

From an endodontic standpoint the restoration of the root filled tooth provides 2 main functions:

1. Protection from oral microbial contamination.
2. Protection from fracture.

1. Coronal leakage

- Important cause of failure in endodontically treated teeth.
- Particularly in multi-rooted teeth, where accessory canals are known to exist in the furcation.

A number of studies have shown that contamination of the unprotected pulp chamber leads to:

- **Bacterial** penetration of the whole root canal system after **3 months**.
- **Periapical** contamination by bacterial endotoxin after **20 days**.
- *If a root filled tooth is open to the oral environment for longer than **20 days** it should be **retreated**, prior to restoration.*

2. Intra-coronal seal

Various ways of sealing the pulpal floor and orifices have been researched:.

e.g: glass ionomer - Vitrebond, Clearfil Liner Bond 2V, 4-Meta type composites either Amalgabond or C&B Metabond, and Resilon Epiphany.*

* Resilion is a new polycaprolactone root filling material, which is claimed to provide a seal from the apex to the core material. It is etched, primed, and bonded to the dentinal walls.
The jury is still out with regard to it's longevity in a wet environment, its ability to "strengthen " the root, and its biocompatibility.

3. Resistance to Fracture

Full coverage restorations prevent fractures in two ways:

1. Composite resin etched and bonded in the pulp chamber increases the stiffness of the tooth back to 87% of an intact tooth.
2. They provide cuspal protection.

Note: There must be at least **1.5–2.0 mm ferrule** resting on tooth structure, which should surround the endodontically treated tooth. ***Otherwise crown lengthening is strongly advised.***

- **These findings indicate that more emphasis should be placed on the prompt completion of the coronal restoration (3weeks) as a way of ensuring successful, root canal therapy.**