ENDODONTIC PAIN CONTROL

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ENDODONTIC EMERGENCIES ARE CHALLENGE IN BOTH DIAGNOSIS AND MANAGEMENT

-EVERY CASE IS A COMPLETE SEPARATE STORY
Diagnostic considerations
The initial challenge for the clinician is to understand the biological process resulting in pain. Among the diagnostic questions that must be resolved prior to treatment are:

- Is the pain of odontogenic or non-odontogenic origin?
- Is the tooth vital or non-vital?
- Is the pain due primarily to an inflammatory or infectious process?
- Is the pain of pulpal or periradicular origin or both?
- Is there a periodontal problem?

From the results of the tests, radiographs and the history, the clinician determines which procedure or combination of procedures will most likely relieve the patient’s pain.
Clinicians focus for pain management on drugs and clinical treatment options include:

1-Pulpotomy:

A-performed in cases of acute pain of pulpal origin when there is insufficient time to do pulpectomy.

B-The goal of the pulpotomy is to remove the coronal pulp tissue in the chamber without penetrating pulpal tissue in the root canal systems.

C-The procedure should be done under rubber dam to prevent further microbiological contamination, including sealing of sedative and antibacterial dressings in the pulp chamber, the dressings suggested have been phenol, cresatin, and eugenol.

D-The success of a pulpotomy in relieving pain. In the vital case, would seem to be due to a venting of the chamber with a reduction in local tissue pressure, inflammatory mediator concentrations and cutout of the terminal endings of suffering sensory neurons.
2- Pulpectomy:

A-Since it is impossible for the clinician to accurately determine the apical extent of pulpal pathosis, a pulpectomy offers the advantage of complete removal of the pulp.

B-Pulpectomy is the course of treatment often used in patients who present with symptoms of irreversible pulpitis, or pulp necrosis with or without swelling.

C-There is also a controversy concerning the use of an antibiotic to prevent postoperative pain following pulpectomy.

D-For the prevention of root operative pain following pulpectomy would include the use of NSAID.

E-Following the pulpectomy it is best to close teeth in order to prevent contamination from the oral cavity.
3- Incision and drainage:
A- Pulpal necrosis may result in a periradicular abscess with swelling.
B- The goal of emergency treatment for patients with swelling is to achieve drainage.
C- The use of antibiotics to treat swellings of endodontic origin is not recommended without canal instrumentation and when suitable incision and drainage.
4- Trephination:
A- Is the surgical perforation of the alveolar cortical plate over the root end of a tooth to release accumulated tissue exudates that is causing pain.
5- Occlusal adjustment:
A-The value of reducing occlusion to prevent pain after endodontic instrumentation had been a source of controversy. In a review of the treatment of endodontic emergencies it had been recommended that if a tooth responsible for an acute abscess is extremely painful on biting, Occlusal contact should be reduced so that the tooth is reasonably comfortable in normal occlusion.
B-Occlusal reduction when performed in appropriate cases is a highly predictable simple strategy for the prevention of postoperative pain and relief of pain due to endodontic emergencies.
PSYCHOLOGICAL MANAGEMENT IS THE MOST IMPORTANT:

Anxiety reduction is another important factor in reducing intraoperative and postoperative pain.

