

**Sheet no: 8.**

## **(inflammatory lesions of the jaws.**

**Written by hadeel & corrected by lubna.**

نسجت له من أهداب العين شماغاً.. وفي كل مرة تقبل بذلته العسكرية ..  
كانت تقبل الفوتيك وتهمس :.. عشت لمجد هذه الأرض يا ولدي ..  
في ذلك اليوم عانق الرصاص قبلات أمه ,رَبَّتْ على قبلات أمه والرصاص وهتف:  
وعاشت للمدى بلدي أموت أموت ويحيا الاردن.

Most of what we do related to inflammatory lesion, the good thing that most of them are not dangerous. However, some cases exceed this level.

The mediators of inflammation affect the bone, some cause bone resorption others cause bone deposition. It depends on the situation of pulp and you should notice the difference between acute and chronic cases hence they differ clinically and radio graphically.

It is important to know extent of the lesion (how much involvement, what type of tissues is affected.)

It is very important to know the difference between Osteitis and Osteomyelitis.

So let's start:

### **Acute inflammation:**

Unfortunately has **no radiographic sign**, however the clinical signs are very clear: (5 important signs) redness, pain , swelling, heat, loss of function.

**Maybe** in some cases you find

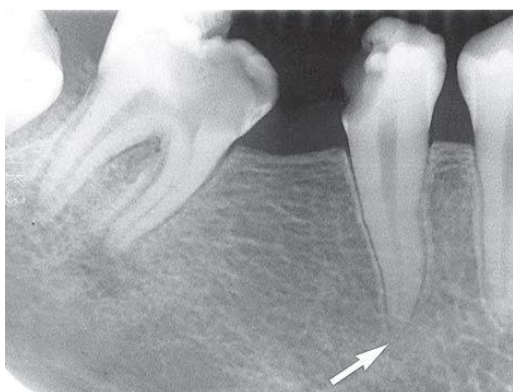
- 1- Widening in pdl space.
- 2- Bone started resorption.

For example acute apical periodontitis. you may take multi radiograph without seeing anything

### **Chronic inflammation:**

Has much more details, here we have increased Radiolucency because it heads to bone removal, some cases may cause bone formation, but most cases will show mixture of both (increased Radiolucency, increased opacity).

Ex: apical disease: has radiolucent lesion with bone loss, in addition to sclerotic zone (the bone around it) and this tooth might have big carious lesion or has been neglected or badly RCT treated( neglect the caries and under treatment may cause mixed appearance of apical inflammation )



#### **PERIAPICAL INFLAMMATORY LESIONS**

##### **Synonyms**

Periapical inflammatory lesions have been called acute apical periodontitis, chronic apical periodontitis, periapical abscess, and periapical granuloma.

Radiolucent presentations have been called rarefying osteitis, whereas radiopaque presentations have been called sclerosing osteitis, condensing osteitis, and focal sclerosing osteitis.

Oral Radiology book

## Osteomyelitis :

If the inflammatory process spread and no management interference, here you will start to see sequestration, fistula, and pathological destruction. (We will talk about them later).

### General Radiographic Features of inflammatory lesions:

The periphery of inflammation lesions: well defined, ill defined or potentially ill defined.

**\*\*always acute inflammation: mostly ill defined.**

**\*\* Chronic inflammation: well defined**

Therefore, the internal structure depends on how much the bone resorption or deposition & formation. (HOW MUCH THE RATIO BETWEEN THESE TWO PROCESSES. BECAUSE IT IS MORE LIKELY TO BE MIXED DENSITY).

### What are other signs of inflammatory lesion? (clinically)

- 1- Widening in pdl space. (esp. when we talk about inflammatory process of pulpal origin).
- 2- Root resorption especially external root resorption (will give blunting appearance )
- 3- Osteomyelitis signs: periosteal reaction (periosteal rxn is a sign of acute inflammation and malignancy).

