

Clinical Endodontics I: Preparation for Endodontic Treatment

Pathways of the Pulp, Cohen 10th edition
Preparation for Treatment, *Chapter 5.*
Local Anesthesia in Endodontics, *Chapter 20.*

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This is a reading guide for the assigned reference

Lecture outline:

Operatory preparation:

- Selection of the armamentarium.
- Infection Control

Patient preparation:

- Treatment planning.
- Case presentation.
- Informed consent.
- Premedication with antibiotics.

Preparation of radiographs:

- Applications of radiography.
- Limitations.
- Principles of radiograph.
- Radiographic interpretation.
- Orascopy and Endoscopy.

Administration of local anesthesia.

Isolation of treatment site.

Operatory preparation

Selection of the armamentarium

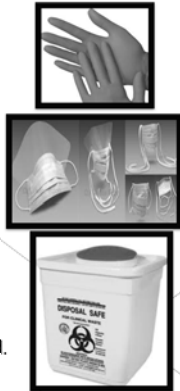


Operatory preparation

Infection Control

The major ADA recommendation

1. Vaccination against hepatitis B
2. Baseline tuberculin skin test
3. Medical history
4. Screen all patient for latex allergies.
5. Proper barrier techniques
6. Contaminated sharps
7. Operatory surfaces , either covered or disinfected.
9. Mouth rinsing
10. Instruments must be clean and sterilized.



Patient preparation

- Treatment planning
- Case presentation
- Informed consent
- Premedication with antibiotics

- ✓ Prosthetic heart valves
- ✓ History of infective endocarditis
- ✓ Congenital heart abnormalities

Cephalexin Cephadrine and amoxicillin (2g 1hr before treatment)

Allergic

Unable orally

Allergic +unable orally

Clindamycin 600mg 1hr before treatment

Cefazolin 1g ampicillin 2g IV or IM 1hr before treatment

Clindamycin 600mg 1hr before treatment

Antibiotic Prophylactic Regimens for Dental Procedures

Situation	Agent	Regimen—Single Dose 30-60 minutes before procedure	
		Adults	Children
Oral	Amoxicillin	2 g	50 mg/kg
Unable to take oral medication	Ampicillin OR Cefazolin or ceftriaxone	2 g IM or IV	50 mg/kg IM or IV
	Cefazolin or ceftriaxone	1 g IM or IV	50 mg/kg IM or IV
Allergic to penicillins or ampicillin—Oral regimen	Cephalexin**	2 g	50 mg/kg
	OR		
	Clindamycin	600 mg	20 mg/kg
Allergic to penicillins or ampicillin—Oral regimen	OR		
	Azithromycin or clarithromycin	500 mg	15 mg/kg
Allergic to penicillins or ampicillin and unable to take oral medication	Cefazolin or ceftriaxone	1 g IM or IV	50 mg/kg IM or IV
	OR		
	Clindamycin	600 mg IM or IV	20 mg/kg IM or IV

Bisphosphonate Therapy

- Risk of osteonecrosis
- Surgical treatment should be avoided

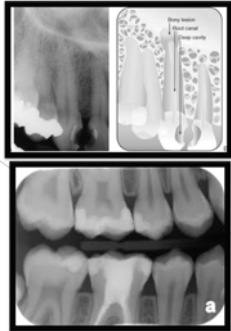
Preparation of Radiographs

● Periapical

vs

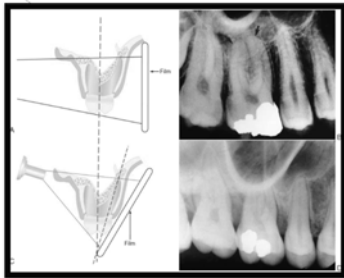
Bite-wing

● Limitations of radiographs

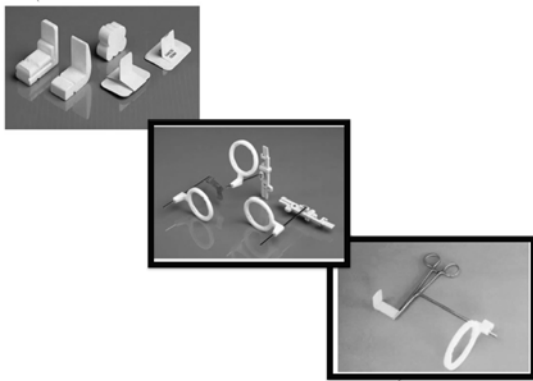


Principle of Endodontic Radiographs

Film placement:



Film holder and Aiming devices:



Exposure and film qualities:

- Kilovoltage affects the film contrast
- Time and milliamperage affect film density

Processing:

- Rapid processing methods are used to produce good film in less than 1 to 2 minute.



