RADIOGRAPHIC APPEARANCE OF COMMON DENTAL DISEASES

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1. Dental caries
2. Periodontal Diseases
3. Pericoronitis
4. Inflammatory lesions of the jaws
5. Fructures
6. Impacted tooth

1.Dental Caries

Dental caries is the common infectious disease strongly influenced by diet, affecting 95% of population.

Radiography is useful for detecting dental caries because the carious process causes tooth demineralization.

The carious lesion (the demineralized area of the tooth that allows greater infiltration of x-rays) is darker (more radiolucent) than the unaffected portion and may be detected on radiographs.

An early carious lesion may not have yet caused sufficient demineralization to be detected radiographically.

Intraoral radiography can reveal carious lesions that otherwise might go undetected during a thorough clinical examination.

A number of studies have shown the value of dental radiographs by repeatedly demonstrating that approximately half of all proximal surface lesions cannot be seen clinically and may be detected only with radiographs.

Interpretation of Dental Caries (DC) regarding to its location

Interpretation of Incipient Occlusal DC:

Radiographs are usually not effective for the detection of an occlusal carious lesion until it reaches the dentin.

Interpretation of Moderate Occlusal DC

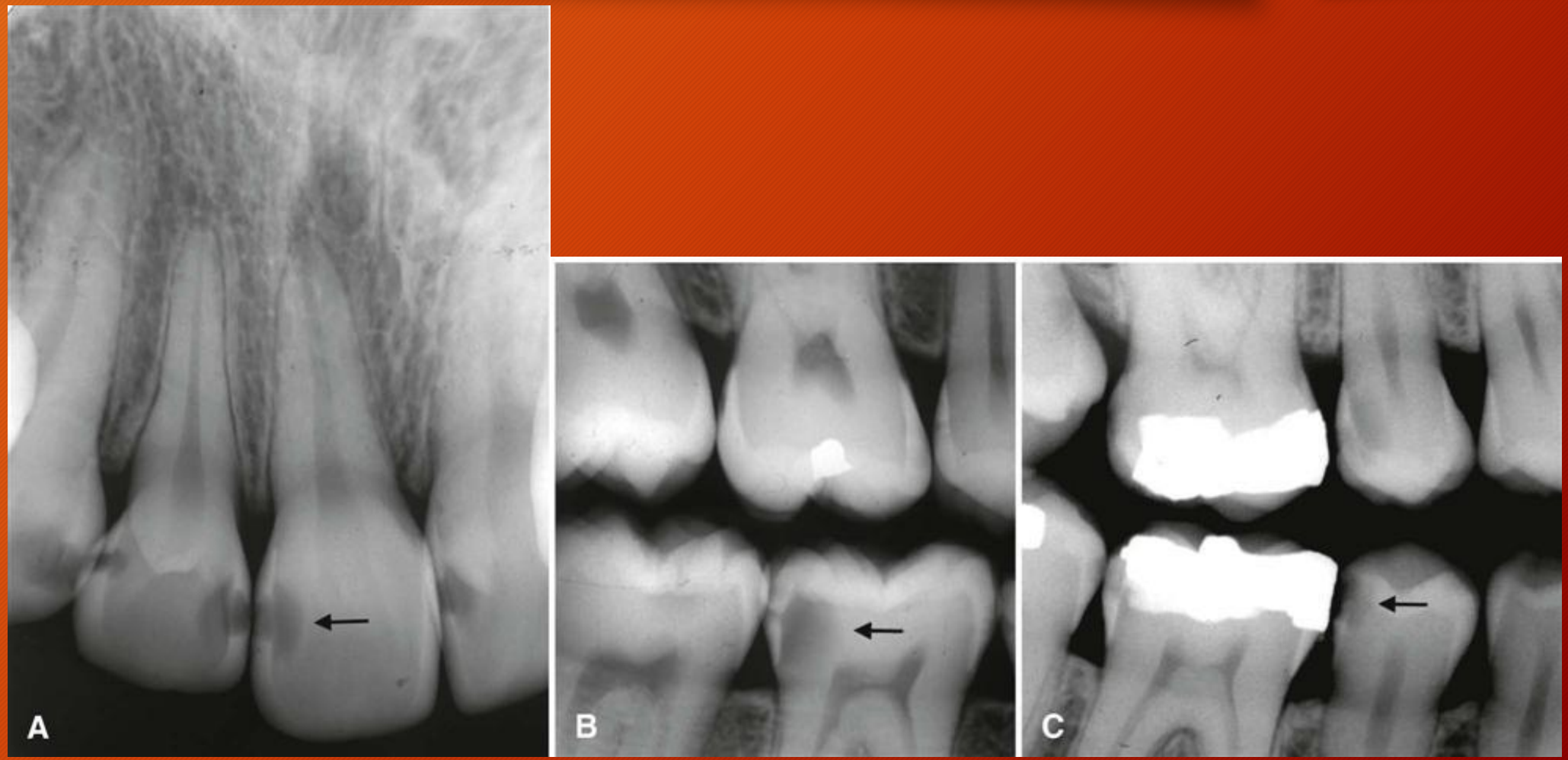
The moderate occlusal lesion is usually the first to induce specific radiographic changes.

