RADIOGRAPHIC INTERPRETATION

DEAPARTMENT OF OMDR

What is dental radiograph ?

Dental radiography :

It is the art of producing an image or picture for intra-oral or extra-oral structures on a dental film using X-rays.

Dental radiographic views

- **Intra oral :**

-Peri-apical

-Bitewing

-Occlusal

- **Extra oral :**

-OPG

-Cephalometry

-Sialography

IOPA (INTRAORAL PERIAPICAL RADIOGRAPH)

- **Periapical radiograph:**

It is the most frequently used intra-oral view radiograph, which shows the entire tooth and surrounding structures on the film.

Need for prescribing peri-apical dental radiograph

- Extent of carious involvement in the tooth
- Interproximal decay under the contact point
- Periapical pathological changes
- Traumatic injuries to dento-alveolar process
- Periodontal diseases

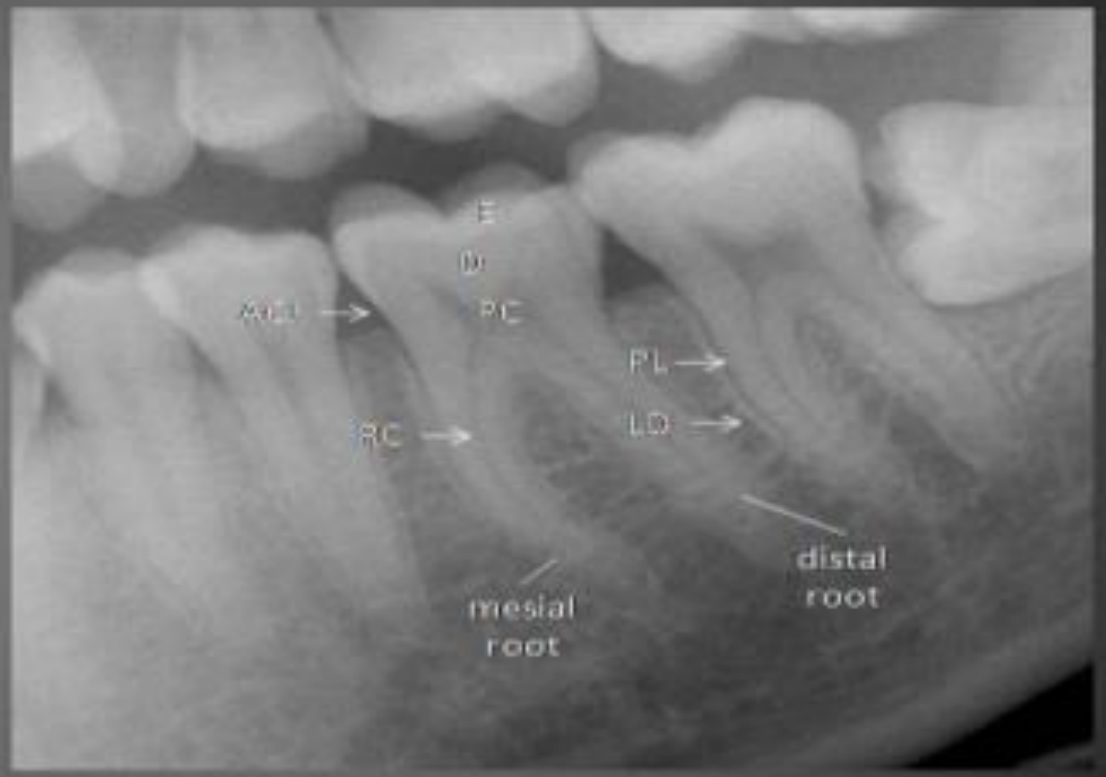
- Dental anomalies
- Occult diseases
- Prognostic assessment during treatment planning
- Post obturation assessment of endodontic therapy
- Working length measurement during root canal therapy
- Implants

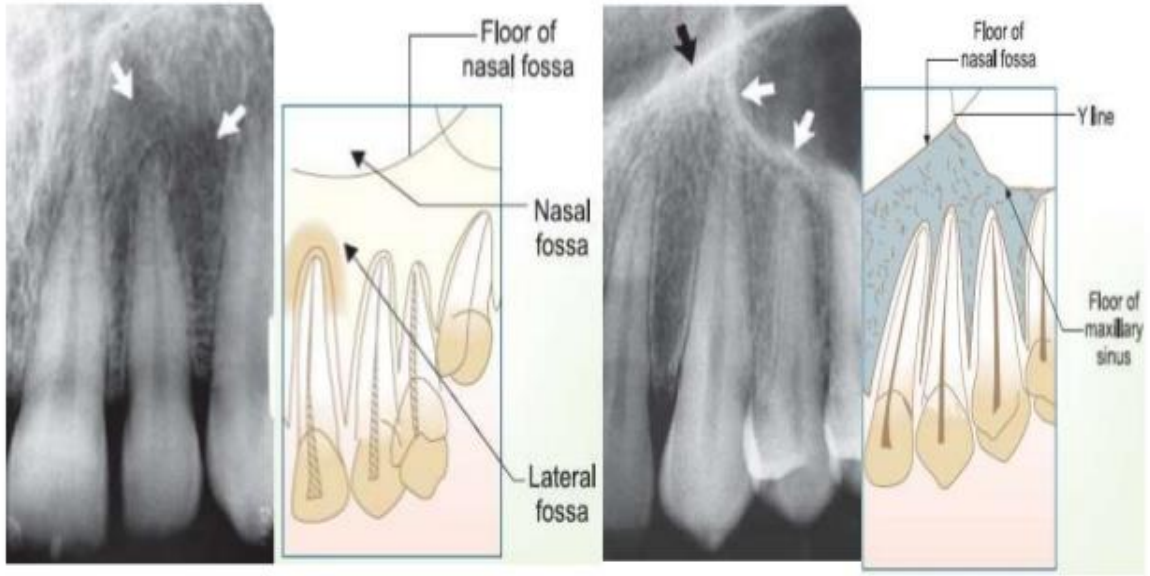
Normal Radiographic Anatomy (Peri-apical)

Normal radiographic anatomy

Dental Anatomy

E	enamel
D	dentine
PC	pulp cavity
RC	root canal
ACJ	amelo-cemental junction
PL	periodontal ligament
LD	lamina dura