### Cases:



Apical periodontitis: widening in pdl space

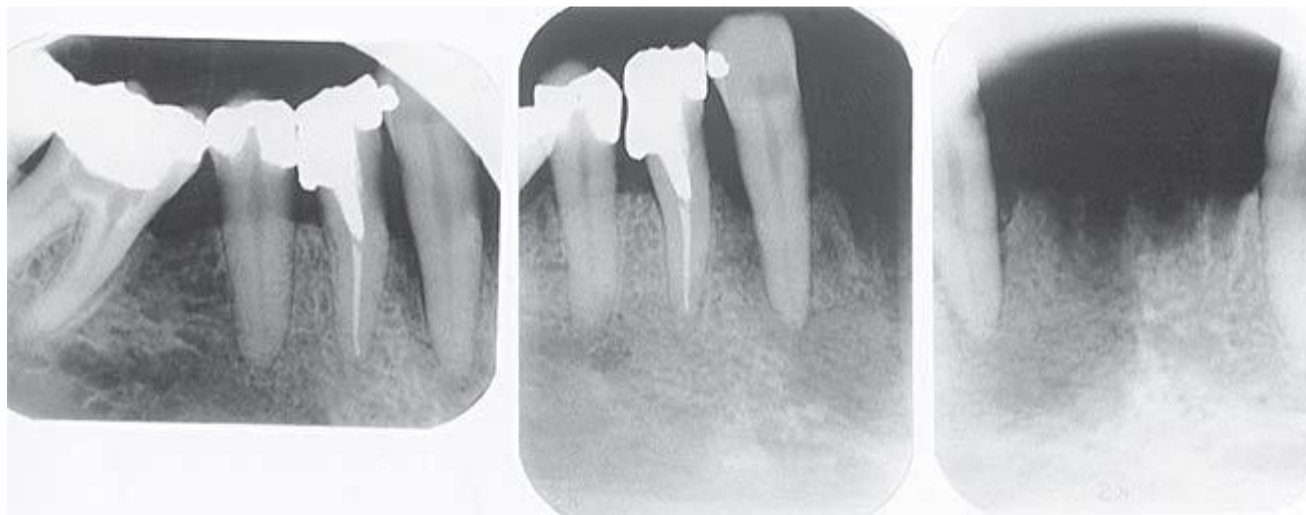


**Apical rarifying osteitis:** (rarifying means resorption) Note: according to the book, it is radiological term. (Radiolucency)

There is a bone loss due to inflammatory lesion around the apex of the tooth, actually its might be one of three choices; granuloma , cyst or abscess.

However, it is not common anymore because of increase dental care and better OH and better access to AB.

### Osteomyelitis:



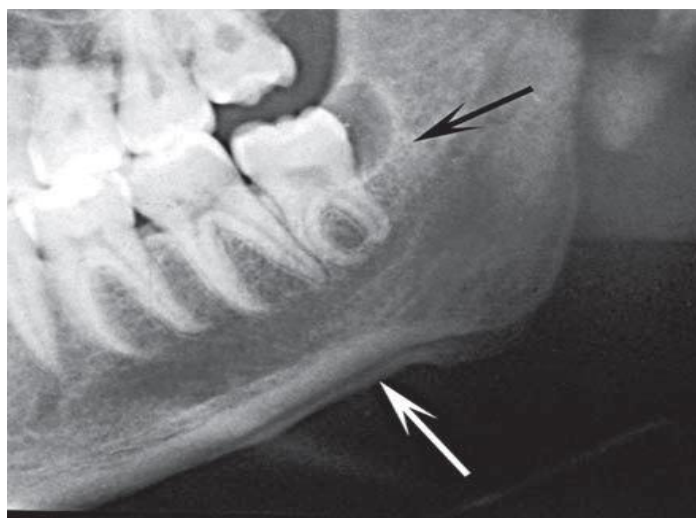
It comes in different subtypes: acute, chronic, diffuse, sclerotic, proliferative, some has different clinical manifestation like actinomycosis (multiple fistuli, different features under the microscope or with CBCT) both have spreading capability).

### Osteonecrosis :



- patient that is under radiotherapy
- patient under bisphosphonate drug therapy
- It shares a lot feature with Osteomyelitis but different **cause** as we said it caused by radiation.