The classic radiographic change is a broad-based, thin radiolucent zone in the dentin with little or no changes apparent in the enamel.

PROXIMAL CARIES

Radiographic detection of carious lesions on the proximal surfaces of teeth depends on loss of enough mineral to result in a detectable change in radiographic density.

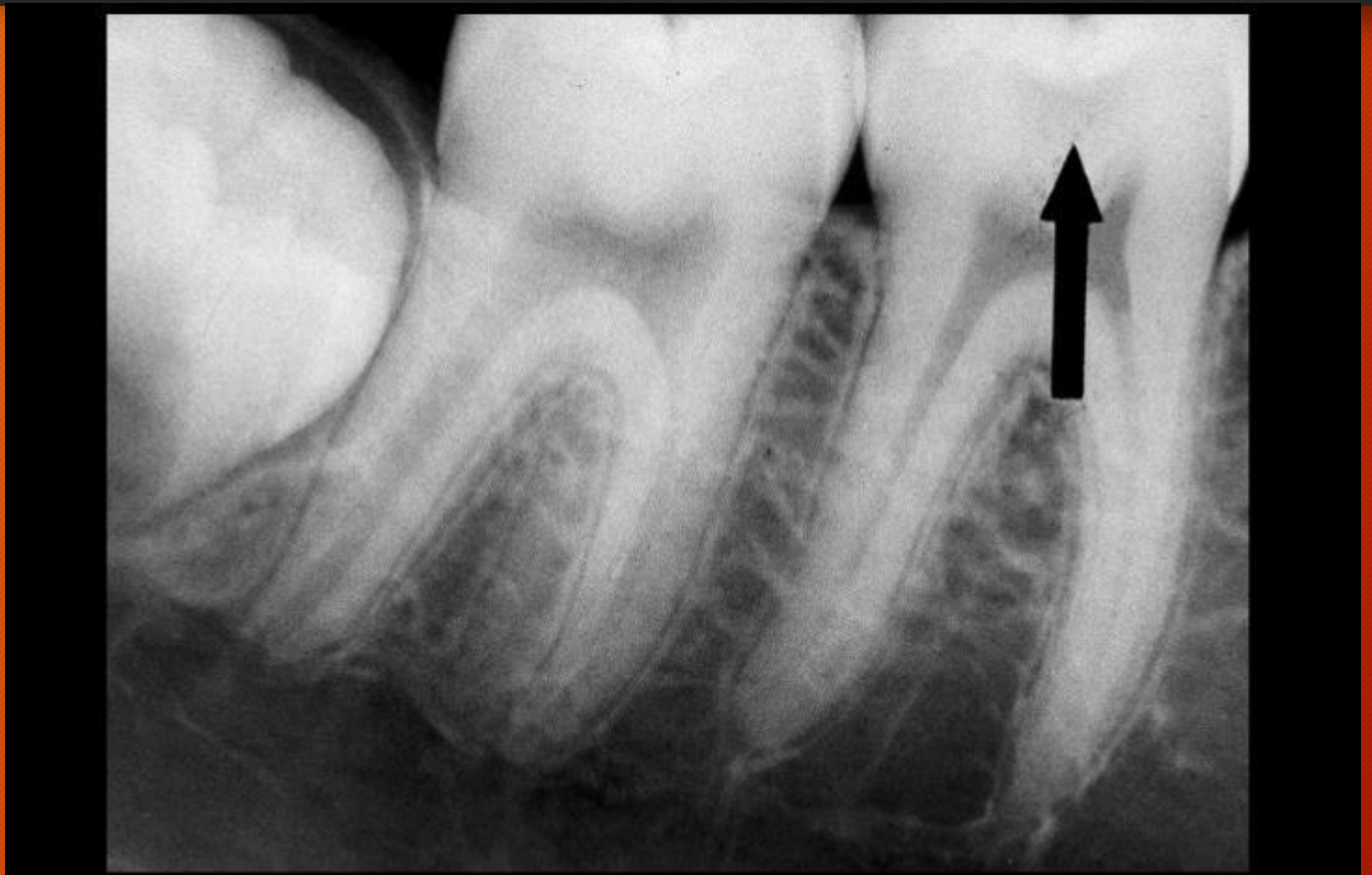
Approximately 40% demineralization is required for radiographic detection of a lesion



