

# Clinical Management of Root Canal Perforations: Is the Tooth Doomed?

Endodontic treatment (aka RCT) can be, both, a very rewarding and sometimes challenging dental procedure for the practitioner. While generally endodontic treatment may be straightforward once the root canals have been located and negotiated to length, sometimes iatrogenic perforation of the pulp chamber floor or the root becomes a stressful reality for the clinician, and perplexing, if not upsetting, for the patient. Is such a tooth doomed in those circumstances? In this month's Newsletter, I will address the different factors (location, size, length of time since perforation, repair material of choice, use of magnification, and the experience of the clinician dealing with perforation) that may determine the success of perforation repair, and the long term retention of such teeth. I will end by presenting some clinical cases from our practice.

Procedural accidents present a source of frustration to the dental clinician. One such accident is the perforation of the tooth during endodontic treatment. However, *contrary*

*to the belief that once a tooth has been perforated, that its prognosis becomes poor to hopeless. Perforation repair can be a very successful and predictable procedure, a procedure that is routinely performed in our clinic.*

The factors that determine the success of teeth that have had a perforation include: location (sub-ossous, coronal, furcal, mid-root, or apical); size (small, medium, or large); length of time since the perforation (recent, or long standing); repair material (MTA, amalgam, Dycal, composite, or IRM); use of magnification (none, loupes, endoscope, or microscope); and the experience of the operator (none, low, medium or extensive).

Perforations that are of *small size*, are *sub-osseous* in the *coronal* aspect of the root, are *repaired immediately* with MTA (due to its sealing ability and its biocompatibility) *using a surgical operating microscope (SOM)* by an *experienced clinician* has the best prognosis for long term success. However, perforations of different sizes (provided they are below the crest of the bone) and at different levels of the

tooth will often have good long term success rates if it is repaired with MTA under proper isolation and moisture control, delivered by specialized carriers, using the SOM. The critical keys to successful management include an *experienced operator* using proper protocol and material under the SOM. Successful recalls of teeth repaired with MTA date back close to 20 years.

It becomes important for a general practitioner to refer the patient who has experienced the unfortunate event of a perforation as soon as reasonably possible. It behooves the dentist as well as the patient to be seen by an endodontist with extensive experience in dealing with procedural accidents, and one who makes full use of a SOM. Both patient and referring doctor will often be pleasantly surprised as to the long term success and predictability of such procedure; thereby averting the loss of the tooth and maintaining the patient's natural tooth for a long period of time.

*(See photos on reverse side.)*



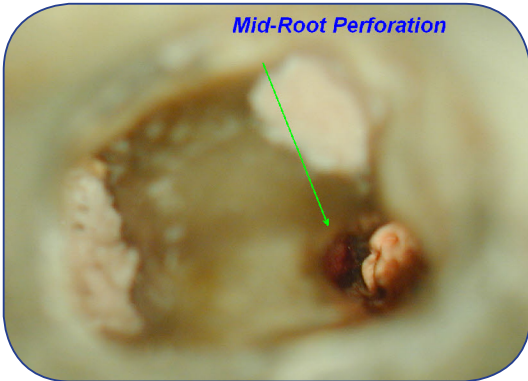
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**Specialty Limited to Microscopic and Diagnostic Endodontics**

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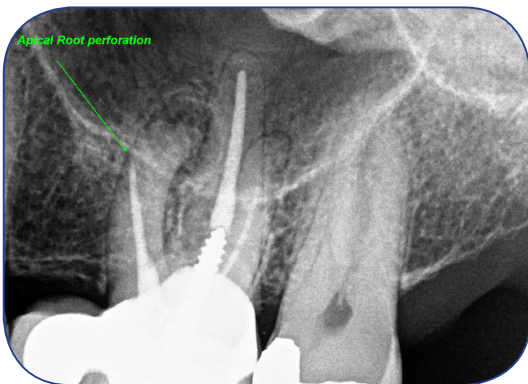
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Clinical Photo of mid-root iatrogenic perforation during initial RCT by GP



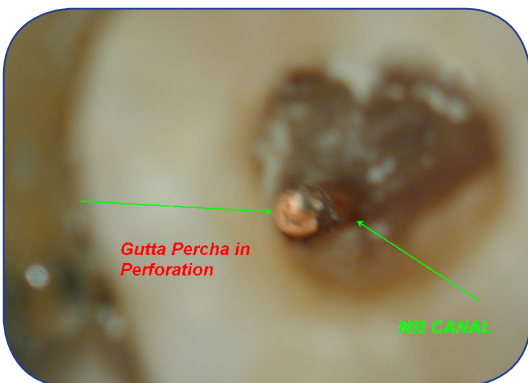
Radiographic presentation of repaired perforation with MTA--Two years follow up.



Apical perforation in the lateral aspect of the MB Root. Note PAL



MTA repair of apical third perforation in MB Root. Note Healing of PAL--One year follow up.



Perforation by Endodontist in the apical of the MB Root, apical entry into the MB canal apex.



MTA repair of apical perforation, and the MB Root Canal Obturated. Patient finally symptom free.