### Periodontal disease and Pericoronitis:

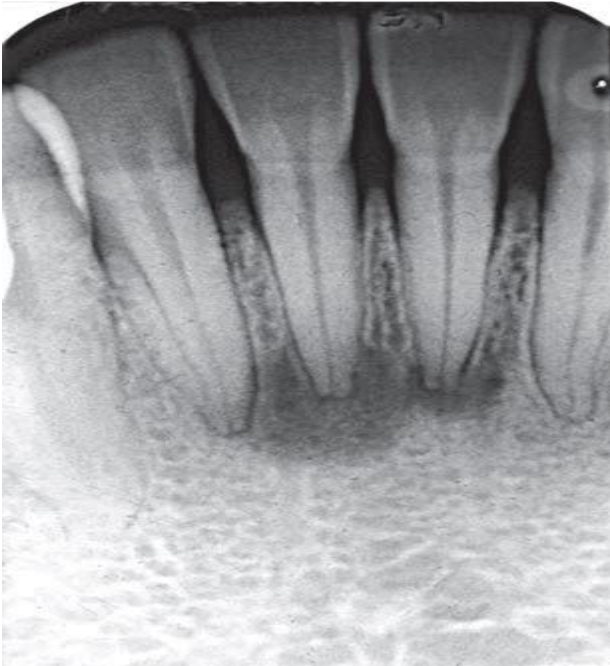


Pericoronitis: Soft tissue inflammation

Now we will talk in specific:

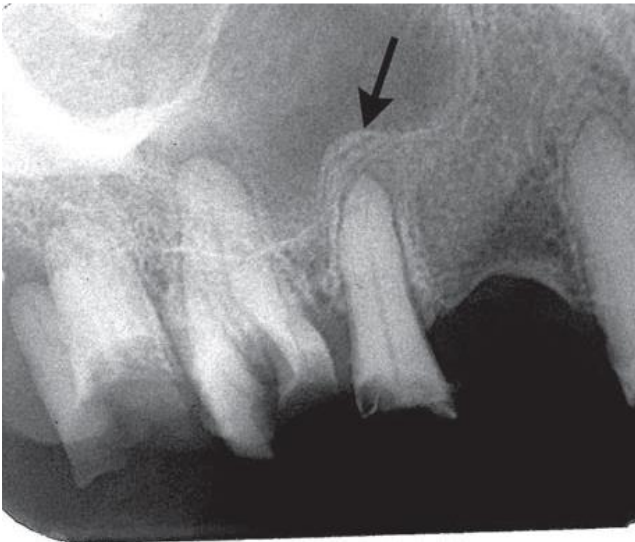
## Apical periodontitis

- 1- Widening in pdl space.
- 2- There is edema which make pressure, that lead to pain.
- 3- Lesion with nonvital tooth with very minimal inflammatory rxn.
- 4- Remember the clinical manifestation. ( to be able to differentiate **periapical cemento dysplasia** )



In the early radiolucent phase of PCD, the radiographic characteristics may not reliably differentiate this lesion from a periapical inflammatory lesion . The diagnosis may rely solely on the clinical examination, including a test of tooth vitality. With longstanding periapical inflammatory lesions, the pulp chamber of the involved tooth may be wider than the adjacent teeth. More mature PCD lesions may show evidence of a dense, radiopaque structure within the radiolucency, which helps in the differential diagnosis.

## Halo sign :



- Enough PA inflammatory exudates cause remodeling of the floor of the sinus.
- So instead of complete convexity of sinus there will be a concavity around the apex of the tooth.
- So we see it in upper posterior teeth,
- It resemble الهالة حول الشيء (from here they give its name)
- non vital tooth that needs RCT if restorable. Or extraction if not. (Some do apicoectomy).
- The decision depend on history of ptn and on sth else that I cannot hear (eshi follow up). In addition to sequential radio graphs that appear no marked difference between them.
- In either case, the destroyed bone may not be replaced with normal-appearing bone but with dense fibrous scar tissue. It depend on many things such as the dentition and gingival type.. etc.