A-CONTROL THE SITUATION.
B-GAIN THE CONFIDENCE OF THE PATIENT.
C-PROVIDE ATTENTION AND SYMPATHY.
D-TREAT THE PATIENT AS AN IMPORTANT INDIVIDUAL.
<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th>Pulp vitality</th>
<th>Percussion</th>
<th>Clinical condition</th>
<th>Treatment</th>
<th>Medicament</th>
<th>Open/close</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+</td>
<td>0</td>
<td>Acute pulpitis</td>
<td>Single-rooted tooth, pulpectomy</td>
<td>Cresatin, Formocresol</td>
<td>Close</td>
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<tr>
<td></td>
<td>+</td>
<td>+</td>
<td>Acute pulpitis with apical periodontitis</td>
<td>Multirooted tooth, pulpotomy</td>
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<td>Close</td>
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<td>+</td>
<td>+</td>
<td>Acute pulpitis with apical periodontitis</td>
<td>Pulpectomy</td>
<td>CMCP</td>
<td>Close</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>Pulp necrosis</td>
<td>Canal debridement</td>
<td>CMCP</td>
<td>Close</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>+</td>
<td>Acute alveolar abscess</td>
<td>Incision and drainage, preferably through tooth; otherwise through tissue</td>
<td>Often systemic antibiotic</td>
<td>Open</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>Second appointment, canal debridement</td>
<td>None</td>
<td>Open</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Third appointment, irrigate and dry; do not file</td>
<td>Sulfonamide or CMCP</td>
<td>Close</td>
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Factors affecting treatment:
1-The patient’s levels of anxiety and preoperative pain have been shown to influence levels of postoperative pain.

2-Patients with irreversible pulpitis had an 8-fold higher failure rate of local anesthetic injections in comparison to normal control patients.
<table>
<thead>
<tr>
<th>Pre-operative factors</th>
<th>Intra operative factors</th>
<th>Postoperative factors</th>
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</thead>
<tbody>
<tr>
<td>1-acute exacerbation of chronic lesion.</td>
<td>1-No use of rubber dam.</td>
<td>1-leaky temporary or permanent filling materials.</td>
</tr>
<tr>
<td>2-non-vital tooth.</td>
<td>2-Irritating canal dressing materials.</td>
<td>2-No use of postoperative medication may also give rise to pain.</td>
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<tr>
<td>3- periapical cyst.</td>
<td>3-Apical extrusion of filling material and instruments.</td>
<td></td>
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<tr>
<td>4-Unusual canal anatomy.</td>
<td>4- Procedural complications.</td>
<td></td>
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<tr>
<td>5-Abscess or fractured teeth are responsible for more flare-ups and pain.</td>
<td>5-Overlooked canals can give rise to more pain.</td>
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</table>
THE IRITANTS THAT INDUCE SEVERE INFLAMATION IN PULP AND PERIRADICULAR TISSUES. LEAD TO THE RELEASE OF A GROUP OF CHEMICAL SUBSTANCES THAT INITIATE THE INFLAMATION.

THESE SUBSTANCES CAUSE PAIN IN TWO WAYS:
1-DIRECTLY: BY LOWERING THE RESPONSE THRESHOLD OF SENSORY NERVES.

2-INDIRECTLY: BY INCREASING VASCULAR PERMIABILITY AND PRODUCING EDEMA.
THE MAIN CAUSE OF THE PAIN IS **EDEMA** RESULTS IN INCREASED FLUID PRESSURE WHICH STIMULATES PAIN RECEPTORS

THE IMMEDIATE GOAL OF THE TREATMENT SHOULD BE THE **REDUCTION OF PRESSURE OR REMOVAL OF THE INFLAMED PULP OR PERIRADICULAR TISSUE**.
TREATMENT PLAN
THE IMMEDIATE GOAL OF THE TREATMENT SHOULD BE THE REDUCTION OF PRESSURE OR REMOVAL OF THE INFLAMED PULP OR PERIRADICULAR TISSUE.

FIRST STEP IN TREATMENT IS:

PROFOUND ANESTHESIA TO GAIN PATIENT’S CONFIDENCE AND COOPERATION

**UPPER JAW**: INFILTRATION OR BLOCK.

**LOWER JAW**: INFERIOR ALVEOLAR BLOCK. (LINGUAL AND LONG BUCCAL BLOCK MAY BE HELPFUL.

**SOMETIMES**: PERIODONTAL, INTRAPULPAL OR INTRAOSSEOUS INJECTIONS MAY BE NEEDED
Pretreatment Emergency
A pretreatment emergency is a situation in which the patient is seen initially with severe pain and swelling. Problems occur with both diagnosis and treatment.

