

Root Canal Safety

The relationship of our teeth and mouth to overall good health is indisputable. Endodontics plays a critical role in maintaining good oral health by eliminating infection and pain, and preserving our natural dentition.

A key responsibility of any dentist is to reassure patients who are concerned about the safety of endodontic treatment that their overall well-being is a top priority. The American Association of Endodontists website (www.aae.org) is the best place for anxious patients to obtain comprehensive information on the safety and efficacy of endodontics and root canal treatment.

While plenty of good information is available online from the AAE and other reliable resources, patients sometimes arrive in the dental office with misinformation. This has occurred with the long-dispelled “focal infection theory” in endodontics, introduced in the early 1900s and reintroduced in the 2019 “Root Cause” documentary. In the 1920s, Dr. Weston A. Price presented research suggesting that bacteria trapped in dentinal tubules during root canal treatment could “leak” and cause almost any type of degenerative systemic disease (e.g., arthritis; diseases of the kidney, heart, nervous, gastrointestinal, endocrine and other systems). This was before medicine understood the causes of such disease.

Dr. Price advocated tooth extraction—the most traumatic dental procedure—over endodontic treatment. This theory resulted in a frightening era of tooth extraction both for treatment of systemic disease and as a prophylactic measure against future illness. Dr. Price’s research techniques were criticized at the time they were published, and by the early 1930s, a number of well-designed studies using more modern research techniques discredited his findings.

Decades of research have contradicted Dr. Price’s findings since then. In 1951, the *Journal of the American Dental Association (JADA)* published a special edition reviewing the scientific literature and shifted the standard of practice back to endodontic treatment for teeth with non-vital pulp in instances where the tooth could be saved. The *JADA* reviewed Dr. Price’s research techniques from the 1920s and noted that they lacked many aspects of modern scientific research, including absence of proper control groups and induction of excessive doses of bacteria.

More recent research continues to support the safety of dental treatment as it relates to overall systemic health. In 2007, the American Heart Association updated its guidelines on the prevention of infective endocarditis, drastically curbing the indications for premedication for dental procedures and excluding endodontic treatment from dental procedures requiring premedication.

Decades of research contradict the beliefs of “focal infection” proponents; there is no valid, scientific evidence linking endodontically treated teeth and systemic disease. Yet some patients still hear about this long-dispelled theory.

Dentists are asked to use the following guidelines to address patients who inquire about a connection between root canal treatment and illness:

- Acknowledge the patient's concerns; stress that optimum health is the goal for every dental patient.
- Provide the patient with written information about endodontic treatment, and discuss it. The AAE has a variety of patient education brochures available for purchase at www.aae.org/onlinestore.
- Provide the patient with information from the AAE website about common root canal myths: www.aae.org/patients/root-canal-treatment/myths-root-canals.
- Indicate that the patient is in control of his/her own decision to move forward with any dental procedure, and reiterate a commitment to the highest quality dental care.

Select References

1. Easlick K: An Evaluation of the Effect of Dental Foci of Infection on Health. *JADA* 42:615-686, 694-697, June 1951.
2. Grossman L: Root Canal Therapy. 4th edition, Lea & Febiger, Philadelphia, 15-40, 1955.
3. Grossman L: Focal Infection: Are Oral Foci of Infection Related to Systemic Disease? *Dent Clin N Amer*, 749-63, Nov. 1960.
4. Bender TB, Seltzer S, Yermish M: The Incidence of Bacteremia in Endodontic Manipulation. *Oral Surg* 13(3):353-60, 1960.
5. Goldman M, Pearson A: A Preliminary Investigation of the Hollow-Tube Theory in Endodontics: Studies with Neo-tetrazolium. *J Oral Therapeutics and Pharm*, 1(6):618-26, May 1965.
6. Torneck C: Reaction of Rat Connective Tissue to Polyethylene Tube Implants. Part. I. *Oral Surg* 21(3):379-87, March 1966.
7. Torneck C: Reaction of Rat Connective Tissue to Polyethylene Tube Implants. Part. II. *Oral Surg* 24(5):674-83, Nov. 1967.
8. Phillips J: Rat Connective Tissue Response to Hollow Polyethylene Tube Implants. *J Canad Dent Assoc* 33(2):59-64, Feb. 1967.
9. Davis M, Joseph S, Bucher J: Periapical and Intracanal Healing Following Incomplete Root Canal Fillings in Dogs. *Oral Surg* 31(5):662-675, May 1971.
10. Baumgarther J, Heggers J, Harrison J: The Incidence of Bacteremias Related to Endodontic Procedures. I. Nonsurgical Endodontics. *J Endod* 2(5):135-40, May 1976.
11. Ehrmann E: Focal Infection: The Endodontic Point of View. *Oral Surg* 44:628-34, Oct. 1977.
12. Wenger J, Tsaknis P, delRio C, Ayer W: The Effects of Partially Filled Polyethylene Tube Intraosseous Implants in Rats. *Oral Surg* 46:88-100, July 1978.

13. Delivanis P, Snowden R, Doyle R: Localization of Blood-borne Bacteria in Instrumented Unfilled Root Canals. *Oral Surg* 52(4):430-32, Oct. 1981.
14. Grossman L: Pulpless Teeth and Focal Infection. *J Endod* 8:S18-S24, Jan. 1982.
15. Torabinejad M, Theofilopoulos A, Kettering J, Bakiand L: Quantitation of Circulating Immune Complexes, Immunoglobulins G and M, and C3 Complement Component in Patients with Large Periapical Lesions. *Oral Surg* 55(2):186-90, Feb. 1983.
16. Delivanis P, Fan V: The Localization of Blood-borne Bacteria in Instrumented Unfilled and Overinstrumented Canals. *J Endod* 10(11):521-24, Nov. 1984.
17. Benatti O, Valdrighi L, Biral R, Pupo J: A Histological Study of the Effect of Diameter Enlargement of the Apical Portion of the Root Canal. *J Endod* 11(10):428-34, Oct. 1985.
18. Wu M, Moorer W, Wesselink P: Capacity of Anaerobic Bacteria Enclosed in a Simulated Root Canal to Induce Inflammation. *Int Endod J* 22:269-77, Nov./Dec. 1989.
19. Schonfeld SE: Oral Microbial Ecology. In: Slots J, Taubman M, eds. *Contemporary Oral Microbiology and Immunology*. St. Louis: *Mosby Year Book*, 1992:267-274.
20. Wilson W, Taubert K, et al. Prevention of Infective Endocarditis: Guidelines From the American Heart Association, *J Amer Heart Assoc* 2007;116:1736-54.
21. Lockhard, PB, et al. Periodontal Disease and Atherosclerotic Vascular Disease: Does the Evidence Support an Independent Association? *Circulation* 2012;125:2520-2544.
22. Tezal M, et al. Dental Caries and Head and Neck Cancers. *JAMA Otolaryngol Head Neck Surg* 139(10):1054-60, Oct. 2013.

The guidance in this statement is not intended to substitute for a clinician's independent judgment in light of the conditions and needs of a specific patient.

Access additional resources at [aae.org](https://www.aae.org).

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