Radiographic interpretation:

- Read the film carefully
- Many anatomical structures and osteolytic lesion can be mistaken for periradicular pathoses.
- A commonly misinterpreted osteolytic lesion is periapical central dysplasia.

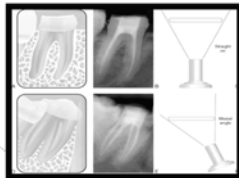


Lamina Dura:

- Changes in the integrity of PDLs have diagnostic value.

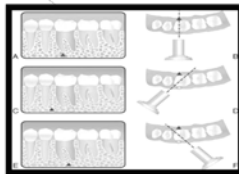
Buccal Object Rule (Cone shift):

Clark's (SLOB)



Vertical Angulation:

Mandibular canal



Digital Radiographs

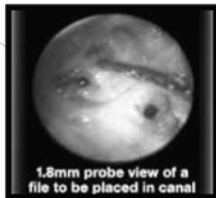
- ❖ In the late of 1980s development of RVG by Dr. Francis Mouyen.
- ❖ RVG (RadioVisioGraphy) has three component:
- ❖ Other :Dexis Digital x-ray,Computed Dental Radiography, Digora and DenOptix
- ❖ Advantages of digital radiographs
- ❖ Digital Subtraction Radiographs:
Detecting radiographic density changes over time



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Orascopy and Endoscopy:

- ⦿ Enhance visualization in endodontics
- ⦿ Consist of either flexible or rigid fiberoptic endoscopes



Local anesthesia:

Mechanisms of Action:

- ⦿ Block sodium channels
- ⦿ Modulation of certain G protein-coupled receptors

Clinically available local anesthetics:

Possible adverse effects:

- ⦿ Cardiovascular reactions
- ⦿ Systemic effects
- ⦿ Methemoglobinemia
- ⦿ Peripheral nerve paresthesia
- ⦿ Allergic reaction

Effect of systemic diseases or conditions on local anesthetics:

- Cardiac patients should not receive local anesthetics containing vasoconstrictors
- Patients with Hodgkin's disease and breast cancer who have received radiation may require consultation and reduction of local anesthetics dose
- Alcoholics appear more resistance to local anesthetics
- Local anesthetics are safe for use in pregnant and lactating patient
- Local anesthetics may interact with patient medication

Method of confirming anesthesia:

- Traditional method
- Using the EPT and cold test

Reversing the action of local anesthesia

OraVerse
(Phentolamine Mesylate) Injection

Mandibular Anesthesia:

Anesthetic agent:

1.8ml of 2% lidocaine with 1:100,000 epinephrine

Techniques:

- Inferior alveolar nerve block(IAB)
- Gow-Gate
- Akinosi-Vazirani
- Incisive nerve block at mental foramen
- Infiltration

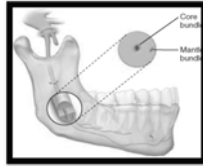


Increase success of IAB:

- Increase the volume of anesthesia
- Increase epinephrine concentration
- Addition of hyaluronidase
- Carbonated anesthetic solution
- Diphenhydramine as local anesthetic agent
- Addition of Meperidine to lidocaine

Factors in failure of the inferior nerve block:

- Accessory innervations: Mylohyoid nerve
- Accuracy of injection
- Needle deflection
- Cross innervations
- Core Theory: is nerves on the outside of the nerve bundle supply molar teeth, and nerves on the inside of the nerve bundle supply anterior teeth



Alternative techniques:

- Intriligamintary
- Intraosseous
- Use of mannitol (hyperosmotic sugar solution)

Maxillary Anesthesia:

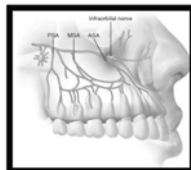
Anesthetic agent:
1.8ml of 2% lidocaine with 1:100,000 epinephrine

Other: 3% mepivacaine(short duration)
4%prilocaine
Atricaine
0.5% bupivacaine

Techniques:

- Infiltration
- Posterior superior alveolar nerve block(2nd and 3rd molars)
- Infraorbital block(1st and 2nd premolars anesthesia)
- Second division nerve block
- Palatal-anterior superior alveolar nerve block(incisors+canine)
- Anterior middle superior alveolar nerve block(all anteriors+premolars)

Duration: can be increase by increase the solution and volume3.6ml



Supplemental Anesthesia:

Three technique can be used:

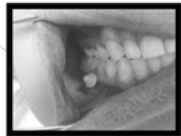
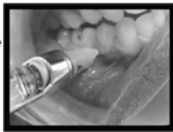
1. Intraalveolar:

- Success : 50-79%
- Mechanism:
- Onset: immediately
- Duration: 10-20 minutes
- Selective anesthesia:
- Systemic effects
- Safety to periodontium
- Safety to primary teeth
- Safety in periodontal involve site
- **New technology:** the Wand a computer-assisted local anesthesia delivery system(ComputDent)



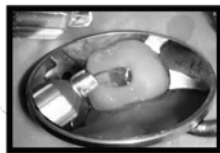
2. Intraosseous local anesthesia:

- Two techniques: Stabident and X-Tip
- Other: Intraflow, Comfort Control Syringe
- Perforator breakage: 1 case
- Injection distal to tooth, except Max. and Mand. 2nd molars
- Site selection: attached gingival, In X-Tip perforation(alveolar mucosa)
- Cardiovascular effects
- Bupivacaine (cardiotoxic effect)
- Plasma level of lidocaine same as infiltration
- Post operative discomfort
- Post operative problem: Swelling



3. Intrapulpal injection:

- Moderately to severely painful
- given only after all other techniques have failed
- Duration 15-20 minutes
- Pulp must be exposed
- Give profound anesthesia
- Immediate onset



MANAGEMENT OF SPECIFIC ENDODONTIC SITUATIONS:

Irreversible Pulpitis:

Mand. teeth:

Max. teeth:

Symptomatic Teeth with Total Pulp Necrosis and Periradicular Radiolucencies :

Man. teeth:

Max. teeth:

Asymptomatic Teeth with Total Pulp Necrosis and Periradicular Radiolucencies:

Easiest to anesthetize

Incision and Drainage:

In the mandible, a conventional IAN injection and long buccal injection are given. In the maxilla infiltration on both sides of the facial swelling.

Isolation of the treatment site:

Rubber dam is mandatory in root canal treatment. Why?

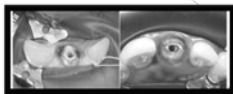
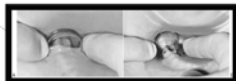
Armamentarium:

- Dam sheets
- Rubber dam frame(Young's, Nygaard-Ostby)
- Clamps(Winged clamp, butterfly, premolar, max. and mand. Molar clamps). Other: tiger, Silker-Glickman clamp
- Rubber dam punch and forceps .

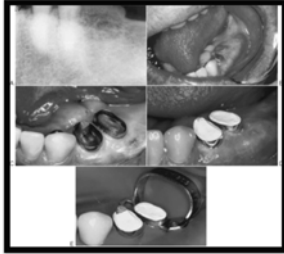


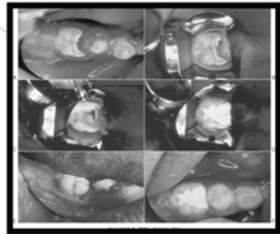
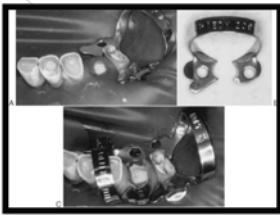
Methods of rubber dam placement:

1. Rubber dam, clamp, and frame
2. Dam, clamp, and frame as one unit
3. Clamp placed first, then dam attached to the frame
4. Split dam technique



Problem solving in tooth isolation:





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Chapter 5,20