Facial, buccal, and lingual caries

Facial, buccal, and lingual carious lesions occur in enamel pits and fissures of teeth. When small, these lesions are usually round, as they enlarge, they become elliptic or semilunar.

They demonstrate sharp, well-defined borders. It is difficult to differentiate between buccal and lingual caries on a radiograph.



Occlusal caries

ROOT SURFACE CARIES

(also called cementalcaries) involves both cementumand dentin. Its prevalence is approximately **(40% - 70%)** in an aged population.

The tooth surfaces most frequently affected are in order, buccal, lingual, and proximal.

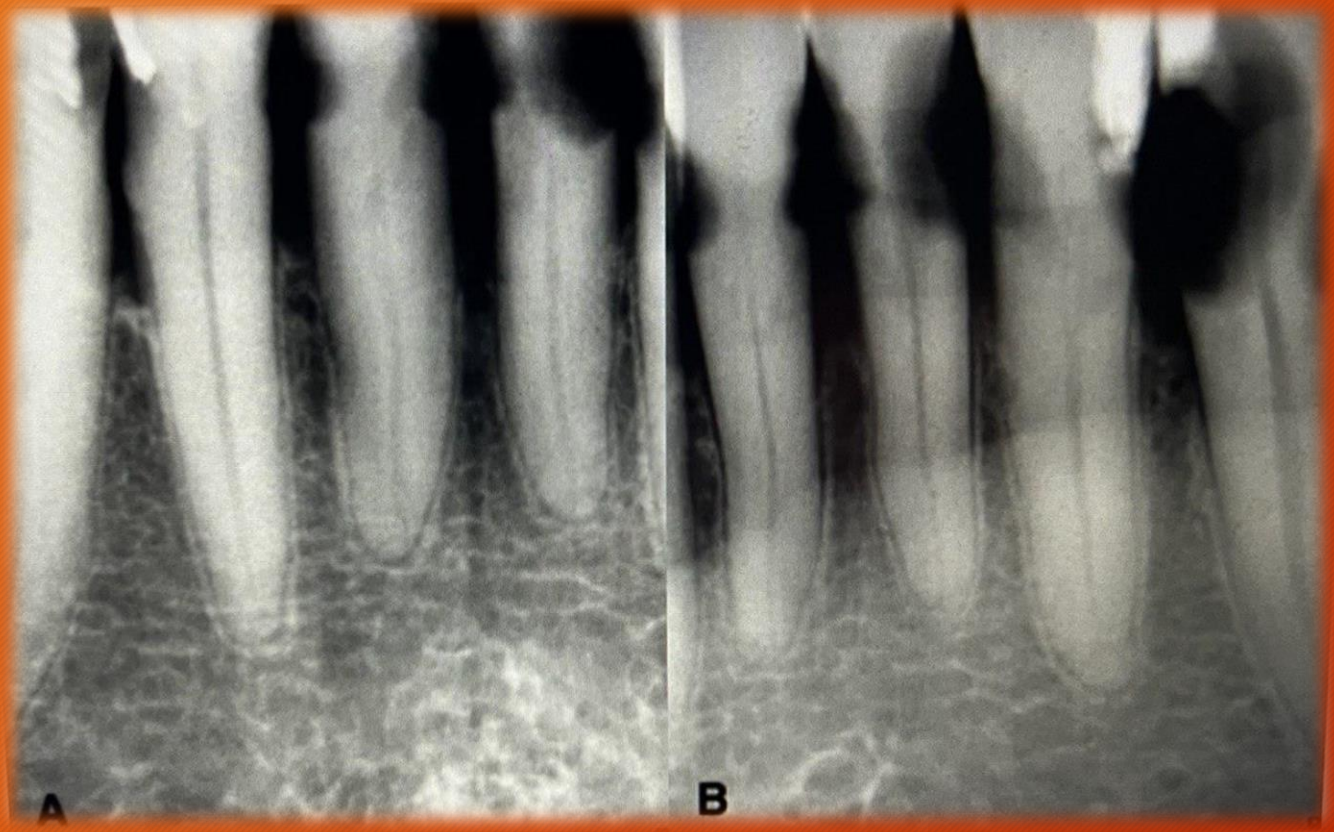
RECURRENT CARIES

Recurrent caries is that occurring immediately next to a restoration.
It may result from poor adaptation of restoration, which allows for marginal leakage, or from inadequate extension of a restoration.

In addition, caries may remain if the original lesion is not completely evacuated, which later may appear as residual or recurrent caries.

The radiographic appearance of recurrent caries depends on the amount of decalcification present and whether a restoration is obscuring the lesion

RAMPANT CARIES



is the term used to describe rapid progression with severe and widespread involvement. This is most often seen in young children who have poor oral hygiene habits coupled with poor dietary habits (e.g., going to sleep with a bottle of milk or juice). Imaging examinations of these patients can demonstrate advanced, generalized caries, involving smooth surfaces and teeth that usually do not present carious lesions.

2-Periodontal Diseases

The most common of periodontal disease are gingivitis and periodontitis.

Assessment of Periodontal Disease, contributions of radiographs Radiographs play an integral role in the assessment of periodontal disease. They provide unique information about the status of the periodontium and a permanent record of the condition of the bone throughout the course of the disease.

It is important to emphasize that the clinical and radiographic examinations are complementary. The clinical examination should include periodontal probing, a gingival index, mobility charting, and an evaluation of the amount of attached gingiva. Features that are not well delineated by the radiograph are most apparent clinically, and those that the radiograph best demonstrates are difficult to identify and evaluate clinically.

