

## **Endodontic Emergency Treatment**

Emergency conditions in endodontics induce infection which is expressed as pain and/or swelling. Any irritation to the tissues results in inflammation and release of chemical mediators which with pressure induce pain.

Chemical mediators cause pain by lowering pain threshold of the sensory nerve fibers or by increasing vascular permeability and producing edema. Increased fluid pressure resulting from edema directly stimulates the pain receptors.

The classification of endodontic emergencies includes (Walton):

### **A- Pretreatment**

- 1- Dentin hypersensitivity
- 2- Pain of pulpal origin
  - a) Reversible pulpitis
  - b) Irreversible pulpitis
- 3- Acute apical periodontitis
- 4- Acute apical abscess
- 5- Traumatic injury
- 6- Cracked tooth syndrome

### **B- Patients under treatment**

- 1- Mid treatment flare-up.
- 2- Exposure of pulp
- 3- Fracture of tooth
- 4- Recently placed restoration
- 5- Periodontal treatment

### **C- Post endodontic treatment**

- 1- Overinstrumentation
- 2- Overextended obturation
- 3- Underfilling
- 4- Fracture of root
- 5- High restoration

### **Irreversible acute pulpitis**

The diagnosis of irreversible pulpitis can be subcategorized as:

- 1- Asymptomatic. Asymptomatic irreversible pulpitis means a tooth that has no symptoms, but with deep caries or tooth structure loss that, if left untreated, will cause the tooth to become symptomatic or nonvital.
- 2- Symptomatic. Pain from symptomatic irreversible pulpitis is often an emergency condition that requires immediate treatment. These teeth exhibit

intermittent or spontaneous pain, whereby exposure to extreme temperatures will elicit intense and prolonged episodes of pain, even after the source of the stimulus is removed.

Teeth with irreversible pulpitis with definite periapical inflammatory extension, occlusal reduction is recommended. Antibiotics are not recommended for the emergency management of irreversible pulpitis.

#### Steps of treatment

- a) Clean the root canal(s) to the working length.
- b) Place a suitable medicament in the pulp canal and chamber (ex. Calcium hydroxide).
- c) Close the access opening with a temporary filling.
- d) Check occlusion of the tooth.
- e) Prescribe a pain analgesic.

#### **Acute apical periodontitis**

It is inflammation of the apical periodontal tissue caused from extension of pulpal infection periapically. It is characterized by the following features:

- 1- Elevated tooth from its socket because of build up in fluid pressure in the periodontal ligament.
- 2- Discomfort on biting.
- 3- Sensitivity to percussion.

#### Steps of management

- 1- Access opening preparation.
- 2- Total pulp extirpation.
- 3- Cleaning the root canal.
- 4- Thorough irrigation and dryness.
- 5- Placement of intracanal medicament as Calcium hydroxide.
- 6- Close the tooth with a temporary filling material.
- 7- Relieve occlusion.
- 8- Prescribe analgesics.

#### **Acute periapical abscess**

Extrusion of bacteria from the root canal to the periapical area induces infection ending in formation of a collection of pus. Acute periapical abscess is characterized by the following features:

- 1- Clinically a swelling is evident with pain and a sensation of tooth elevation.
- 2- Radiographic evidence varies in size of lesion.
- 3- Systemic fever.

#### Steps of management

- 1- Pulp debridement of its contents.
- 2- Incision and drainage (if swelling is present)
- 3- If pus is oozing the tooth may be left open for 1 day for drainage.



- 4- Antibiotics may be prescribed only if systemic features are present as fever.
- 5- Relieve the tooth out of occlusion.
- 6- Analgesics should be prescribed.

Local anaesthetic is contraindicated to be used because:

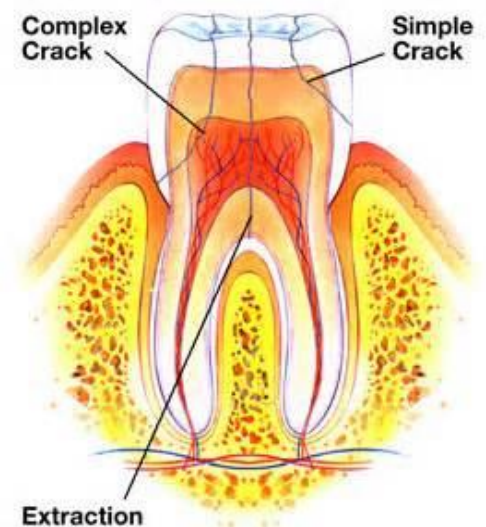
- 1- Pain caused by injection in distended area.
- 2- Chance of spread of microorganisms.
- 3- Ineffectiveness of local anaesthetics.

### **Cracked tooth syndrome**

It is incomplete fracture of a tooth with vital pulp. It is commonly seen with teeth with large restorations. Pain is experienced when the patient chews laterally a cotton roll.

#### **Steps of treatment**

- 1- Immediately reduce the occlusal contact with the cracked area.
- 2- Analyze the extent of the crack to preserve the pulpal health.
- 3- If the pulp is involved and the crack is superficial to the alveolar bone endodontic treatment is necessary.
- 4- If the crack is below the alveolar bone extraction of the tooth is necessary.



### **Intratreatment flare-up**

Flare-up is the occurrence of pain, swelling or both during the course of root canal treatment.

#### **Risk factors contributing to flare-ups:**

- 1- Overinstrumentation and overobturation.
- 2- Inadequate debridement.
- 3- Periapical extrusion of debris.
- 4- Preoperative pain, percussion sensitivity and swelling.
- 5- One visit endodontics in cases of acute apical periodontitis.
- 6- Retreatment.
- 7- Apprehension.
- 8- History of allergies.

#### **Steps of management**

- 1- Reassurance of the patient
- 2- Complete debridement of the root canal with no overinstrumentation or extrusion of debris.
- 3- Establishment of drainage if pus is present.
- 4- Relief of occlusion
- 5- Calcium hydroxide intracanal medication.
- 6- Analgesic and antibiotic prescription.

### **Overextended treatment beyond the apex.**

Any extension of an instrument or filling material induces acute inflammation and with the presence of extruded debris will cause infection. Pain is magnified because of the limited area between the bone and the tooth.

#### **Steps of treatment**

- 1- Care should be taken in consideration not to extend instrumentation beyond the apex.
- 2- Reinstrumentation to the exact working length should be done to insure an apical stop area to prevent extrusion of gutta percha.
- 3- If gutta percha is extended beyond the apex then retreatment should be performed by special retreatment kits as ProTaper retreatment and D-Race systems.
- 4- Analgesic should be prescribed.

### **Fracture of tooth**

During the course of treatment or after it the tooth may be subjected to force and it might fracture. The treatment depends on the extent of the fractured area (in crown or including root). The steps of treatment resemble that of the cracked tooth syndrome.