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).

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

Etiology

- Microbial
- Mechanical
- Chemical

Factors Causing Pain

- **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.

Emergency Impacts

- Patient
- Staff
- Dentist

Patient Presentation

- Pain
- Pain and swelling
- ~~Trauma~~

3D's of Successful Management

- Diagnosis
- Definitive Dental Treatment
- Drugs

Diagnosis

- Determine the CC
- Accurate Medical History
- Complete thorough exam
- Radiographic exam
- Analyze the results
- Establish Treatment Plan

Treatment Plan

- Remove the etiology

When do patients present for emergency endodontic care

- No prior RCT/initial infection
  - Pain
  - Primary Infection
- After RCT initiated
  - Flare-up
- After obturation
  - Non-healing endo therapy

Pulpal Diagnosis

- Irreversible Pulpitis
- Necrotic pulp
- Pulp-less / previously treated

Periradicular Diagnosis

- Normal periradicular tissues
- Symptomatic periradicular periodontitis
- Acute periradicular abscess

Etiology

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

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

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

	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)
	<u>Anteriors/Premolar</u>: Anesthesia ➔ pulp extirpation ➔ temporary dressing **<u>Molar</u>**: Pulpotomy	Complete pulp extirpation ➔ Temporary dressing	**<u>Anteriors/Premolar</u>**: Complete pulp extirpation ➔ temporary dressing **<u>Molar</u>**: 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
a. Orientation of tooth apex b. Relationship of site of perforation to muscle attachment	a. Facial area b. Palatal area c. 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	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.
Antibiotic Therapy is unnecessary (except with depressed host defense)	**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)

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