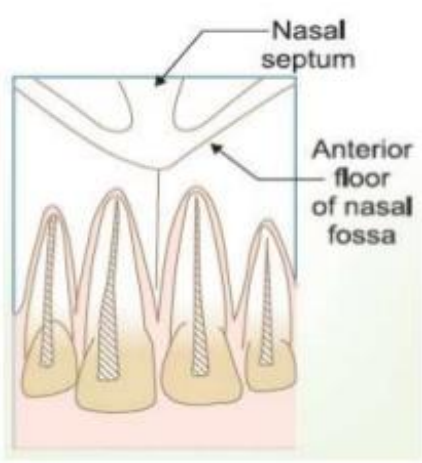




LATERAL FOSSA

INVERTED 'Y' OF YENTIS

A

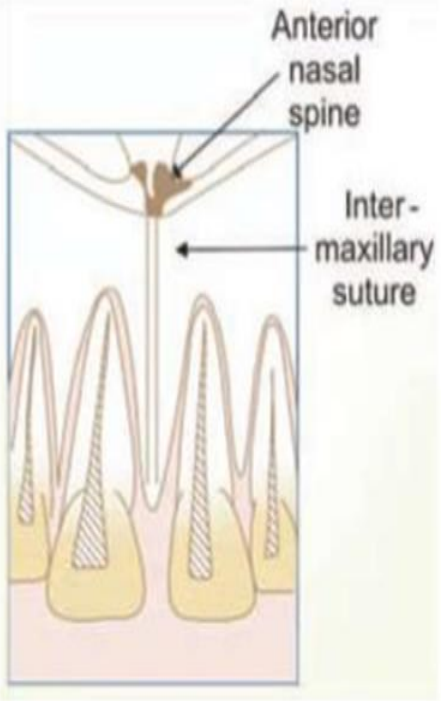


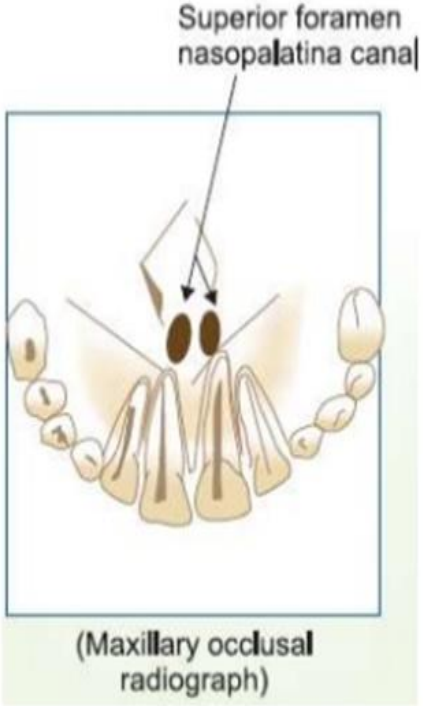
B

(A) NASAL SEPTUM (B) ANTERIOR FLOOR OF NASAL FOSSA

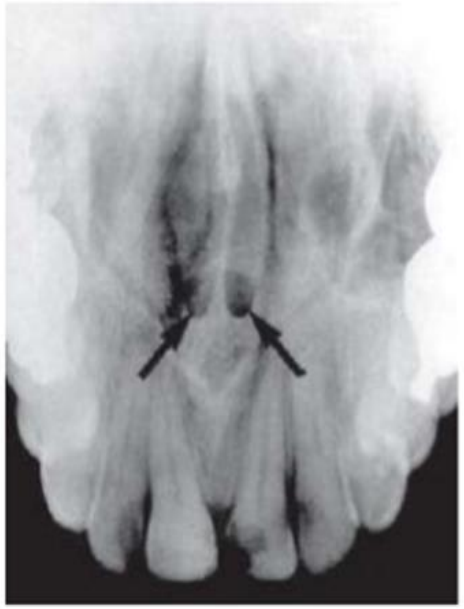
A B C

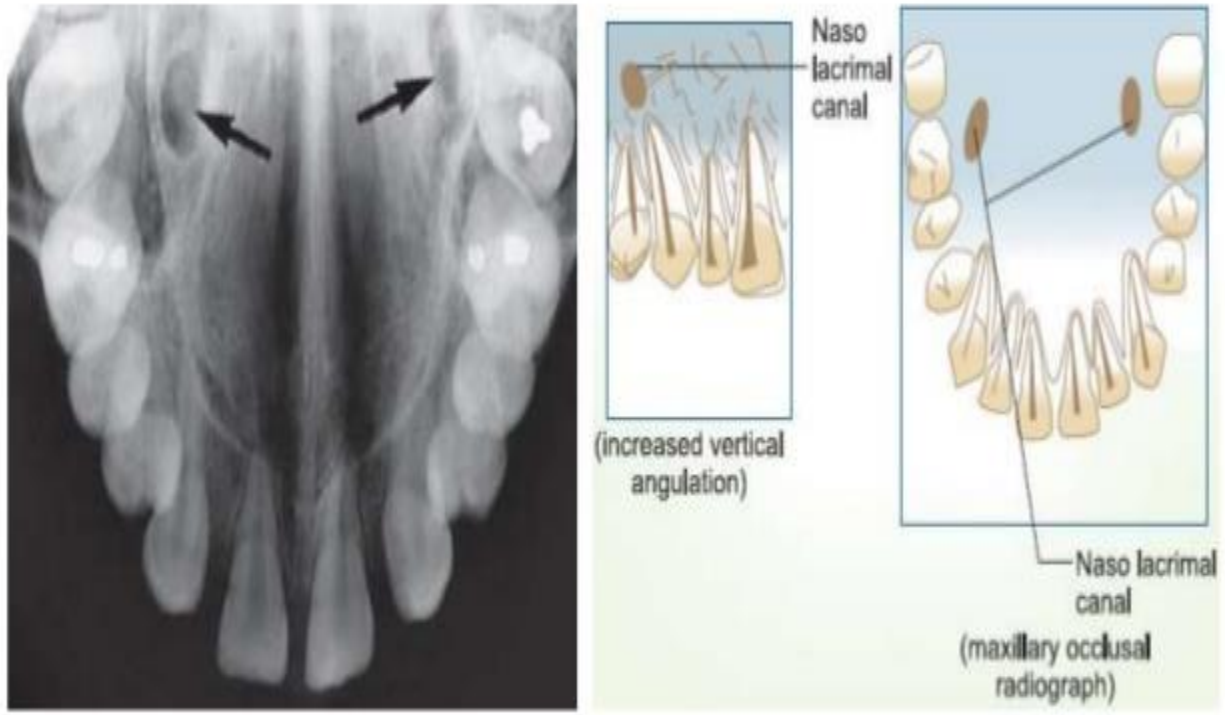
INTERMAXILLARY SUTURE (A,B) ANTERIOR NASAL SPINE(C)



