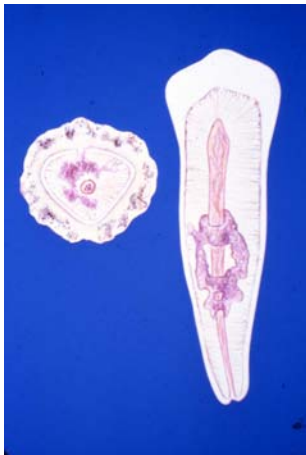


Extracanal Invasive Resorption (ECIR)

ECIR, sometimes referred to as internal-external resorption is a specific type of resorption that involves the area of the cemento-enamel junction (CEJ). “Extracanal” is descriptive in that it defines that the resorption does not invade the pulp tissue.

It is “invasive” in the way that the defect indiscriminately penetrates the dentin.



CLASSIFICATION OF ECIR

Class 1 is described by minimal invasion that has not reached the margin of the chamber or canal space. Class 2 resorption has reached the margin of the canal or chamber but is not extensive and has not “wrapped around” the root canal space. Class 3 ECIR has the appearance of being bilateral with apical migration. The image at the left is representative of a Class 4 ECIR that is bilaterally involved, extensive, and essentially inoperable. The area of resorption may have pinkish appearance at the CEJ. See the clinical example on the following page.



The radiograph to the left is representative of an ECIR lesion that had its origin at the CEJ and has advanced through the dentin to the pulp chamber without penetrating the uncalcified dentin matrix. (Class 2) ECIR in this form is frequently caused by deep scaling that removes cementum at the CEJ. Many cases of this type have a history of orthodontic treatment.

The origin of the resorption is most always a site near the CEJ, sometimes less than a millimeter in diameter. Cells that normally resorb bone called osteoclasts are involved. The process of bone resorption and reformation is a normal and ongoing function of bone metabolism. The clastic cells are normally confined to bone but if they have access to dentin they will resorb that tissue also. The process of ECIR is effected either through some type of trauma to the CEJ area or even by predisposition to normal anatomy in the area. Ten percent of all CEJ areas lack coverage of the dentin by either enamel or dentin. In some cases the cementum overlaps the enamel or it is abutted against the enamel.

If there is that 10% gap in enamel and cementum, then clastic cells can present to the dentin with no traumatic stimulus. Cementum has a protein that repels osteoclastic activity and enamel is resistant to clastic activity because it is essentially in the oral environment, that is, coronal to bone and not subject to osteoclastic activity. Minor trauma from orthodontic movement, luxation injuries, or even root planning procedures that strip away cementum can result in CEJ area dentin exposure.

Methods used to arrest resorption include removal of the affected dentin in a manner similar to caries excavation. Treatment of the area with liquid Trichloroacetic Acid has been recommended. The defect can be restored with a composite or Geristore type materials. Mineral Trioxide Aggregate (MTA) can be used under the restorative material but not if the defect is exposed to the oral environment.

An important consideration in diagnosis and treatment is availability of historical radiographs. If the resorption hasn't appreciably changed in several years, it may be considered arrested, and intervention may not be necessary. Periodic radiographic exam may be recommended. If the resorption appears to be aggressive and location of the entry site can be determined, treatment may be an option. Treatment will be determined by location of the defect. Some areas, such as interproximal areas, may be inoperable. Although the resorption does not penetrate the pulp canal space, most cases cannot be treated without doing endodontic treatment first because of the microscopic proximity of the resorbed area to the pulp tissue.



The radiograph seen on the left is illustrative of a typical Class 4 ECIR. Two distinct areas of resorption are seen on either side of the root canal space. The two areas are actually the same resorptive defect that has wound around the canal space. Notice how the the canal space appears intact. The resorptive-“clastic” cells will not penetrate to the pulp tissue since those clastic cells are interested in calcified tissue. As the clastic cells approach the uncalcified dentin matrix they go elsewhere to find calcified tissue, hence the random – wandering nature of the resorptive defect. The pulp tissue remains vital. The pulp may become involved in cases of longstanding resorption if bacteria penetrates the resorptive site and causes pulpitis. This example case is particularly difficult to treat because although the entry site is at the cemento-enamel junction, the resorbed dentin is in the mid-root area. Periodic observation with no treatment and plan for future implant placement may be the only option.

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