

Endodontic Complications

(Root Canal Treatment)



- **Intra-operative Complications:** While the root canal treatment is being carried out.
- **Postoperative Complications:** After the root canal treatment is completed.
- **Miscellaneous complications**

Investigators found only one failure of the 143 endodontic treatments for a success rate of 99.3 percent. In case of a failure of Root Canal treatment, it has to be replaced by an implant.

DOCTOR MUST BE INFORMED WHENEVER PATIENT EXPERIENCES ANY OF THE FOLLOWING COMPLICATIONS.

Please note: The cost of management of complications (if any) is not covered in the treatment charges.

- 1. Treating wrong tooth
- 2. Missed canals
- 3. Failure to remove caries
- 4. Damage to existing restorations or crowns
- 5. Access (when entering the pulp chamber of the crown of tooth) related perforations)
- 6. Over and under instrumentation
- 7. Fracture of instruments
- 8. Root perforations
- 9. Ledge formation.
- 10. Over and Under extended root fillings
- 11. Irrigant related mishaps
- 12. Accidental swallowing of foreign bodies

POST OPERATIVE COMPLICATIONS

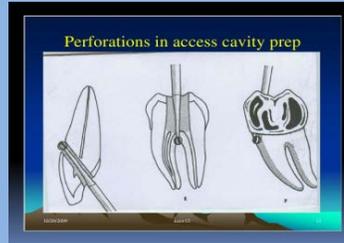
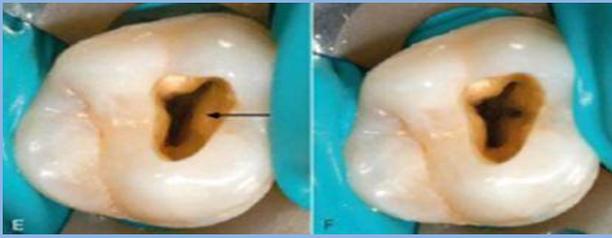
1. Pain
2. Swelling
3. Sensitivity or numbness

Intra-operative complications

• Access related • (chances minimal, mostly manageable)	• Instrumentation related • (chances minimal, mostly manageable)	• Obturation related • (chances minimal, mostly manageable)
<ul style="list-style-type: none"> • 1. Treating wrong tooth • 2. *Missed canals: Proper radiographs under magnification. • 3. Failure to remove caries • 4. Damage to existing restorations or crowns. • 5. Access (when entering the pulp chamber of the crown of tooth) related perforations: Hemorrhage control, followed by perforation repair. • Damage to adjacent hard and soft structure 	<ul style="list-style-type: none"> • 1. Over and under instrumentation (improper use of instrument) • 2. *Fracture of instruments: Retrieval of separated instruments depends on the point where instrument is fractured and region of the tooth where it is present. Accordingly, it is retrieved or bypassed or surgical intervention is required. • 3. *Root perforations: Sealing the perforation • 4. *Ledge formation: Early recognition, bypass the ledge, obturate. 	<ul style="list-style-type: none"> • 1. Under extended root fillings • 2. *Over extended root fillings Obtain a radiograph after the procedure, reposition the master cone (main root filling material) accordingly, take a confirmatory radiograph and proceed with obturation (final step of root filling after root canal treatment).

COMPLICATIONS OF ROOT CANAL TREATMENT

MISSED CANAL



OVER FILLING



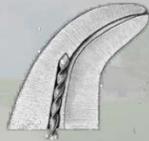
FRACTURED INSTRUMENT



Ledge Formation

Definition

a ledge has been created when the working length can not longer be negotiated and the original patency of the canal is lost.



Miscellaneous complications

➤ Irrigant related mishaps

Anesthesia, allow bleeding from canal like defense mechanism, flood the canal with normal saline.

Under the expert guidance of endodontist Dr. Sanjay Arora, complications during root canal treatment at Zental are very uncommon.



Swelling of lower lip and chin after 1 hr of irrigation with sodium hypochloride

INTERNAL and EXTERNAL RESORPTION

- Resorption: a condition associated with either physiologic or a pathologic process resulting in a loss of dentin, cementum, and/or bone. This may lead to loss of tooth.
- Internal resorption is "a defect of the internal aspect of the root following necrosis of odontoblasts as a result of chronic inflammation and bacterial invasion of the pulp tissue." Contributing factors include caries, trauma, and restorative procedures. The occurrence of internal resorption has been estimated to be between 0.01% and 55%, depending on the inflammatory status of the pulp. Root canal treatment remains the treatment of choice of internal root resorption as it removes the granulation tissue and blood supply of the clastic cells.

