

CLINICAL INSIGHTS

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ESCONDIDO ENDODONTICS



Sealing the Canal System Orifice After Endodontic Treatment

Endodontic treatment is not complete until the tooth is permanently restored. The major cause of post endodontic failure is orthograde bacterial microleakage. Think of the pulp tissue as the root's first line of defense against bacterial infiltration. It's more than just "the nerve". After the connective tissue and circulatory component have been removed or have become non-vital, the body's immune system is no longer poised to prevent the invasion of bacteria into the alveolar bone via the root canal spaces.

In addition to well instrumented and three dimensionally obturated root canal spaces, bacteria must be excluded from the internal aspects of the crown leading to the canal orifices. Although endodontic cases are frequently referred for specialty care, it is actually the restorative dentist who is responsible for completion of the canal space obturation procedure.

For the convenience of placing core build-ups, the endodontic case is most often presented for completion with the gutta-percha recessed approximately one millimeter into the orifice followed by an intervening layer of cotton fibers and an appropriate temporary restoration. It is very disconcerting to observe, on endodontic recall examination, a lucent space between the margin of a new porcelain crown and the coronal extent of the obturation material. In those cases, either the cotton wasn't removed or the core material did not flow into the canal orifices and isthmus.

Understanding root canal orifice anatomy is important. A simple principle is the "one root equals one root canal space" axiom. The mesial root of a mandibular molar generally has two spaces that can initially accept small endodontic files. In reality, there is only one root canal space present. The microscopic isthmus that connects the mesiobuccal and mesiolingual main canal spaces can retain tissue if not properly soaked with tissue dissolving irrigants such as sodium hypochlorite. Of similar importance, if the connecting isthmus is not obturated, this area becomes very vulnerable to future microleakage and endodontic failure. The same holds true for the mesiobuccal root of maxillary molars and the distal root of mandibular molars with "two" canals.

The most advanced techniques for the hybridization of dentin through dentin bonding are appropriate and necessary steps in core build-up procedures to ensure that the root canal space is completely sealed from the apex to the margin of the restoration.

- Communicate your restorative intentions with regard to post-space and core build-ups to your endodontic colleagues.
- Completely restore endodontically treated teeth as soon as possible.
- Remove all temporary filling material from the access cavity and complete the endodontic obturation by sealing all canal orifices and connecting isthmuses with dentin hybridization bonding procedures.

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