## Sclerosing osteitis:



- Widening in pdl space, but the whole area sclerotic
- Called sclerotic bony island (osteosclerosis).
- The sclerosis is part of the inflammation. It will disappear but it needs time for healing.
- Not related to any particular tooth. But Mostly common in the mandible in premolar area
- it can't be osteitis unless its centered around apex or lateral foramen
- Not a measure of treatment success and failure
- periapical cemento dysplasia should differentiated.

### Hypercementosis:



- Thick root.
- club shape
- well defined
- Thin pdl space
- lamina Dura
- seen in Paget disease( seen systematically)
- tooth with under function

### Osteomyelitis:

The lesion is no longer confined to alveolar process; it enters the bone marrow spaces. Why that happen?  
Because of **predisposing conditions:**

Malnutrition, diabetes, leukemia, anemia, alcoholism, drug addicts, extreme ages, osteoporosis, and anything that may depress the immunity.

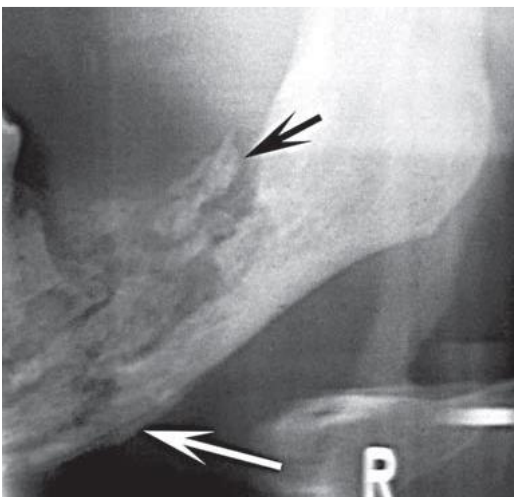
The dr said that most of the pt that she saw, do not have any of the above factors, but are accusing a wide spectrum of AB with no reason! That happens with middle age healthy pts they get the disease only from extraction or simple RCT (this in Jordan).

Hypovascularity also is a risk factor (in the mandible more). Men are more affected, premolar and molar area more than anterior area depending on how thick the cortical bone area.

The main clinical features:

- History of Purulent drainage depending on how acute and chronic the situation is.
- Acute cases: Pain is sever, lymphadenopathy .
- Not that much radiographic manifestation especially before the first 10 days , after that you will start to see the lamina Dura affected and the lower border of the mandible with some sort of Radiolucency. Sometime nothing at all before the first 10 days.
- Less pain severity in chronic osteomyelitis.

### Chronic osteomyelitis :



The chronic phase of Osteomyelitis may be a sequela of inadequately

Treated acute osteomyelitis, or it may arise de novo. (Inefficient treatment will take it into chronicity).

- Radiolucency, ill-defined lesions, sequestrations that are small pieces of dead bone floating in bone marrow spaces.

Long bone has its vascularity from haversian canal , central arteries, but flat bones like the mandible mostly is from periosteum , so when a piece of bone just separate from adjacent then it will not have nutrients , and it will create another source of inflammatory reaction it must be removed surgically by sequestrectomy (removing all this debris and pieces) .

A picture showing extra oral draining fistula with puss, intraoral the cause is big amalgam in the pulp of tooth with faulty post.

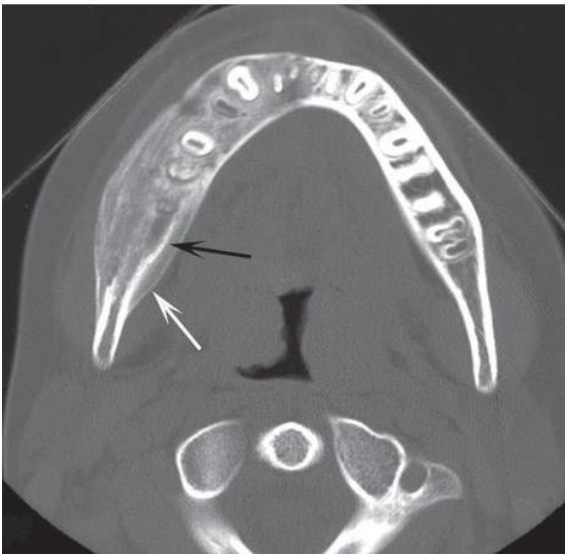
A picture showing condition in a background of florid osseous dysplasia> increase the vascularity> increase the risk of Osteomyelitis. It cannot be reintegrating in all cases.

