Intraoral radiographic examination

How to make a radiograph?
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LEARNING OUTCOMES

- Demonstrate the following radiographic examination procedures (P1)
  - Bisecting angle technique
  - Bite-wing radiograph
- Demonstrate under guidance the following radiographic examination procedure: (P1)
  - Paralleling technique
- List 2 types of occlusal views and state 2 uses each (C1)
- Identify and describe the positioning errors which can cause distortion of resultant image. (C1,C2)
There are two basic techniques for obtaining periapical radiographs:

- Paralleling technique.
- Bisecting angle technique.
The Paralleling Technique:

- **Vertical angulation:** Direct the central ray of the x-ray beam perpendicular to the film and the long axis of the tooth.

- **Horizontal angulation:** Direct the central ray of the x-ray beam through the contact areas between the teeth.
Tips for Film Placement

- The white side of the film always faces the teeth.
- The anterior films are always placed vertically.
- The posterior films are always placed horizontally.
- The identification dot on the film is always placed in the slot of the film holder (dot in the slot).
- Always position the film holder away from the teeth and toward the middle of the mouth.
- Always center the film over the areas to be examined.
Long axis of tooth

Film

Film holder

CR

16” Target-film distance

PID
Position of film inside the mouth
NEW!
XCP Endodontic Instrument - all the advantages of XCP’s precise film positioning, for the first time available for endodontic procedures.
Maxillary incisor region

Patient positioning

Maxillary incisor

Maxillary incisor positioning

Maxillary incisor
Maxillary canine region

Patient positioning

Maxillary canine

Positioning
Maxillary premolar region.
Maxillary molar region
Mandibular incisor region.
Mandibular cuspid region.
Mandibular premolar region.
Mandibular molar region.
The Bisecting angle Technique

- **Cieszynski’s rule of isometry**: 2 triangles are equal when they share one complete side and have two equal angles.

- The bisection of the angle technique is based on a geometric principle of bisecting a triangle (bisecting means dividing into two equal parts).

- The angle formed by the long axis of the teeth and the film is bisected, and the x-ray beam is directed perpendicular to the bisecting line.
The Bisecting angle technique.
Bisecting angle technique

Bite fork

Posterior tooth

Anterior tooth
Horizontal Angulation

- **Horizontal angulation** refers to the positioning of the tubehead and direction of the central ray in a horizontal, or side-to-side, plane.
- The horizontal angulation *remains the same* whether you are using the paralleling or bisecting technique.
The arrows indicate movement in a horizontal direction.
Correct Horizontal Angulation

- With correct horizontal angulation, the central ray is directed perpendicular to the curvature of the arch and through the contact areas of the teeth.
- Incorrect horizontal angulation results in overlapped (unopened) contact areas.
- A film with overlapped contact areas cannot be used to examine the interproximal areas of the teeth.
Correct horizontal angulation.
Incorrect horizontal angulation.
Vertical angulation of the PID.
Correct Vertical Angulation

- Correct vertical angulation results in a radiographic image that is the same length as the tooth.
- Incorrect vertical angulation results in an image that is not the same length as the tooth being radiographed.
- The image appears either longer or shorter:
  - Elongated
  - Foreshortened
Head position for making maxillary periapical radiographs

Head position for making mandibular periapical radiographs.
Normal radiograph
Elongated image caused by projection of central ray from an angle that is too small.

Foreshortened image caused by projection of central ray from an angle that is too great.
Maxillary incisor exposure.
Maxillary canine exposure.
Maxillary premolar exposure.
Maxillary molar exposure.
Mandibular incisor exposure.
Mandibular canine exposure.
Mandibular premolar exposure.
Mandibular molar exposure.
Agulation guidelines in bisecting angle technique

<table>
<thead>
<tr>
<th>Projection</th>
<th>Maxilla</th>
<th>Mandible</th>
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<tr>
<td>Incisor</td>
<td>+40 degrees</td>
<td>-15 degrees</td>
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<td>-20</td>
</tr>
<tr>
<td>Premolar</td>
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<td>-10</td>
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<tr>
<td>Molar</td>
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<td>-5</td>
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