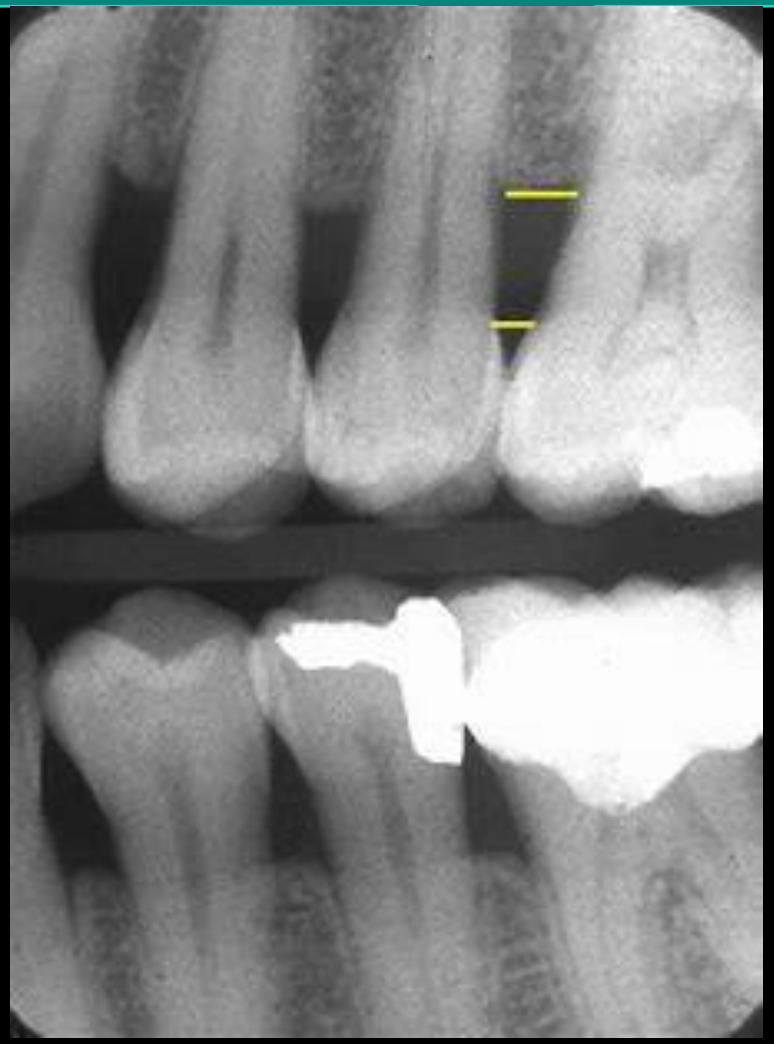
Radiographic features of healthy periodontium

A healthy periodontium can be regarded as periodontal tissue exhibiting no evidence of disease. However, to be able to interpret radiographs successfully clinicians need to know the usual radiographic features of healthy tissues where there has been no bone loss.

The only reliable radiographic feature is the relationship between the crestalbone margin and the cemento-enamel junction (CEJ).

If this distance is within normal limits (2-3 mm) and there are no clinical signs of loss of attachment., then it can be said that there has been no periodontitis

Radiographic features of periodontal disease



Acute and chronic gingivitis

Radiographs provide no direct evidence of the soft tissue involvement in gingivitis.

Periodontitis

Periodontitis is the name given to periodontal disease when the superficial inflammation in the gingival tissues extends into the underlying alveolar bone and there has been loss of attachment.

The destruction of the bone can be either localized affecting a few areas of the mouth, or generalized affecting all areas.

The radiographic features of the different forms of periodontitis are similar; it is the distribution and the rate of bone destruction that varies.

The terms used to describe the various appearances of bone destruction include:

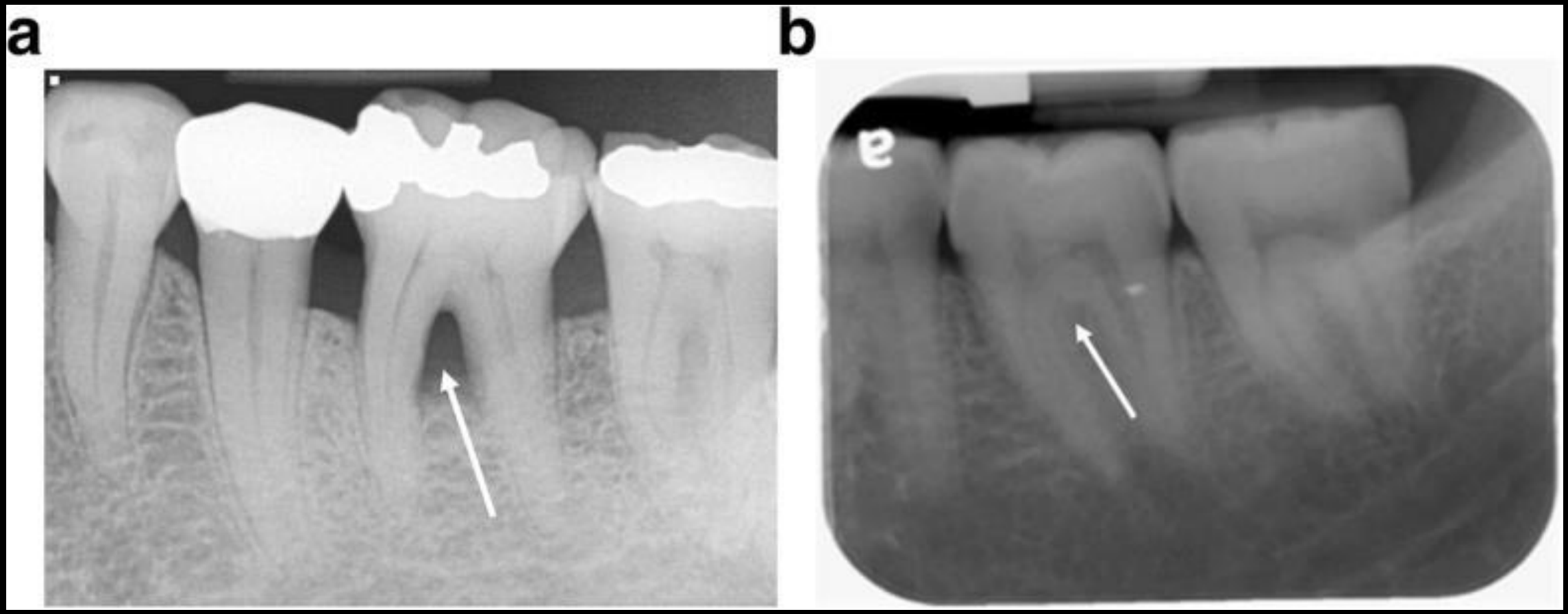
- Horizontal bone loss
- Vertical bone loss
- Furcation involvements.

The terms horizontal and vertical have been used traditionally to describe the direction or pattern of bone loss using the line joining two adjacent teeth at their cemento-enamel junctions as a line of reference. The amount of bone loss is then assessed as mild, moderate or severe.

Severe vertical bone loss, extending from the alveolar crest and involving the tooth apex,