Bone inflammation (osteomyelitis) and bone cancer are coming on the same list of differential diagnosis>> **because cancer do have a chance to become super infected.**

Orthopedics say: **biopsy every osteomyelitis, culture every tumor** due to the huge gray area between them, and have very common features like ill defined, loss of cortices, loss of borders, paresthesia.

### Diffuse sclerosing Osteomyelitis:

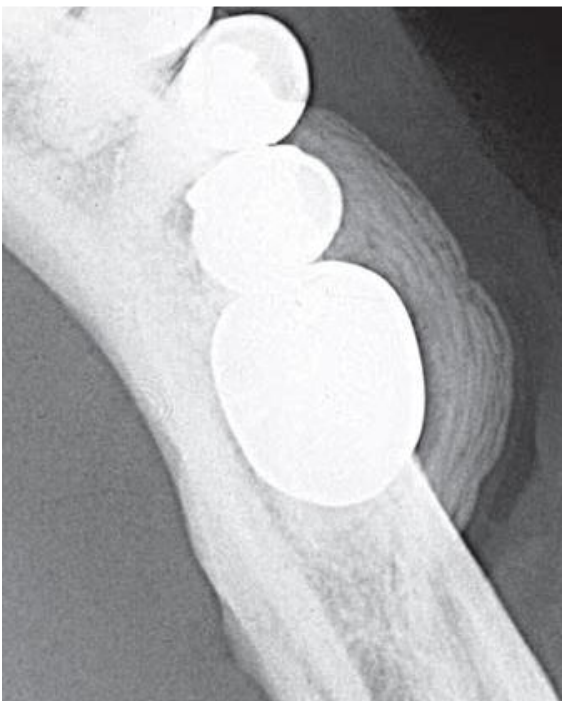
- Milder form of osteomyelitis, since it is mostly sclerosing (bone deposition.)
- Female predisposition.
- mostly has proliferative rxn



On radiograph, it appears as swelling and the mandible just getting bigger but in reality, it is a chronic Osteomyelitis.

Here we have **pain, redness, swelling but not due to edema, it's due to actual bone formation**, so it's a very long process, every now and then we will have puss charge and stop. but the pt wasn't treated yet it will continue and the body will protect itself by forming this sclerotic bone.

### Low refractive osteomyelitis :



- Acute situation.
- Affect very young ages less than 30.
- mostly females
- Mostly lower 6 area which is badly destructed, then periosteal starts to build bone in lamellar predictable fashion, onion shell like.

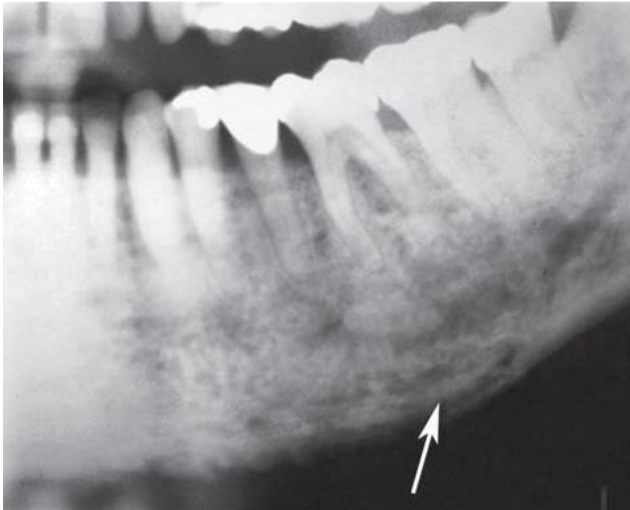
\*To stop this process it needs a good dentist, to decide either to go with RCT or extraction but never to give AB.

Every layer is a periosteal rxn that build up more bone as an attempt from the body to confine the inflammation process.