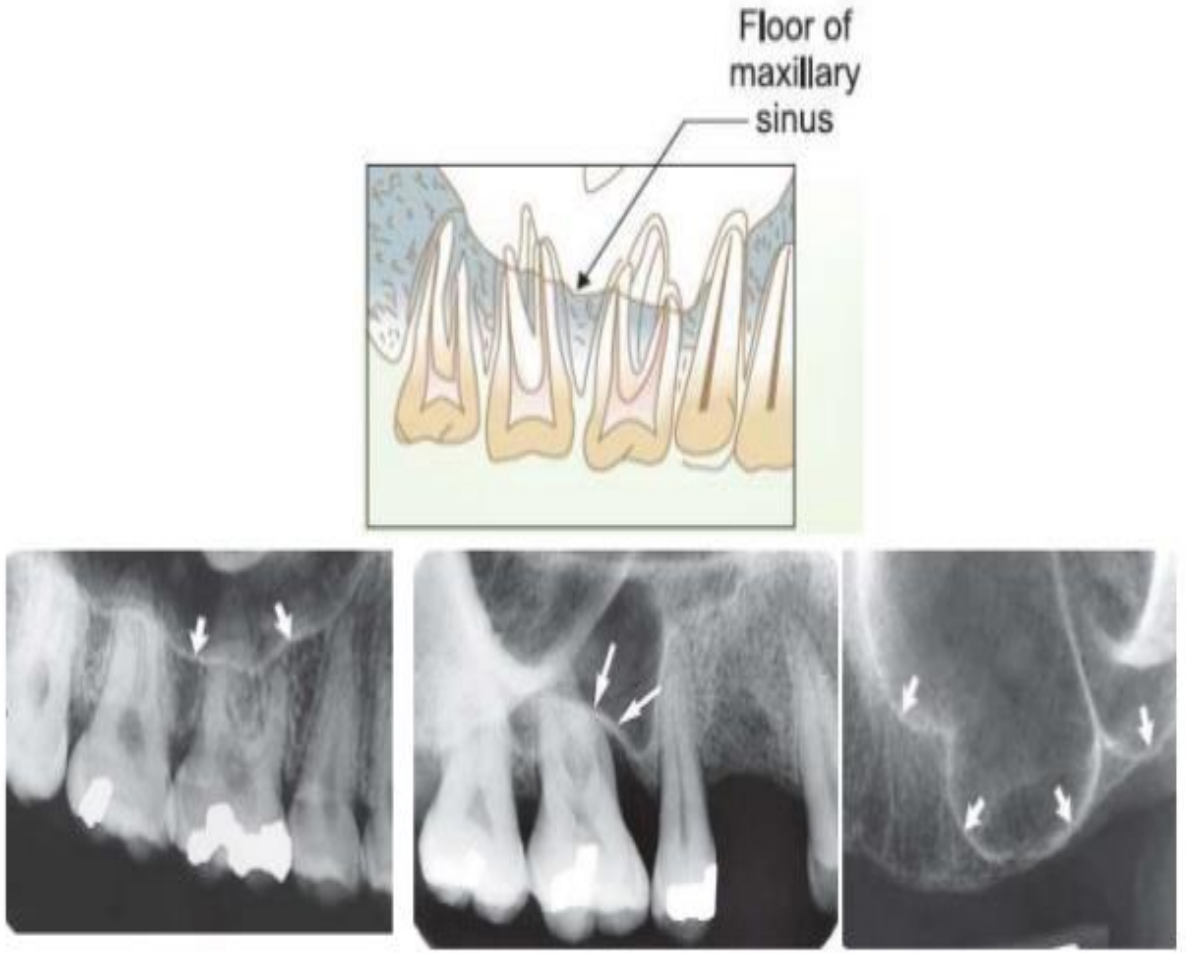


(Maxillary occlusal radiograph)



