesion is isolated and accessible for removal of the **remaining** carious dentin

**Stage 3:** With the carious lesion exposed and isolated, and all the lateral walls and enamel rods supported by a sound dentino- enamel junction, removal of the remaining carious lesion may start.



\* NOTICE: Bucco and linguo-occlusal walls in an ideal cavity, with minimum extension of the carious lesion, are paralleled and 90 degrees to the pulpal floor. However, when the occlusal outline form is extended up the cusp slope beyond the ideal extension, the direction of involved wall(s) diverge occluso pulpally. This will conserve cuspal tooth structure.  
(Refer to AA' vertical section)

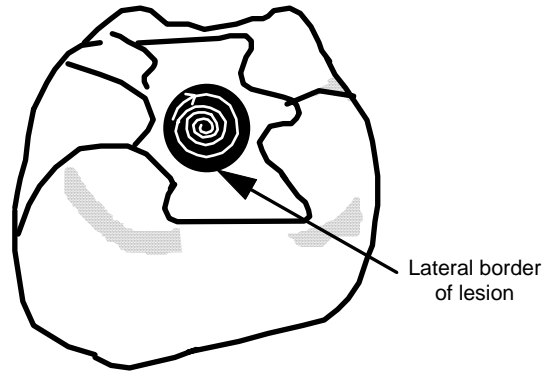
### Instrumentation for the removal of the remaining carious lesion:

- a. Low speed handpiece with the largest\* round bur that will fit in the carious lesion and used with light force with a wiping motion.
- b. Largest\* spoon excavator that will fit in the carious lesion. Large spoon excavator will reduce the chance of pulpal exposure. The forces of removal of defective dentin should be directed laterally and not toward the center of the carious lesion.

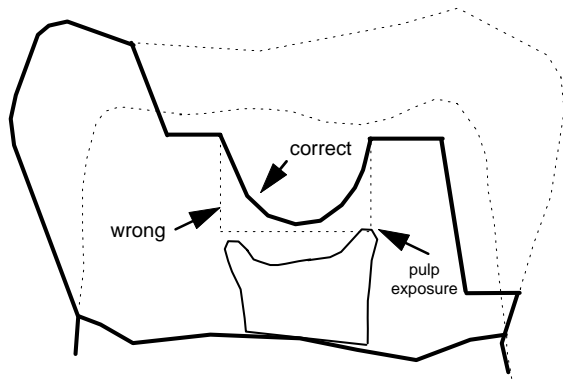
\* The largest possible instrument minimizes the force per square millimeter applied to the affected area. It is possible to expose the pulp **mechanically** when a very small instrument is used for caries removal.

Caries removal starts from the lateral borders of the lesion. The caries are removed in a **spiraling fashion**, beginning with the **most superficial caries** at the outer lateral wall. As firm dentin is reached laterally, it is followed to the central area. A carious mass can often be peeled out in large portions early in the process. In the deeper areas, instrumentation should be done with light force and extreme care.

The deepest carious lesion at the central area overlying pulp is isolated and is removed last in anticipation of a pulpal exposure. If the pulp is exposed, it will happen within a "clean" field. The exposure may be sealed immediately and contamination of the pulp may be kept to a minimum.

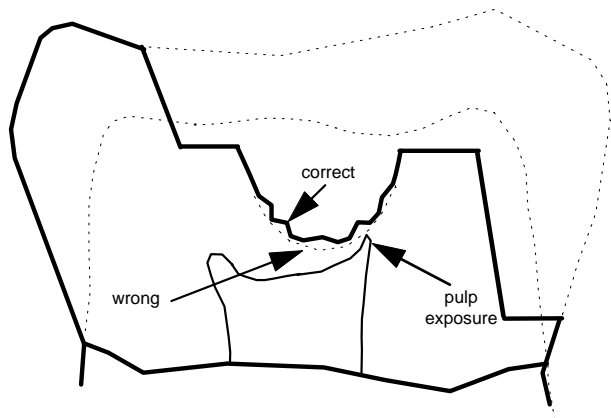


Upon completion of caries removal, The defect should appear funneled. A defect, which is squared off pulpally, indicates unnecessary loss of tooth structure pulpally due to over reduction.



**NOTICE:** No attempt is made to smooth the affected floor during or after removal of the remaining carious lesion, this:

- a. preserves sound dentin.
- b. may prevent possible pulp exposure.
- c. may provide some retention for the cement base.



**Carious removal is completed:**

- a. when the surface of the dentin is firmed and has shattering sound
- b. when washed and dried, it appears shiny and not dull

- c. the surface of the defect after carious removal may appear stained, the color of dentin depends upon how chronic the lesion was and can range from yellow to black. The stain **IS NOT** an indication of the existence of carious dentin. Hard stained dentin and hard dentin should remain in place to minimize unnecessary loss of tooth structure, as the caries are removed from the outer edges of the lesion towards the center. **Stained dentin** is removed **ONLY** when it is at the dentino-enamel junction. The DEJ provides less resistance to the carious process than either the enamel or dentin. The resultant lateral spread of the lesion produces the characteristic second core of caries activity in the dentin.

**Reminder:** An explorer is used to detect carious lesions and the texture of the dentin at the pit and fissure areas, and in the ideal depth cavities. In deep cavities, its use is discouraged. Testing of the thin dentin wall overlying the pulp must be done with extreme care to avoid pulp exposure. The best instrument for detection of caries and testing dentin texture in deep cavities is a sharp **spoon excavator**. The extent of the lesion should determine the size of the spoon excavator to be used.

Active, **bacteria-containing decay** is characterized by **soft stained dentin**. The lesion is soft enough to remove with a spoon excavator and the surface of active decay **will not take on a shine after was washing and drying**.