

Can a good endo result in a non-healing lesion? Yes. Assuming all the canals were located, instrumented, irrigated, and obturated to the highest standard and a permanent restoration immediately placed; can a lesion persist? The answer is yes again. Do not worry, this does not mean all root canals are doomed to fail and that the focal infection theory of the early 1900's was right after all. Such scenarios are possible and do occasionally occur.

Microorganisms from the canal can invade the periapical endodontic lesion of an asymptomatic tooth and establish an extraradicular infectious disease process. Roughly 10% to 20% of periapical lesions do not respond to local endodontic treatment. Is the lack of response due to the inaccessibility of the extraradicular microorganisms or to the presence of a microbiota, which is different from that typical for an endodontic infection? The answer remains elusive.

Sometimes endodontic microsurgery is the only option for full healing. Extraradicular bacteria may be resistant to non-surgical treatment and can persist despite the use of systemic antibiotics. Below are some reasons why this may occur:

- Bacterial colonies are surrounded by extracellular material and this can act as an impermeable barrier to some antibiotics and opsonising antibodies.
- The outer membrane vesicles in bacteria may bind to antimicrobial substances, e.g. disinfectants, thereby providing resistance.
- The lower metabolic rates of sedentary cells in the biofilm-like structure may make such a structure less susceptible to antimicrobial substances.
- The bacteria in a biofilm exchange DNA much more readily than do free-floating bacteria; this may accelerate the transfer of antibiotic resistance genes in the periapical biofilm.
- Many bacteria have adapted to live in many various environments (i.e. outside of the tooth and in bone).
- Polymicrobial infections involve a large number of bacterial, embrace fluctuations in the type and number of bacteria present, and are amenable to genetic change; these three traits probably give extraradicular infections the tools to adapt to and resist contemporary medications.

Rare things occur rarely. The scenario of tooth with an adequate root canal treatment and coronal seal having a persistent infection will not occur each week in your practice. However, when it does it may be due to an extraradicular infection and endodontic microsurgery may be necessary for full healing of the lesion and the tooth to become asymptomatic and functional again.

Regards,



Dr. Joel N. Fransen  
BSc(OT), DMD, FRCD(C)  
Certified Specialist in Endodontics

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**Richmond Endodontic Centre**  
Dr. Joel N. Fransen

**110-11300 No.5 Rd**  
Richmond, BC V7A 5J7  
office@endodonticcentre.com  
T 604.274.3499  
F 604.274.3477

**Office Hours**  
8am to 5pm - Monday to Saturday  
Extended hours are also available

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