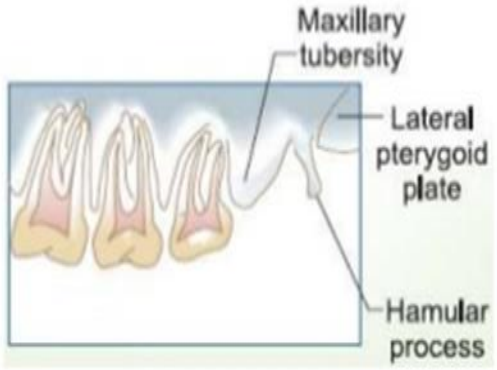


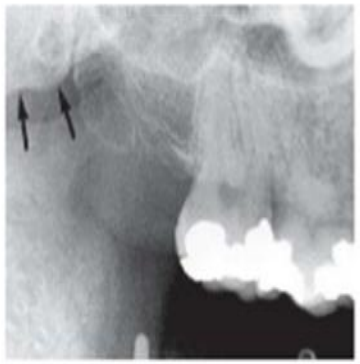
OPENING OF NASOLACRIMAL CANAL



FLOOR OF MAXILLARY SINUS

ANATOMICAL LANDMARKS, TOOTH AND ASSOCIATED STRUCTURES, SUNDARAM, III BDS, TMDC&H

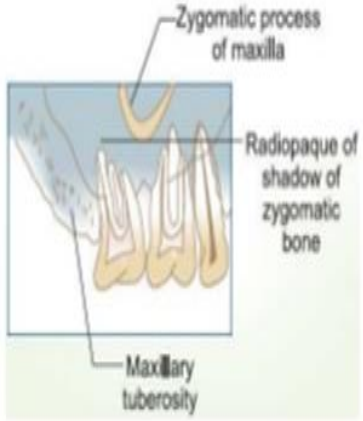




PTERYGOID PLATES

HAMULAR PROCESS

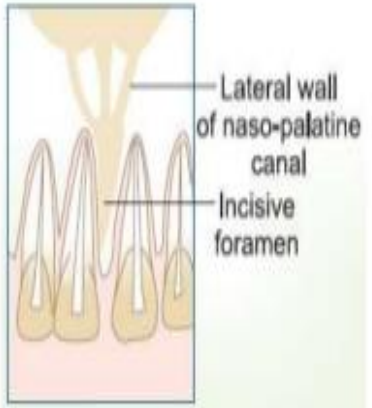
MAXILLARY TUBEROSITY



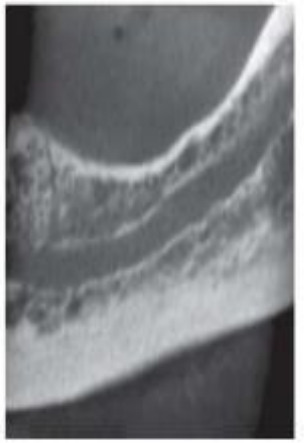
ZYGOMATIC PROCESS OF MAXILLA

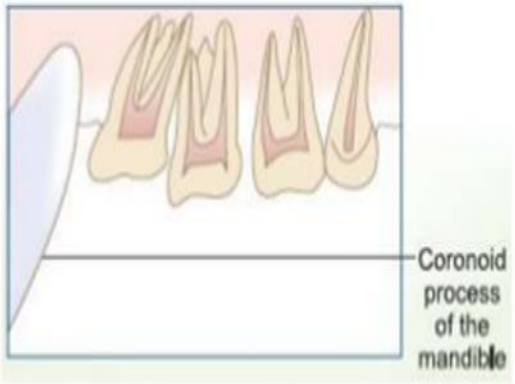
ANATOMICAL LANDMARKS, TOOTH AND ASSOCIATED STRUCTURES, SUNDARAM, III BDS, TMDC&H

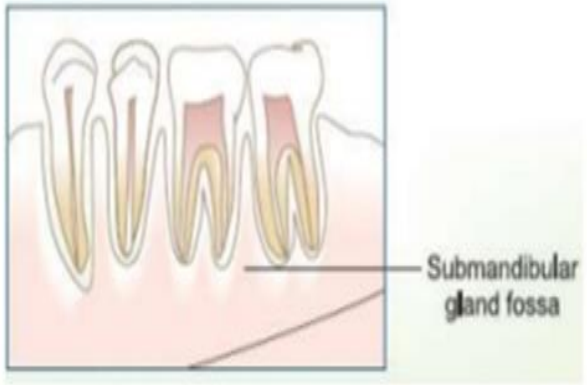

Nasolabial
fold


Lateral wall
of naso-palatine
canal
Incisive
foramen

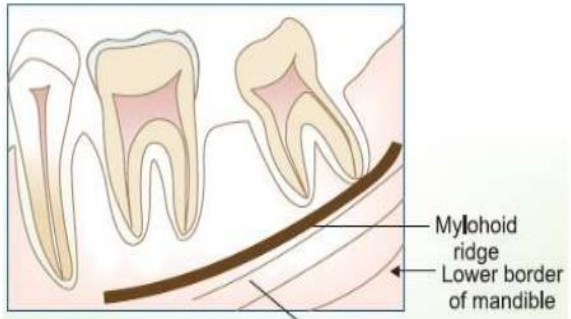

Mandibular
canal

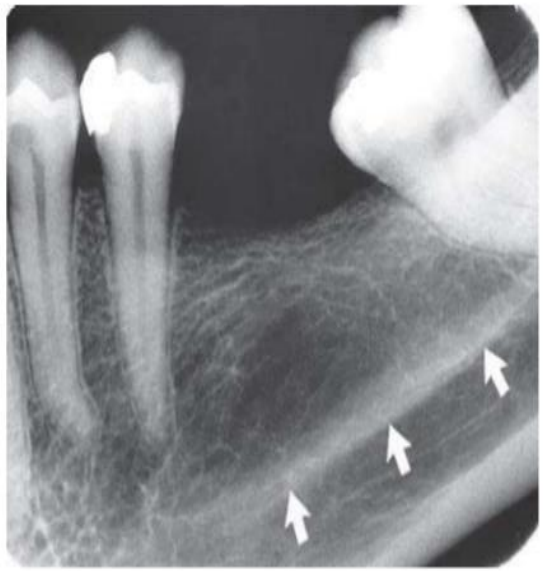




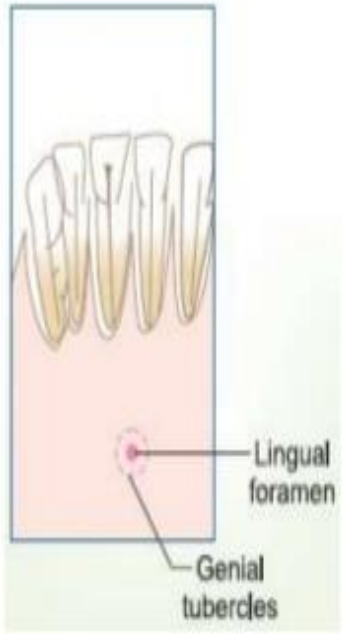


ANATOMICAL LANDMARKS, TOOTH AND ASSOCIATED STRUCTURES, SUNDARAM, III BDS, TMDC&H





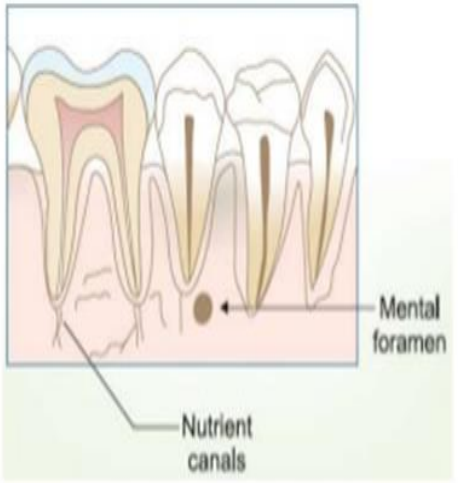
(A)



(B)

(C)

(A) LINGUAL FORAMEN (B,C) GENIAL TUBERCLES



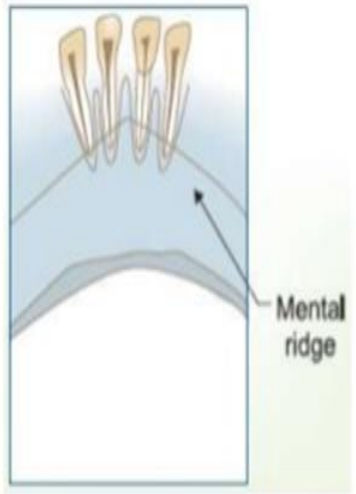
(A)

