
# Errors and Exceptions in Endodontic Exercises


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ABSTRACT

The article discussed in details the factors affecting the success or failure of endodontic treatment, the protocol of root canal irrigation is given, endodontic treatment errors are analyzed.



**Keywords:** root canal, complications of endodontic treatment.


In recent years, there have been positive trends in dentistry associated with improving the quality of endodontic dental treatment. Today, the use of improved tools and new technologies has made it possible to predict the outcome of endodontic treatment and increase its effectiveness. Recent studies have shown that there are a number of unresolved problems in Russian endodontics. Thus, the high incidence of complications of caries (62.3%) (E.V. Borovsky, 2002-2007) is associated with poor quality of endodontic treatment (19.8-48.7%). It is known that for every tooth treated for complications of caries, there are 1.5 teeth removed with the same diagnosis. Among the many factors influencing the success or failure of endodontic treatment: 1) the patient's health; 2) the patient's age; 3) morphological factors; 4) the quality of radiographic interpretation; 5) the quality of formation, cleaning and disinfection of the root canal; 6) the quality of root canal closure; 7) surgical failure during surgery; 8) non-bacterial causes of endodontic failure. If the first three indicators do not depend on the doctor and require only increased vigilance and attention, then the subsequent factors are directly related to the nature and quality of knowledge in the field of endodontics and developed techniques. Violation of one or more of these rules can lead to complications and endodontic failure. Four to eight factors are discussed in detail below. Interpretation of radiographs Although most doctors (90%) do not consider it necessary to conduct primary radiographic diagnostics for pulpitis and some cases of periodontitis, radiographs reflect not only information about the state of periodontal tissues, but also the following conditions. - the degree of curvature of the root; - anatomical features (maxillary sinus, mandibular canal); - anatomical features of the structure of the root (additional root, if the contour of the root is fuzzy and displaced) and the canal (if the color of the canal changes from dark to light, this is the separation of the canal); - atypical structure of the root; - the disappearance of the canal; - the

presence of calcification in the tooth cavity; - resorption in the canal or at the tip of the root in adults; - lateral fracture of the root; - the presence of pathological processes in bifurcation and its connection with periodontal pockets.The presence of even one item from the list of X-rays should alert the dentist to determine whether high-quality endodontic treatment is even possible in his office or clinic. Below are some of the most important endodontic procedures in the world. The quality of root canal formation, cleaning and disinfection. There are five phases of endodontic treatment during the formation and cleaning of the root canal: 1) access formation, 2) visualization and expansion of the root canal opening, 3) measurement of the working length, 4) mechanical file treatment and disinfection with drugs, 5) canal obturation (three-dimensional sealing of the main canal and all its branches). Access to the root canal should be visualized as much as possible, and the walls of the lumen should not prevent the free passage of tools through the root canal. For visualization of the root canal lumen, endolubbers, sodium hypochlorite, endodontic probes, dental magnifiers and lighting are useful. Dilation of the root canal opening is a step that provides patency of the root canal and access to the apex of the root. The more difficult the apical access is diagnosed, the wider the opening of the canal should be formed. Today, this problem is solved by rotary technology. Rotary shapers of any brand can reliably expand and form the upper third of the channel. Measuring the working length is a crucial step in the outcome and prognosis of endodontic treatment. The working length must be measured many times during the passage and formation of the root canal, since the following situations are possible - incomplete passage of the canal and stenosis of the root canal is not reached - the filling material is removed outside and the tip of the canal is "damaged" - the canal is occluded by a dentine seal and the reference point of the length is lost - a ledge or ledge of the root canal is displaced. Mechanical treatment of the canal means that the root canal passes from the opening to the physiological apex, removing the decomposition of tissues in the root canal and creating a taper of the root canal so that the cleansing fluid can freely enter the root canal, reach the apex and flow out of the root canal. Today, the "crown-down" technique is used for biologically based mechanical and pharmacological treatment of root canals. It is aimed at preserving the anatomy of the root canal, preserving the diameter of the apical part and the apical opening, carefully removing the lubricating layer and creating a constant taper to make the root canal trouble-free and difficult to disinfect. Disinfection and sterilization of the root canal. If five to seven years ago the cornerstone of endodontics was the mechanical treatment of the canal, and the main task was the passage of the canal from the mouth to the tip and its obturation, today it is necessary to focus on methods, means and techniques of cleaning, disinfection and sterilization of the canal. This means that mechanical cleaning of the main channels requires giving them a cone-shaped shape, while cleaning of the lateral channels, lateral channels and complex deltas should be carried out with the help of disinfectant solutions. To achieve these goals, we have formulated and worked out the following irrigation protocols of channels: - during the initial entry into the tooth cavity - sodium hypochlorite; - during visualization of the mouth of the canal - endolubricant; - during final cleaning - 17% EDTA solution + 2% chlorhexidine solution; - before the final occlusion - salt water or washing the canal with distilled water. Calcium hydroxide preparations are especially widely used in endodontics due to their broad-spectrum antibacterial action and ability to dissolve pulp tissue residues. The release of hydroxide ions creates a highly alkaline environment (pH = 11-12). In such an environment, bacteria die quickly. For a long-term bactericidal effect in the root canal, the pH value of these drugs should be above 10.0 for a long time and above 12 in cases of infection, necrosis or destruction. These drugs are injected into the root canal for 2-3 days (and can be re-injected if necessary), after which the canal is cleaned, dried and sealed. The quality of the root canal occlusion is determined by the choice of the occlusion method and the materials used to form the root seal. Reliable

and guaranteed filling of the root canal is impossible when using one pin or one paste, since it is necessary to seal not only the main canal before root canal stenosis, but also all lateral branches, lateral canals and triangular spaces. Root filling also requires reliable adhesion to dentin throughout the canal to prevent micro-leaks in the dentine tubule system. Surgical errors The frequency of surgical errors is high, and the frequency of perforation is significant. Considering the cases of removal of filling material from the root canal, the prevalence of perforation as a typical mistake made by dentists in modern endodontics can be considered about 14%. However, currently there are diagnostic methods and methods (radiobiographic magnification, dental magnifiers and microscopes) that allow you to quickly diagnose and effectively close both operative and resorptive perforations (for example, "Pro Root" by Dentsply, USA; "Vladmiva", Russia "Trioxident"). Trioxident"). The breakdown of the instrument in the root canal is the second most common iatrogenic error (0.8-8%) and depends on the doctor's technique, the time allotted for endodontic treatment, and the technical support of the practice. There are many techniques for removing tools from the root canal. Various types of scrapers, H-files, special forceps, "mass run" kits, numerous ultrasonic devices and magnetized instruments can be used for this. The "non-microbial" causes of endodontic failure include: improper installation of pin structures, vertical and lateral root fractures.

**In conclusion**: the following should be noted

- Endodontic practice is one of the most difficult areas of dental practice.
- Compliance with endodontics standards will undoubtedly have a positive impact on the quality of treatment.
- Continuous training of doctors and improvement of techniques will help to avoid iatrogenic errors in the treatment of root canals.

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