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.
8. Mouth rinsing
9. Instruments must be clean and sterilized.

**Patient preparation**

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

### Antibiotic Regimen

<table>
<thead>
<tr>
<th>Medication</th>
<th>Agent</th>
<th>Route</th>
<th>Dosage</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cephalexin</td>
<td>Cephalexin and amoxicillin (2g/hr before treatment)</td>
<td>Oral</td>
<td>2g/hr</td>
<td>1 hour before treatment</td>
</tr>
<tr>
<td>Cefradine</td>
<td>Cefradine and amoxicillin (2g/hr before treatment)</td>
<td>Oral</td>
<td>1g/6hr</td>
<td>1 hour before treatment</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>Ceftriaxone and amoxicillin (2g/hr before treatment)</td>
<td>Oral</td>
<td>1g/6hr</td>
<td>1 hour before treatment</td>
</tr>
<tr>
<td>Clindamycin</td>
<td>Clindamycin (600mg/hr before treatment)</td>
<td>Oral</td>
<td>600mg</td>
<td>1 hour before treatment</td>
</tr>
<tr>
<td>Cefazoline</td>
<td>Cefazoline and amoxicillin (2g/hr before treatment)</td>
<td>IV or IM</td>
<td>1g/6hr</td>
<td>1 hour before treatment</td>
</tr>
<tr>
<td>Clindamycin</td>
<td>Clindamycin (600mg/hr before treatment)</td>
<td>Oral</td>
<td>600mg</td>
<td>1 hour before treatment</td>
</tr>
</tbody>
</table>

- Prosthetic heart valves
- History of infective endocarditis
- Congenital heart abnormalities
- Risk of osteonecrosis
- Surgical treatment should be avoided.

**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 minutes.

**Radiographic interpretation:**
- Read the film carefully
- Many anatomical structures and osteolytic lesion can be mistaken for periapical 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

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 patients
- 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

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: 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:
- Intraligamentary
- Intracorporeal
- 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
  - Articaine
  - 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 and canine)
  - Anterior middle superior alveolar nerve block (all anterior and premolars)
- Duration: can be increased by increasing the solution and volume to 3.6ml
Supplemental Anesthesia:
Three technique can be used:
1. Intraligamentary:
   - 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:
   - 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
   - Postoperative discomfort
   - Postoperative 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:
- Mand. 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, Siker-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:

This is a reading guide for the assigned reference
Pathways of the Pulp, Cohen 10th edition
Chapter 5.20