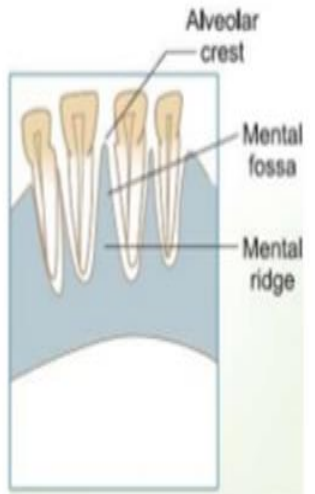
(B)

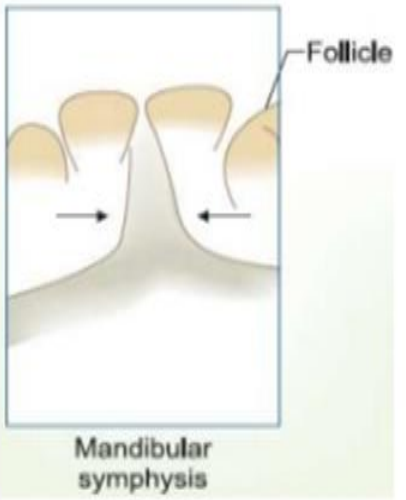
(C)

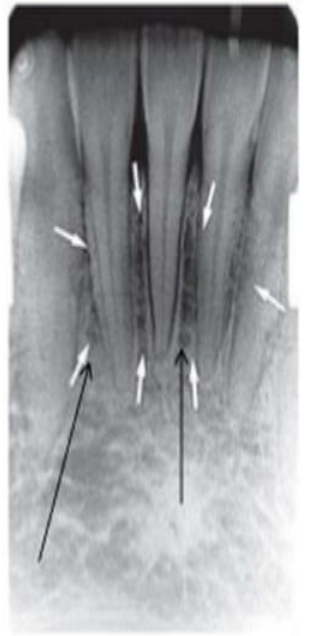
(D)

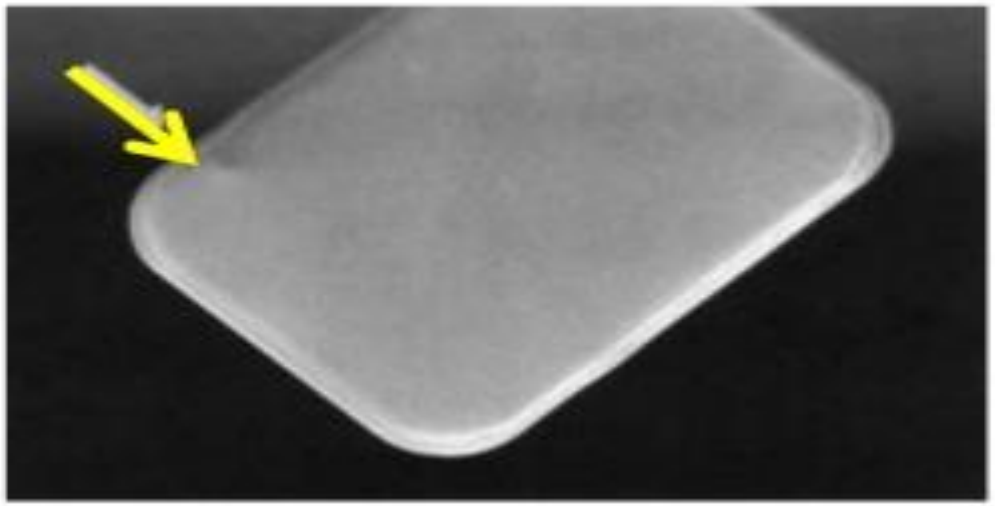
(A,B) NUTRIENT CANALS (C,D) MENTAL FORAMEN





