endodontic emergency

It is a situation associated with pain and/or swelling that requires **immediate diagnosis and treatment.**

An urgency represents a less severe problem than emergency (requires immediate attention).

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| Does the problem disturb sleeping, eating, working or concentration? | Emergency Condition |
| How long has it been bothering you? | Short duration 🡺 Emergency Condition Long duration 🡺 Urgency |
| Have you taken any pain medication; did it help? | Medications are usually ineffective during an emergency condition. |

# Slides 5 – 21

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| Etiology | Factors Causing Pain | Emergency Impacts | Patient Presentation |
| * Microbial * Mechanical * Chemical | * **Chemical Mediators**   + Direct: activate nociceptors causing spontaneous pain or by lowering their pain threshold   + Indirect: activating nociceptors causing spontaneous pair or by lowering their pain threshold * **Pressure**   + Edema results in increased fluid pressure which mechanically stimulates pain receptors. | * Patient * Staff * Dentist | * Pain * Pain and swelling * ~~Trauma~~ |
| 3D’s of Successful Management | Diagnosis | Treatment Plan | When do patients present for emergency endodontic care |
| * Diagnosis * Definitive Dental Treatment * Drugs | * Determine the CC * Accurate Medical History * Complete thorough exam * Radiographic exam * Analyze the results * Establish Treatment Plan | * Remove the etiology | * No prior RCT/initial infection   + Pain   + Primary Infection * After RCT initiated   + Flare-up * After obturation   + Non-healing endo therapy |
| Pulpal Diagnosis | Periradicular Diagnosis |  |  |
| * Irreversible Pulpitis * Necrotic pulp * Pulp-less / previously treated | * Normal periradicular tissues * Symptomatic periradicular periodontitis * Acute periradicular abscess |  |  |

# Etiology

After listening to the patient determine the etiology of chief complaint.

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| **Contents of root Canal** | **Dentist Controlled Factors** | **Host Factors** |
| * + Pulp tissue   + Bacterial   + Bacterial byproducts   + Endodontic therapy materials | * + Dentist personality   + Over-instrumentation   + Inadequate debridement   + Missed canal   + Hyper-occlusion (occlusal reduction is beneficial for teeth that initially present with symptoms):     - Pre-operative pain     - Pulp vitality     - Percussion sensitivity     - Absence of periradicular radiolucency     - Combination of these symptoms   + Debris extrusion   + Procedural complications     - Perforation     - Separated Instrument     - Zip     - Strip     - NaOcl accident     - Air emphysema     - Wrong tooth | * + Allergies   + Age   + Sex   + Emotional State   + Complex etiology   + Microbiology   + Immunology   + Inflammatory |

# Emergency Treatment

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| **Non-surgical** | **Combined** | **Surgical** |
| * + Pulpotomy   + Partial pulpoctomy (???)   + Complete pulpectomy (???)   + Debridement of root canal system |  | * + Incision for drainage     - Rationale:       * Decrease number of bacteria       * Reduce tissue pressure         + Alleviates pain/trismus         + Improves circulation       * Prevents spread of infection       * Alters oxidation-reduction potential       * Accelerates healing   + Trephination/Apical fenestration |

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|  | Acute Pulpitis | | | Acute Pulpitis  with Apical Periodontitis | | | Pulp Necrosis (Rare Emergency) |
| **Diagnosis** | Pain | | + Positive | Pain | |  |  |
| Vitality | | + Positive | Vitality | | + Positive | - Negative |
| Tenderness to Percussion | | - Negative | Tenderness to Percussion | | + Positive | - Negative |
| Radiographic Changes | | No change | Radiographic Changes | | Widening to PDL w/ small radiolucency | Periapical Radiolucency |
| Deep caries, extensive restoration, trauma, and pulp capping may be seen | | | Tooth feels high and/or loose and teeth will not close together (???) | | |  |
| **Management** | Limited Time | | Lots of Time | Limited Time | | Lots of Time | a. Canal debridement 🡺 Temporary Dressing  b. Extraction of non-restorable tooth (analgesics and antibiotics may be required) |
| **Anteriors/Premolar**: Anesthesia 🡺 pulp extirpation 🡺 temporary dressing  **Molar**:  Pulpotomy | | Complete pulp extirpation 🡺 Temporary dressing | **Anteriors/Premolar**:  Complete pulp extirpation 🡺 temporary dressing  **Molar**:  Anesthesia (give additional carpoule) 🡺 Pulpectomy of largest canal (distal of lower, lingual of upper) 🡺 Temporary dressing 🡺 Recall to remove pulp from other canals. | | Complete pulp extirpation 🡺 Temporary dressing |
| Acute Apical Abscess | | | | | | | |
| **Position of the swelling depends on** | | **Swelling can spread to** | | | **To Resolve swelling** | | |
| 1. Orientation of tooth apex 2. Relationship of site of perforation to muscle attachment | | 1. Facial area 2. Palatal area 3. Submandibular area | | | 1. Establish root canal drainage 2. Establish drainage by incising a fluctuant swelling 3. Prescribe antibiotics | | |
| **Management of a localized soft tissue swelling** | | | | | **Management of Diffuse Swelling** | | |
| 1. If it is fluctuant 🡺 pus is present 🡺 soft tissue infiltration of anesthesia around periphery of infected area 2. Incise at site of greatest fluctuance down to level of apical bone. Make sure incision is in a position that encourages drainage by gravity 3. Vertical incision offers better post-operative healing than a horizonal incision 4. Dissect gently through deeper tissues and explore all parts of abscess cavity 5. Wound should be kept clean with hot salt-water mouth rinses to promote drainage   **Antibiotic Therapy is unnecessary (except with depressed host defense)** | | | | | 1. Tooth is opened 🡺 canal thoroughly instrumented and irrigated 2. If no drainage is achieved 🡺 apical foramen is instrumented through to encourage drainage from periapical tissues. Soft tissue drainage can be established through incision. 🡺 Drain is sutured into incision wound to ensure tissue drainage.   **Antibiotics are indicated** | | |
| Patient who show sign of toxicity, CNS changes or airway compromise should be hospitalized immediately. | | | | | | | |

# Guidelines for Antibiotic Therapy

* Select antibiotic with **anaerobic** spectrum
* Use a larger dose for a short period of time
* **As a general rule**, antibiotic therapy should be considered for patients with signs & symptoms of infection (cellulitis, fever, or lymphadenitis)

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| Penicillin VK | 1st Choice | Initial dose **1—2g** then **500mg** every 6 hours for 7—10 days. | Combination penicillin + metronidazole (**250mg**) is recommended 7—10 days |
| Clindamycin | 1st Choice for patients allergic to amoxicillin | Initial dose **300mg** followed by **150mg—300mg** every 6 hours for 7—10 days. | Sometimes signs of colitis |