- External resorption is “resorption initiated in the periodontium and initially affecting the external surfaces of the tooth—may be further classified as surface, inflammatory, or replacement, or by location as cervical, lateral, or apical; may or may not invade the dental pulpal space.” Calcium hydroxide has been proven to induce formation of an apical barrier, but the structure of this barrier might be tunnelled or the soft tissue may be included.

Postoperative complications

1. Pain
2. Swelling
3. Sensitivity or numbness

Re-instrumentation

Definitive treatment may involve re-entering the symptomatic tooth. Working length(crown reference point to point till where cleaning is done in root) should be reconfirmed, patency to the root end tip obtained and a thorough debridement with copious irrigation performed. Remaining tissue, microorganisms, and toxic products or their extrusion are arguably the major elements responsible for the post-treatment symptoms. Drainage will allow for the exudative components to be released from the periradicular tissues, thus reducing localized tissue pressure.

- Incision and Drainage

If the abscess occurs after the obturation of the root canal system, incision of the fluctuant tissue is perhaps the only reasonable emergency treatment, provided the root canal filling is adequate.

- Intracanal medicaments'

The use of intracanal steroids, nonsteroidal anti-inflammatory drugs (NSAIDs), or a corticosteroid–antibiotic compound has been shown to reduce post-treatment pain.

- Occlusal Reduction.
- Drugs

Patient has to come for regular visits as and when advised.

PERIAPICAL LESIONS

The current philosophy in the management of periapical lesions includes the initial use of nonsurgical methods. When this treatment approach is not successful a surgical approach may be adopted, which if unsuccessful may lead to loss of tooth.

The following factors must be considered, while deciding on the management approach:

Diagnosis of the lesion

Many bone destroying lesions closely resemble endodontically related periapical lesions on radiographs. Some of these nonendodontic lesions include ameloblastoma, central fibroma, giant cell lesions, fibrous dysplasia, central hemangioma, primary malignancies, metastatic neoplasms, and inflammatory bone diseases. Teeth related to nonendodontic periapical lesions generally test vital to pulp testing methods.



➤ **Proximity of the periapical lesion to adjacent vital teeth**

When the periapical lesion is in close proximity to the apices of vital teeth, adopting a surgical approach may result in injury to the blood vessels and nerves of the adjacent teeth, thereby compromising their vitality.

➤ **Encroachment on anatomical structures**

Surgery increases the risk of damage to the anatomic structures such as mental foramen, inferior alveolar nerve and / or artery, nasal cavity and maxillary sinus. Also, the aspiration–irrigation technique, a nonsurgical method, is not recommended where adjacent tissue spaces or sinus cavities are involved. In such cases, alternative nonsurgical methods can be used.

➤ **Patient cooperation**

Considerable pain or discomfort can be experienced by the patient during or after a surgical procedure. A nonsurgical approach would be recommended for apprehensive and uncooperative patients. However, patient cooperation is also essential, while using the nonsurgical methods as several follow-up appointments may be required.

➤ **Age of the patient**

Very old patients may not tolerate surgical procedures well and hence may require nonsurgical treatment modalities.

➤ **Obstructions in the root canal system**

Ledges, calcified canals, separated instruments may prevent access to the apical foramen and may warrant a surgical approach in managing periapical lesions related to such teeth.

➤ **Time involved for treatment**

Enhanced healing kinetics is observed after performing apical surgery in teeth with periapical lesions.

Presence of periapical lesions may significantly affect the prognosis of the tooth.

Accidental Swallowing of foreign bodies : Grossman determined that if swallowed accidentally, 87% of foreign bodies entered the alimentary tract, whereas 13% aspirated into the respiratory tract. The literature also showed that although 90 % of ingested foreign objects could pass through the gastrointestinal tract uneventfully, there are roughly 10% that require endoscopic removal, while still 1% will ever require operation.

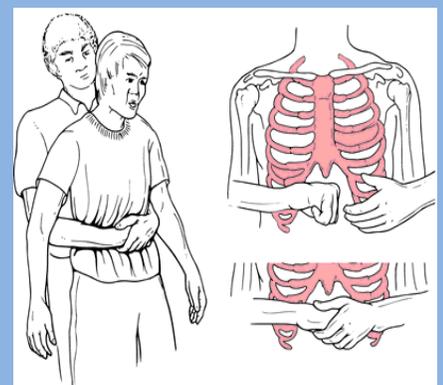
MANAGEMENT:

Clinical Retrieval: The oral cavity and oropharynx should next be examined under good illumination and if the object is visible, it should be retrieved with forceps or high-volume suction.

Observation and radiographic assessment:

Non-invasive emergency measures: Back blows, abdominal thrusts, Heimlick maneuver, CPR (Cardio Pulmonary Resuscitation)

Surgical intervention



HEIMLICK MANEUVER