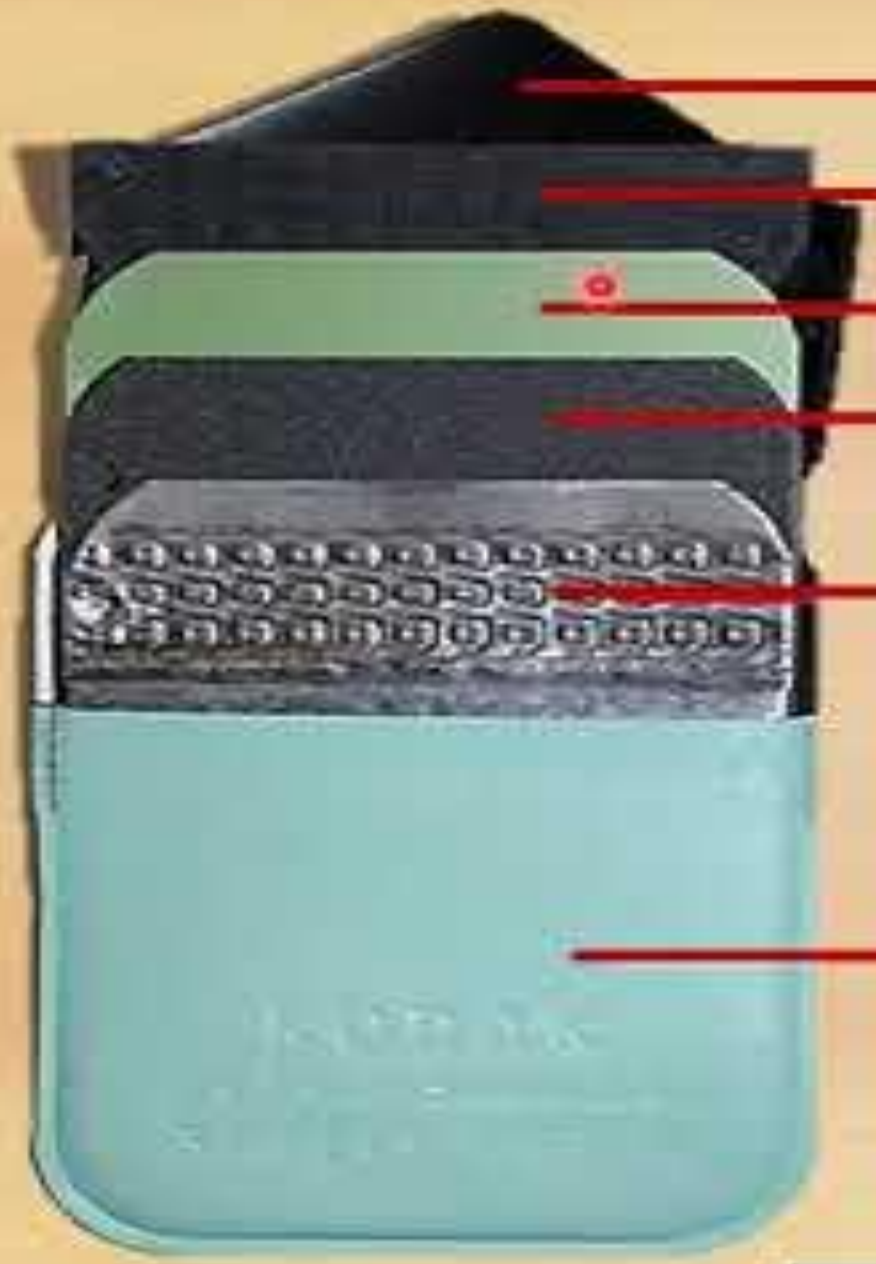






Tube side

LABEL SIDE



1(a). **Outer Plastic/ Vinyl/ Paper wrapping**
(protects film from saliva)

2 (a). **Black Paper wrapping** (protects emulsion)

3. **X-ray film** (sensitive component)

2(b). Black Paper wrapping

4. **Lead foil/sheet** (prevents backscattering of radiation, reduces patient exposure)

1(b).Outer Plastic/ Vinyl/ Paper wrapping

X-RAY FILM PACKET

Radiographic interpretation:

Interpretation :

- Step by step analytical process that provides an exact idea of the clinical problem and helps to achieve the final diagnosis of any particular lesion.

RADIOGRAPHIC INTERPRETATION FORMAT

1. Region radiographed/IOPA region
2. Teeth completely seen
3. Teeth partially seen
4. Anatomical Landmarks

a. Dental b. Osseous

5. Most pathologic tooth
6. Other completely seen teeth
7. Radiographic Diagnosis
8. Radiographic Differential Diagnosis
9. Radiographic Faults

Interpretation:

- Studying the features of teeth and bone:

Teeth

Study the whole tooth,(crown, root, enamel, pulp), number of teeth and finally supporting structures, (Periodontal membrane space, lamina dura , alveolar crest)

Bone:

Changes in bone may include:

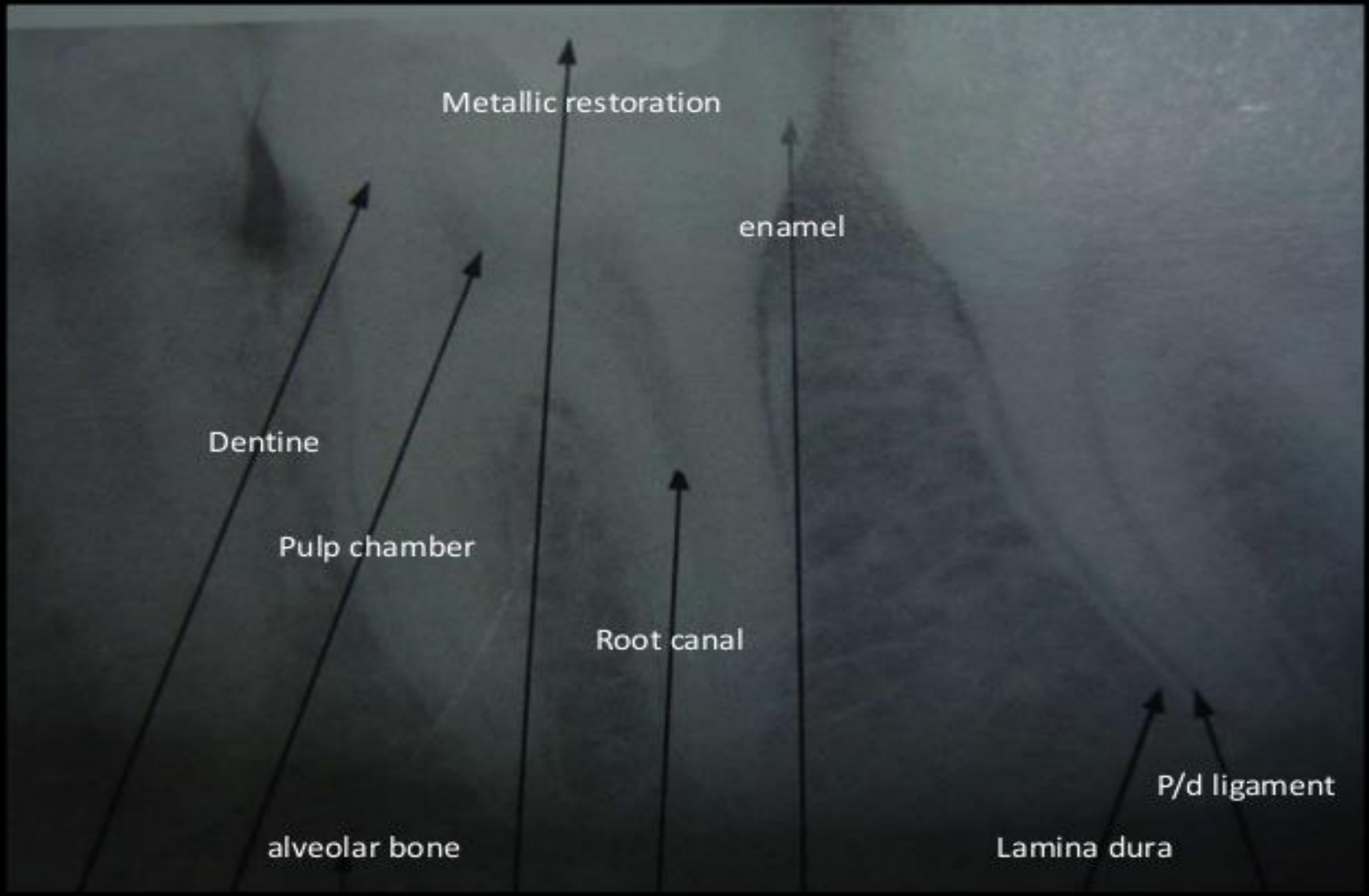
1- Changes in density.