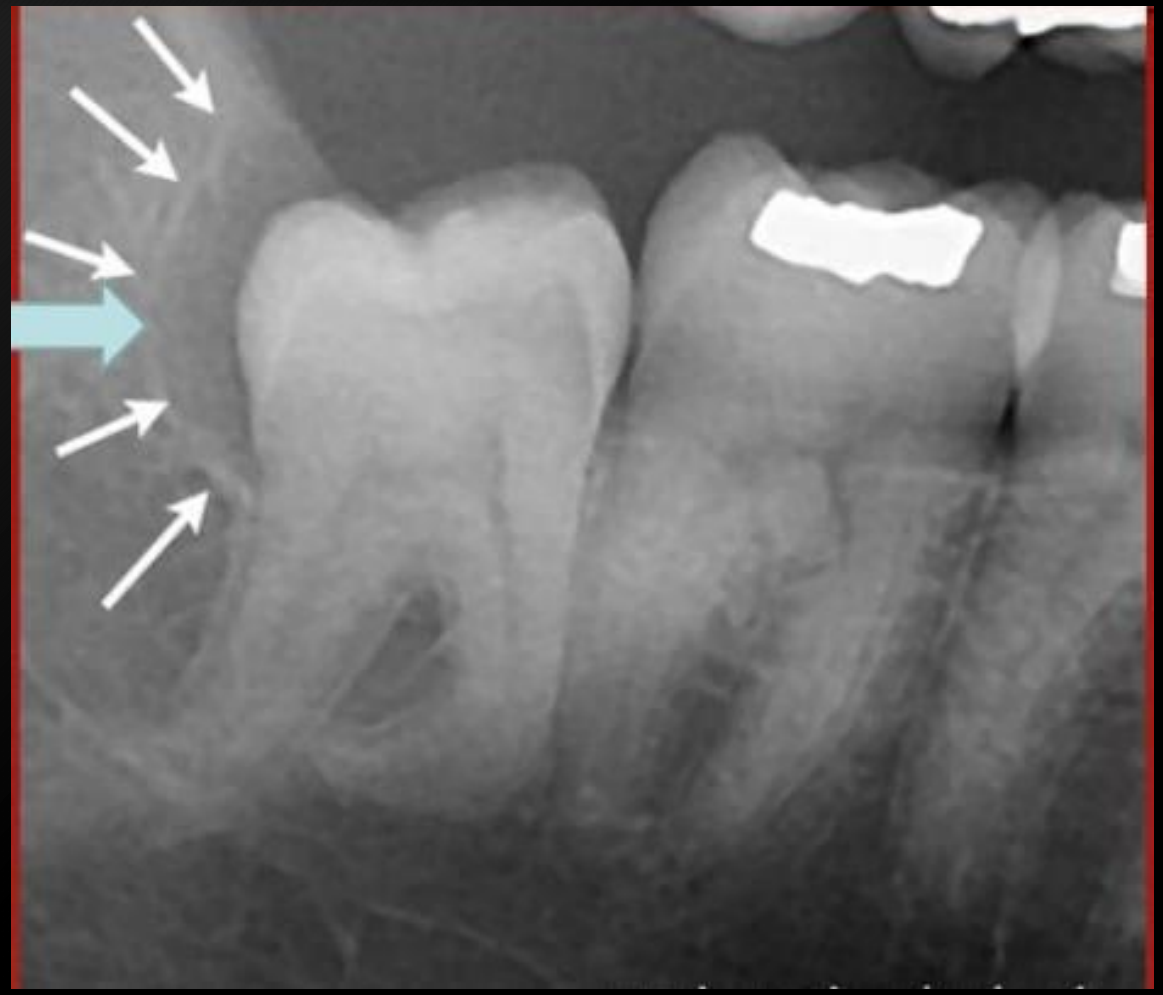
The term furcation involvement describes the radiographic appearance of bone loss in the furcation area of the roots which is evidence of advanced disease in this zone.

Although central furcation involvements are seen more readily in mandibular molars, they can also be seen in maxillary molars l



3-PERICORONITIS

The most common radiographic feature of pericoronitis of mandibular third molar is that there is presence of distal bone loss. This distal bone loss is semilunar or circumferential in shape.In the case of mesiallytilted impaction, bone loss is present on the mesial side.



4-Inflammatory lesions of the jaws

inflammatory lesions are by far the most common pathologic condition of the jaws. When the initial source of inflammation is a necrotic pulp and the bony lesion is restricted to the region of the tooth, the condition is called a periapical inflammatory lesion.

When the infection spreads in the bone marrow and is no longer contained, it is called osteomyelitis.

It must be emphasized that the names of the various inflammatory lesions tend to describe their clinical and radiologic presentations and behavior;

Normal radiographic appearances

The appearances of normal, healthy, periapical tissues vary from one patient to another, from one area of the mouth to another and at different stages in the development of the dentition.

Radiographic Features of periapical lesion

The radiographic features of periapical inflammatory lesions vary depending on the time course of the lesion

A-Early lesion Early periapical inflammatory lesions

may show no radiographic change in the normal bone pattern.

The earliest detectable change is loss of bone density, which usually results in widening of the periodontal ligament space at the apex of the tooth and later involves a larger diameter of surrounding bone. At this early stage no evidence may be seen of a sclerotic bone reaction.

