

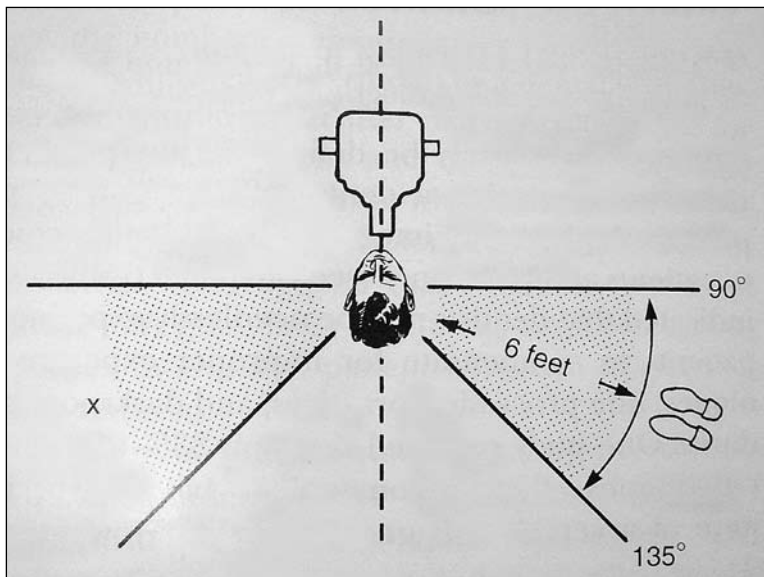
Protocol 20

Dental Radiography^{40, 41, 42}

Dental Radiograph: Is a photographic image produced on film by the passage of x-rays through teeth and related structures.

Radiation Protection Guidelines:

1. Use of proper equipment to reduce patient exposure to radiation.
2. A thyroid collar, a lead apron, fast film and film holding devices are used to protect the patient from excess exposure to radiation.
3. The dental radiographer must never hold a film or tube head in place for patient during x-rays exposure.
4. The dental radiographer must follow operator protection guidelines (maintain an adequate distance, proper position and shield protection).
5. Careful film holding and processing techniques should be followed.



Position and distance rule. If no barrier is available, the operator should stand at least 6 feet from the patient, at an angle of 90 to 135 degrees to the central ray of the x-ray beam when the exposure is made.⁴¹

(Fig. 36)

Dental Radiography Types and Techniques A-Intra Oral Views (Table 11)

Types	Indications	Techniques	Recommended Vertical Angulation Ranges (Degrees)
Periapical View	Is used to detect the tooth and its periapical area problems: (pulp stone, pulpal obliteration and sclerosis, external and internal resorption, granuloma, cyst, abscess... etc) and eruption of permanent teeth under primary teeth.	<p><u>Paralleling Technique</u> A film holder aligns the film parallel to the tooth and at 90 degrees to the x-ray tube.</p> <p><u>Bisecting Angle Technique</u> The film placed against the back of the tooth and the x-ray tube is aligned at 90 degrees to the plane halfway angle between the tooth and the film.</p>	<p>Maxillary Mandibular</p> <p>Canines +45 to +55 -20 to -30</p> <p>Incisors +40 to +50 -15 to -25</p> <p>Premolars +30 to +40 -10 to -15</p> <p>Molars +20 to +30 -5 to 0</p>
Bite – wing View	Is used to detect the crowns of the teeth in arches, interproximal caries and the crestal bone levels between teeth.	X-ray tube is positioned at 90 degrees to the dental arch and the beam passes between the contact points.	The x-ray tube is directed at +10 degrees toward the center of the film to avoid overlapping the cusp tips.
Occlusal View	Is used to detect foreign bodies, impacted teeth, supernumary teeth, un erupted teeth, root positions, salivary stones, broken needles and instruments, and jaw fractures.	<p>Upper occlusal.</p> <p>Upper occlusal lateral (right or left).</p> <p>Upper occlusal pediatric.</p> <p>Lower occlusal.</p> <p>Lower occlusal lateral (right or left).</p> <p>Lower occlusal pediatric.</p>	<p>+65</p> <p>+60</p> <p>+60</p> <p>90</p> <p>-55</p> <p>-55</p>

B-Extra Oral Views (Table 12)

Types :	Indications :
Panoramic View (Orthopantomogram.OPG)	To evaluate impacted teeth. To evaluate eruption patterns, growth, and development. To evaluate trauma and jaw fractures. To examine the extent of large lesions, and conditions of the jaws.
Lateral Cephalometric View	To examine large areas of the skull and jaws (facial profile). To evaluate growth and development, and planning of orthodontic treatment.
Lateral Jaw View (Body of mandible)	To evaluate impacted teeth, fractures, and lesions located in the body of the mandible (premolar, molar, and inferior border).
Lateral Jaw View (Ramus of mandible)	To evaluate impacted teeth, large lesions, and fractures of the ramus.

C-Digital Views

- Radiation dose of digital view (50-80%) less than conventional radiation.
- Very efficient image storage.
- No conventional processing.
- Used for intra oral and extra oral views.

Dental X-ray Film Sizes (Table 13)

TYPES:	Film Size			
	0	1	2	4
Periapical Film	Anterior and posterior teeth (child 3-5 years)	Anterior teeth (adult). Anterior and posterior teeth (child: 6-8 years)	Anterior and posterior teeth (child and adult)	
Bite-wing Film	Posterior teeth (child: 3-5 years)	Anterior teeth (adult) –Vertical position Posterior teeth (child) –Horizontal Position	Posterior teeth (adult)	
Occlusal Film				Child and adult.

Dental x-ray Film speed (Table 14)

Types	Film Speed
Intra Oral Film	D film
	E film (faster)
	F film (fastest)
Extra Oral Film	Intensifying screen.

Dental X-Ray Film Mounting

(Labial mounting as recommended by American Dental Association (ADA).)

- 1 - Examine and handle x-ray film by edges only.
- 2 -The raised side convex of the dot facing occlusally.
- 3 -The raised side convex of the dot (patient) facing the viewer.
- 4 -The anatomical order of the teeth can be used to distinguish right from left.

Common Errors of Dental X-Ray Film (Table 15)

Appearance	Problem
Clear Film	The film is not exposed to x-ray.
Clear Cone- Cut	The entire film is not exposed to x-ray.
Black Film	The film exposed to white light.
Light Film	Inadequate exposure time or inadequate developing time of the film.
Dark Film (Poor contrast)	Excessive exposure time or excessive developing time or inadequate fixing time.
Foreshortened Images	Excessive vertical angulation.
Elongated Images	Insufficient vertical angulation.
Double Images	Double exposure film to x-ray.
Dark Spots	Developer comes in contact with the film before processing.
White Spots	Fixer comes in contact with the film before processing.
Yellow Brown Color	Insufficient fixation time or rinsing time of the film, exhausted developer or fixer solution.
White Line	Scratched film by sharp object.
Straight White Border	Low level of developer solution.
Straight Black Border	Low level of fixer solution.
Blurred Images	Patient moved during film exposure.