2- Changes in the margin

3- Changes inside the lesion.

4- Effect on surrounding tissues.

5- Changes in structure


Metallic restoration
enamel
Dentine
Pulp chamber
Root canal
P/d ligament
alveolar bone
Lamina dura

Periapical radiograph interpretation:

RADIOGRAPHED AREA

- MENTION:- 1)The type of radiograph- iopa
- 2)side of the radiograph- right or left
- 3)Region of radiograph- front or back

eg)This is an intraoral radiograph of lower right back region of jaw.

ANATOMICAL LANDMARKS:-DENTAL

Enamel

- Caries of the enamel : appears as radiolucent area

- Enamel hypoplasia: appears as radiolucent area surrounded with radiopaque margins

- Enamel hypoplasia: appears as radiolucent area surrounded with radiopaque margins

- Amelogenesis imperfecta: all the enamel appear as radiolucent area

Dentin:

- Caries of the dentin: appears as radiolucent area

- Dentinogenesis imperfecta: dentin appear as radiolucent area surrounded by faint radiopaque margins

- Dense in dente: appears as radiopaque structure within the tooth surrounded by radiolucent margin

- Internal resorption: radiolucent lines on the apex or lateral side of the root dentin

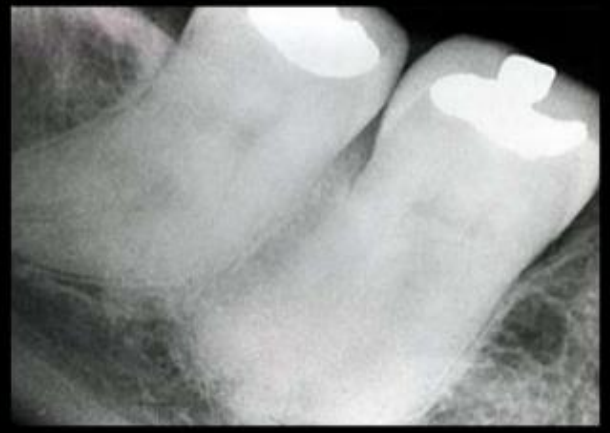
Pulp:

- Calcification of the pulp: appears as a localized area of radiopacity, if the calcification is generalized it appears as a generalized area of radiopacity

- Shell tooth: appear as wide pulp chamber

Cementum:

- Hypercementosis: appear as radiopaque area covers the cementum line



- Cementoma: appears at the apex of the tooth as a radiolucent area in its early stages and converted into radiopaque at the terminal stages

PDL space:

- Normally appear as radiolucent line surround the root surface
- Widening of the space as a result of osteolytic process e.g, osteolytic osteoma
- Narrowing of the space as a result of osteoblastic process e.g, scleroderma

Pdl space

Widened pdl space

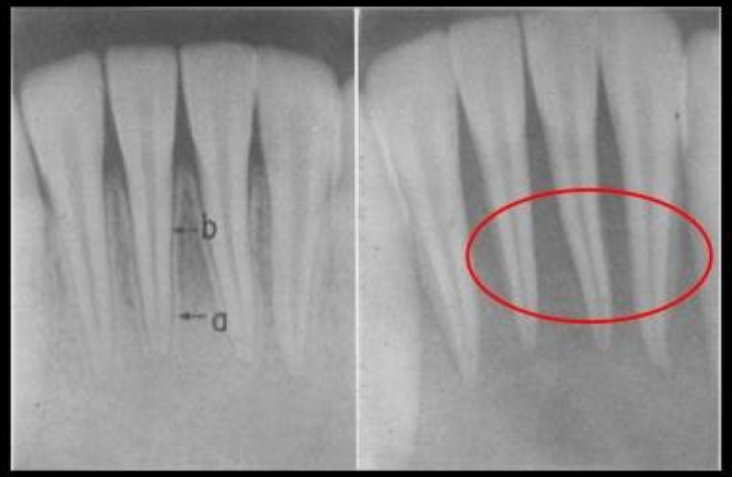
Narrow PDL space

Lamina dura:

- Normally appear as radiopaque clear continuous band covers the alveolar bone i.e, lining the socket and covers the crest of the alveolar bone

- Discontinuity of the lamina dura indicate pathological changes

Lamina dura pathology



Normal lamina dura

Loss of lamina dura

Alveolar bone:

- Bone resorption either horizontal or vertical
- Bone loss:

Alveolar bone height

Alveolar bone health

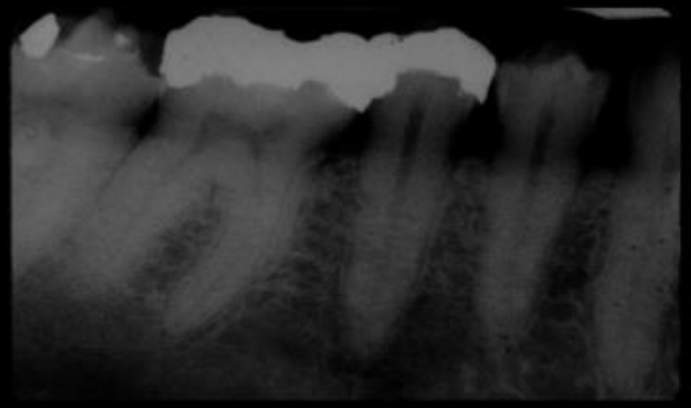
Generalized v/s localized alveolar bone loss

Horizontal bone loss

Vertical bone loss

Metallic restoration :

- Restoration done on tooth showing radio-opacity.

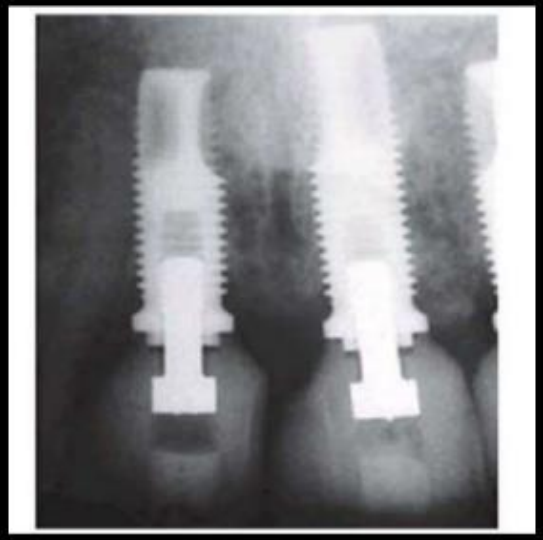


Status of root filling (RCT) :

- Radio-opacity on the whole pulp chamber can be seen.