B- Granuloma Periapical

are the most common periapical radiolucency's encountered in dental practice .Radiographically the lesion is not fully dark but it has greyish appearance with well defined borders , there is a loss of lamina dura in relation with the affected tooth , the size of radiolucency is less than 1.5 cm in diameter if the size larger so it consider periapical cyst

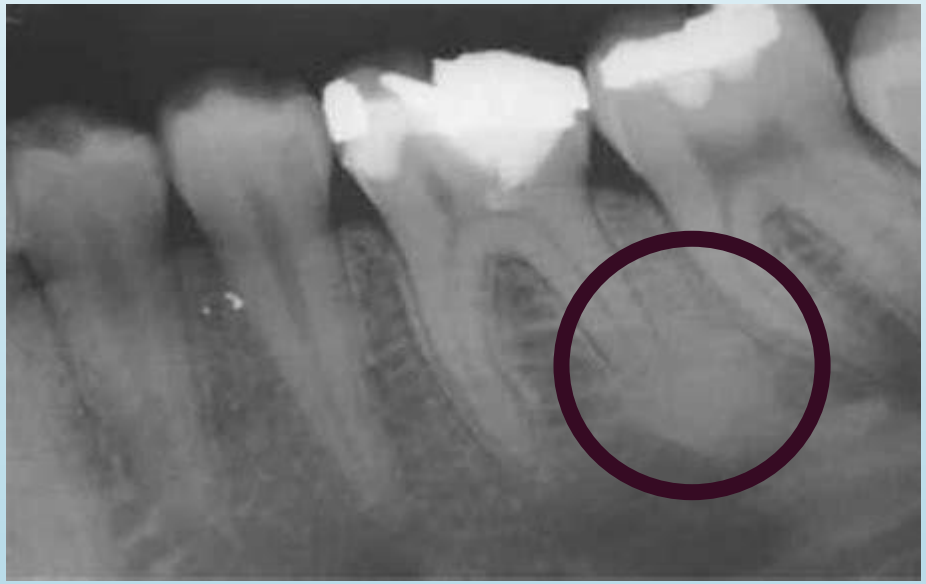
Granuloma Periapical Radiograph Image

C-Chronic periapical abscess

Radiographic appearance of the lesion may be quite variable, the lesion may have radiolucent appearance with ill-defined borders and in this time it impossible to differentiate from granuloma or cyst.

D- Condencing ostitis Lesion

is localized and present as increased band of radiopacity associated with root of the tooth



5-FRUCTURES

Radiographic signs of fractures The following are general signs that may indicate the presence of a fracture of bone or tooth:

1. **The presence of a radiolucent line (usually sharply defined) w**
2. **A change in the normal anatomic outline or shape of the structure.**
3. **A defect in the outer cortical boundary, which may appear as a deviation in the smooth outline.**
4. **An increase in the density of the bone, which may be caused by the overlapping of two fragments of bone**

6-Impacted tooth

Accurate diagnostic imaging is an essential requirement to derive the correct diagnosis and optimal treatment plan, as well as monitor and document the treatment progress and final outcome. Intraoral periapical occlusal and panoramic films can provide this


A

OSTEOMYELITIS

Osteomyelitis is an inflammation of bone.

The inflammatory process may spread through the bone to involve the marrow, cortex, cancellous portion and periosteum.

Clinical Features

Osteomyelitis of the maxilla is much less frequent than that of the mandible because the maxillary blood supply is far more extensive.

Clinically, patients present with facial swelling, localized pain and tenderness, low-grade fever, draining sinus tracts, suppuration, dental loss and sequestrum (i.e. necrotic bone fragment) formation Radiographic Features.

Acute osteomyelitis: Very early in the disease no radiographic changes are identified.

The first radiographic evidence of the acute form of osteomyelitis is slight decreased density of the involved bone.

There is loss of sharpness of the existing trabeculae.

In time bone destruction becomes more profound, resulting in an area of radiolucency in one focal area or in scattered regions throughout the involved bone.

Sequestra may be present but usually more clearly seen in chronic form of the disease.

Osteomylitis seen in mandible – sequestra surrounded by radiolucency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