1-PAINFUL IRREVERSIBLE PULPITIS WITHOUT APICAL PERIODONTITIS

DIAGNOSIS:
1-PAIN ON THERMAL STIMULI (MAINLY HOT)
2-NO PAIN ON PERCUSSION
3-SPONTANOUS PAIN
4-NO RADIOGRAPHIC PERIAPICAL CHANGES
TREATMENT:

- Profound anesthesia
- Complete pulp extirpation
- Cleaning & shaping of the canals is desirable.

- In molars; pulpotomy may be enough to release pressure
- Medicaments: camphor sealed in the canals.
- A mild analgesics but no antibiotic
2-PAINFUL IRREVERSIBLE PULPITIS WITH ACUTE APICAL PERIODONTITIS

- THE SAME AS (PAINFUL IRREVERSIBLE PULPITIS WITHOUT APICAL PERIODONTITIS) BUT WITH SLIGHT TO SEVERE PAIN ON PERCUSSION

- RADIOGRAPHICALLY: SLIGHT WIDENNING OF THE LAMINA DURA AROUND THE APEX

THE SAME TREATMENT BUT:
1- MAY NEED RELIEF OF OCCLUSION
2- ANTIBIOTIC IS NOT NEEDED
3-Pulp Necrosis Without Swelling

Diagnosis:
- Tooth not affected by thermal stimuli.
- Pain on percussion.
- Periapical radiolucent lesion may be seen.

Treatment:
- Anesthesia: Inflamed pulp remnants in the apical canals or the inflamed periradicular tissue.
- Complete debridement is the treatment of choice.
- Heavy irrigation with copious amount of sodium hypochlorite.
- Dry the canals with paper points
- Fill the canals with non-setting calcium hydroxide.
- Medicaments: Camphor sealed in the canals and close it with temporary filling
- Mild analgesic is needed (antibiotic is rarely needed)
4-PULP NECROSIS WITH LOCALIZED SWELLING
(ASSOCIATED WITH ACUTE APICAL ABCESS)

- TOOTH MAY HAVE SOME MOBILITY AND VERY SENSITIVE TO BITTING.
- THERE MAY BE BUS INSIDE THE CANALS WHEN OPEN THE PULP CHAMBER.
- THESE PATIENTS MAY HAVE ELEVATED TEMPERATURES OR LYMPHADENOPATHY.
RADIOGRAPHIC FINDINGS RANGE FROM NO PERIAPICAL RADIOLUCENCY TO LARGE RADIOLUCENCY.
-TREATMENT IS BIPHASIC
FIRST: DEBRIDMENT OF THE CANALS
SECOND: DRAINAGE OF BUS
LOCALIZED SWELLING SHOULD BE INCISED & DRAINED TO:

1-RELEASE OF PRESSURE.
2-REMOVAL OF THE VERY POTENT IRRITANT.
IN PATIENTS WITH A PERIRADICULAR ABCESS & NO DRAINAGE FROM THE CANALS, PENETRATION OF THE APICAL FORAMEN WITH SMALL FILE (UP TO 25) MAY INITIATE DRAINAGE & RELEASE PRESSURE. DRAINAGE THROUGH THE TOOTH MAY BE ENOUGH IN SOME CASES.
- Most of the cases need drainage through the tooth & the mucosal incision.
- Drain may be needed to permit continued drainage.
TREATMENT
- DEBREDMENT & DRAINAGE.
- HEAVY IRRIGATION WITH DISTILLED WATER
- IT IS ADVISED NOT TO USE SODIUM HYPOCHLORIDE WITH THE PRESENCE OF BUS BECAUSE THIS MAY LEAD TO THE FORMATION OF PLUG.
- DRY THE CANALS WITH PAPER POINTS & CLOSE.
- MEDICAMENTS: CAMPHOR SEALED IN THE CANALS
- CLOSE WITH GOOD TEMPORARY FILLING
- MILD ANALGESIC & ANTIBIOTIC IS NEEDED
- Make sure that there is no bus in the canals before you close.
- Don’t leave these teeth open for drainage.

