

ERRORS AND COMPLICATIONS IN ENDODONTIC TREATMENT**Kurbanova Nodira Voxidovna**

Faculty of Medicine, International University of Asia, Uzbekistan.

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Abstract. Endodontic treatment, commonly known as root canal therapy, is a vital procedure in saving teeth that have been compromised by decay, trauma, or infection. While the success rate of endodontic therapy is generally high, various errors and complications can occur during the procedure, which may lead to treatment failure. This article reviews the most common endodontic errors, their causes, potential consequences, and methods of prevention.

Keywords: Endodontic treatment, trauma, infection, dental pulp.

1. Introduction

Endodontics is the branch of dentistry concerned with the etiology, diagnosis, prevention, and treatment of diseases of the dental pulp and periapical tissues. Despite advances in technology and techniques, procedural errors still occur, often due to lack of experience, insufficient knowledge, or failure to follow proper protocols.

2. Common Errors in Endodontic Treatment**2.1. Access Cavity Errors**

Improper access cavity preparation can result in:

Missed canals

Perforation of the pulp chamber floor or walls

Excessive removal of tooth structure

Prevention: Use of rubber dam, pre-operative radiographs, and magnification tools like loupes or microscopes can help ensure proper access.

2.2. Instrumentation Errors

These include:

Ledge formation

Canal transportation

Instrument separation (file breakage)

Perforation during cleaning and shaping

Prevention: Use flexible nickel-titanium instruments, follow proper irrigation and glide path creation, and avoid excessive force.

2.3. Working Length Determination Errors

Incorrect determination of the working length can lead to:

Over-instrumentation (beyond the apex)

Under-instrumentation (short of the apex)

Prevention: Use electronic apex locators, confirm with radiographs, and ensure accurate measurements.

2.4. Irrigation Errors

Sodium hypochlorite accidents (extrusion into periapical tissues) may cause severe pain, swelling, and tissue damage.

Prevention: Use side-vented needles, avoid excessive pressure, and do not bind the needle tip in the canal.

2.5. Obturation Errors

Poor obturation can result in:

Voids

Overfilling or underfilling

Missed canals

Prevention: Use appropriate obturation techniques (e.g., lateral or vertical compaction), and confirm with radiographs.

3. Consequences of Endodontic Errors

Persistent infection or inflammation

Chronic pain or discomfort

Tooth fracture

Treatment failure and tooth loss

Need for retreatment or surgical intervention (apicoectomy)

4. Prevention and Management

Thorough training and continuing education

Use of modern technologies (CBCT, apex locators, rotary systems)

Strict adherence to aseptic protocols

Proper case selection and referral when necessary

Immediate recognition and management of complications

5. Conclusion

Endodontic treatment requires precision, knowledge, and attention to detail. Avoiding common procedural errors is essential to ensure successful outcomes. By following best practices and using advanced tools, dental practitioners can minimize complications and enhance patient satisfaction.

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