Dental Implant :

- Dental implant shows obvious shape and radio-opacity on radiographs



MOST PATHOLOGIC TOOTH

- EXPLAIN IN DETAIL ABOUT :-
- 1)CROWN- e.g.)diffuse,illdefined,radiolucency, involving enamel dentin in the distoocclusal part suggesting of (moderate,severe or advanced) proximal caries. (should know radiographic classification of caries)
- 2)ROOT-eg) diffuse illdefined radiolucency seen in (cervical 3^{rd},middle 3^{rd} or apical 3^{rd}) of (mesial or distal or palatal or all)root with patent root canals.
- 3)PDL-eg) mention if space is present or cannot be appreciated in the particular part of root(cervical 3^{rd},middle 3^{rd} or apical)

…….cont

- 4)LAMINA DURA:- loss of continuity of dura (cervical 3rd ,middle 3rdor apical 3rd) of root
- 5)PERIAPICAL AREA:- (DIFFUSE OR WELL DEFINED),RADIOLUCENCY OR OPACITY, IN (middle 3rd,cervical 3rd ,apical 3rd) of (mesial or distal or palatal or all) root to be mentioned
- 6) INTERDENTAL BONE:- describe it as per the level of bone loss.

.....CONT

- ALSO MENTION ABOUT OTHER COMPLETELY SEEN TOOTH IF NORMAL OR PATHOLOGICAL IN THE SAME PATTERN.
- Teeth seen completely have to be explained in detail in the above format ,incompletely seen teeth should not be elaborated.

RADIOGRAPHIC DIAGNOSIS

- PROPER WRITING OF DIAGNOSIS AS ANY OF THE ABOVE DISCUSSED PATHOLOGY

eg)periapical abscess secondary to severe proximal caries

chronic apical periodontitis secondary to moderate occlusal caries

periapical granuloma secondary to advanced mesio occlusal caries

Granuloma vs Cyst vs Abscess

Granuloma	Cyst	Abscess
Chronic	Chronic	Acute /Chronic
non painful	non painful	Pain/non painful
Definite outline	Sclerotic opaque border	Swelling/parulis
Smaller in size	Bigger in size	Sinus opening(chronic)
	Contain more protein and albumins	Diffuse outline
		Mobility of the tooth
		history

Conformative → histology

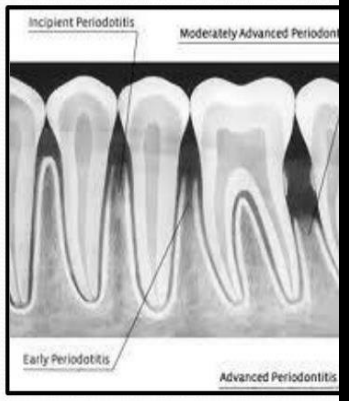
Abscess

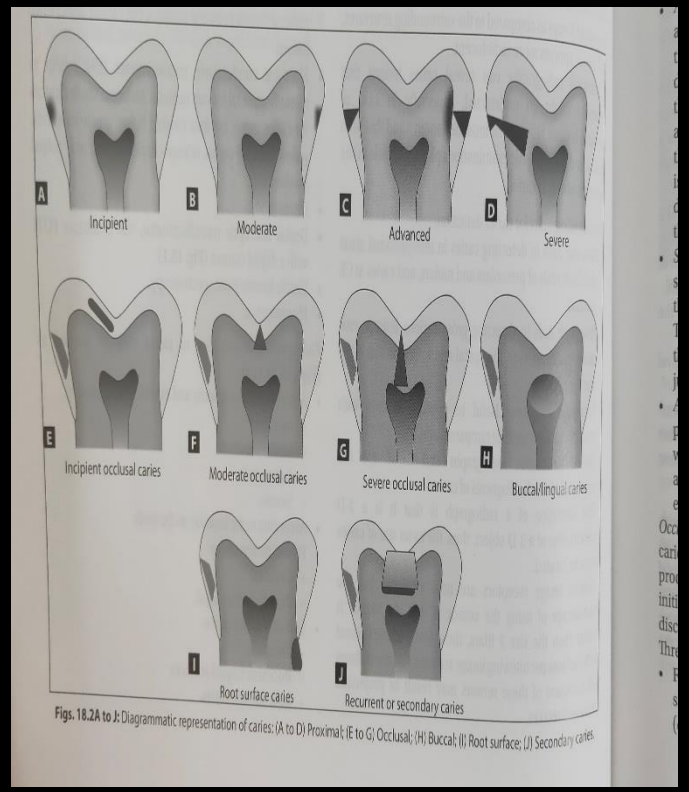
Granuloma (less than 1.4 cm)

Cyst(more than 1.4 cm)

Radiographic classification of periodontal disease

- Bone Level Assessment
- Mild periodontitis
- Moderate periodontitis
- Severe /Aggressive periodontitis
- Furcation Involvement





Figs. 18.2A to J: Diagrammatic representation of caries: (A to D) Proximal; (E to G) Occlusal; (H) Buccal; (I) Root surface; (J) Secondary caries

RADIOGRAPHIC DIFFERENTIAL DIAGNOSIS

- MENTION DIFFERENTIAL DIAGNOSIS FOR LESIONS

Pericoronal radioluceny

1)Dentigerous cyst
2)CEOT
3)AOT

RADIOLUCENT LESION(periapical)

1)Cyst
2)Granuloma
3)Abscess
4)Early stage pcod

RADIOPAQUE LESION(periapical)

1)Cementoblastoma
2)Condensing osteitis
3)Hypercementosis
4)Late stage

RADIOGRAPHIC FAULTS

- FAULTS LIKE:-
- 1)cone cut
- 2)Decreased radiographic contrast
- 3)apical and coronal part of film cutoff due to film not being placed parallel
- 5)smudge
- 6)inappropriate occlusal clearance
- 7) etc.

Horizontal overlap

Elongation

Double image

Reverse image

Developer cut off

Cone-cut

Exposure errors

Low density (faint) image

Processing errors

Film Handling errors

Smudge (finger print)

When the film touched by fingers contaminated with developer or fixer

Reverse image

Apices cut off

THANK YOU