**But**

If the drainage through the canal is not stopped, the access may be left opened for further drainage **but not more than 24 HRS**.
ANTIBIOTIC OF CHOICE:

A COMBINATION OF
-WIDE SPECTRUM ANTIBIOTIC FOR AEROBIC BACTERIA (PENECILLINS)
-METRONEDAZOLE (FLAGYL) FOR ANEROBIC BACTERIA
5-PULP NECROSIS WITH DIFFUSE SWELLING

- SPREADING OF INFECTIONS INTO FACIAL SPACES
- VERY DANGEROUS SITUATION
- SYSTEMIC MANIFESTATION ARE PRESENT
- EYE CLOSURE IF ASSOCIATED WITH UPPER TEETH AND TRISMUS IF ASSOCIATED WITH LOWER TEETH
Fig. 3-25. Sequence of pulp pathoses.
TREATMENT
- DRAINAGE IS VERY IMPORTANT IF THERE IS FLUCTUATION & BUS.
- EXTRAORAL INCISION WITH DRAIN MAY BE NEEDED.
- REMOVAL OF IRRENTANTS BY DEBRIDEMENT OF CANALS OR EXTRACTION OF INFECTED TOOTH.
- STRONG ANTIBIOTIC (I.V.) & ANALGESIC.
- MAY NEED HOSPITALIZATION.
Interappointment and Postobturation Emergency

The interappointment and postobturation emergency, also referred to as the “flare-up,” occurs after an endodontic appointment. Although this is an upsetting event, it is easier to manage because the offending tooth has already been identified and a diagnosis has been previously established. Also, the clinician has knowledge of the prior procedure and will be better able to correct the problem.
CAUSITIVE FACTORS

- PREOPERATIVE COMPLICATION
- OVERINSTRUMENTATION (BLOOD IN THE CANALS)
- REMAINING INFLAMMED PULP TISSUE
- IMPROPER PREPARATION OF PATIENT
PREVIOUSLY VITAL CASES WITHOUT SWELLING

TREATMENT
- ASSURANCE OF PATIENT
- GOOD ANALGESIC
- REOPEN THE TOOTH (MAKE GOOD DEBRIDMENT & IRRIGATE)
- INTRACANAL MEDICAMENTS
2-PREVIOUSLY NECROTIC CASES WITH NO SWELLING
TREATMENT

- OPEN THE TOOTH
- RECLEAN & IRRIGATE THE CANALS WITH SODIUM HYPOCHLORITE
- DRY & CLOSE.
IF ACUTE APICAL ABCESS IS DEVELOPED:

- DRAINAGE IS NECESSARY (THROUGH THE TOOTH OR THE SOFT TISSUE)
- CLEANING & IRRIGATION OF THE CANALS
- DRY & CLOSE.
- ANTIBIOTIC & NSAID IS NEEDED
POSTOPERATIVE EMERGENCIES
ONE THIRD OF ALL ENDO CASES EXPERIENCE SOME PAIN FOLLOWING OBTURATION.
CAUSES:

- OVERFILLING IS THE MAIN CAUSE
- HIGH OCCLUSION
- IRRITATION FROM THE SEALER OR GUTTAPERCHA
TREATMENT

- DISCOMFORT: REASSURANCE & MILD ANALGESICS.
- REMOVAL OF THE HIGH POINTS
- RETREATMENT IS INDICATED IF PAIN PERSIST & ENDO TREATMENT HAS BEEN OBVIOUSLY INADEQUATE.
- APICAL SURGERY (APECICTOMY) IN PATIENTS WITH PERSISTENT PAIN WITH OVER FILLING
- PATIENTS WITH GOOD ROOT CANAL TREATMENT BUT WITH PERSISTENT SWELLING AFTER OBTURATION, INCISION & DRAINAGE MAY BE ENOUGH.
THE END
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