Here we don't have ill defined, no sequestra , no fistula , its only periosteal rxn.

The diff. diagnosis: the most important is 1- infantile cortical hyperostosis >> multi area of extra bone, which is not an ostiomas, comes with systemic signs and symptoms.2- fibrous dysplasia

## OSTEORADIONECROSIS and bisphosphonate bone necrosis:



- (drug induced necrosis of the jaw) are very serious conditions
- They are sterile necrosis.
- when they happen, there is not much to do, so don't allow this to happen from the beginning, because patient under radiotherapy or bisphosphonate tends to have more bone deposition and hypovascularity in the same time which leads to necrosis. In some cases necrosis happens spontaneously without any intervention!

(قصة حزينة)

The dr. was talking about a case of patient of breast cancer who is under bisphosphonate for 4 years and has an uncomfortable bridge. >> the patient knows that he cannot extract any of his teeth so he is careful about his teeth until he goes to one dentist who told him that he can remove the bridge and extract the teeth under it and he will not get any complication completely! >> patient ends up with huge sequestra, the doctors here start to do debridement, and use fresh plasma proteins, close it by secondary intention, actually if you want to clean all the necrotic bone, you might reach the skull base, so we don't remove all necrotic bone, most important thing is to achieve any kind of secondary closure. Here patient is forced to stop chemotherapy until he fixes the bone necrosis that he has after the extraction!

### Once the patient did the chemotherapy or radiotherapy how much time, we have to wait till we can do dental treatment like extraction?

You cannot do anything at all. You should extract first then he can go for radiotherapy after 2 weeks.

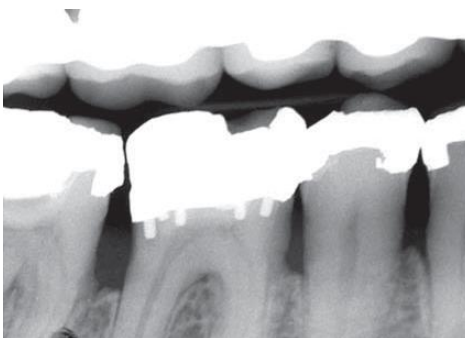
Therefore, there is no safe area for people taking bisphosphonate or radiotherapy for head and neck that is much more severe. However, the patient who takes bisphosphonates for stage 4 cancer for bone metastasis is the highest risk factor

**Radio graphically: they are very similar to osteomyelitis, but the latter has much more periosteal reaction and less aggressive because it allows the periosteal reaction to happen, but the severity in OSTEORADIONECROSIS is higher because it just resorbs bone**

In OSTEORADIONECROSIS the patient gets a fragile mandible and a pathological fracture may go through the necrotic area, the patient will feel pain, and there is necrosis, so the dentist doesn't want to open a flap

Even the intermaxillary fixation will be challenging

### periodontal Disease :



-the radiograph does not tell that much and we cannot use it instead of probing or clinical examination.

- Radiograph tells if there is a bone loss or not, is it still happening? Is it localized or generalized? Is it mild, moderate, severe.

So there is different prognosis with different treatment strategies, Therefore, the radiograph here explains morphology only, not function.

It can help if there is a local factor, like if you examine ptn and you just find a 8 mm pocket mesial to the canine for example, here you should start think about local factor like fracture, perforation, vertical crack.

If there pocketing, its related to perio , if there is no pocketing and I see asymmetrical widening of pdl, probably we have to extract the tooth because it is an early sign of malignancy.

**pericoronitis** is a soft tissue issue, so you don't see much on radiograph, happen around the partially erupted tooth.

The radiograph will be important here when you want to extract this tooth to see the proximity of vital structures, degree of impaction and amount of bone.

What we can see is the underlying osteitis, because we cannot see pericoronitis on radiograph

### **Chronic sinusitis**



Different colors:

Opaque color of the floor of the sinus.

A bit grayish.

Black due to thickening of mucosa lining (other causes other than sinusitis, is allergy, bacteria).

In addition, the inflammation around the apex of a tooth may cause small interruption of the floor of the sinus, so it might be as odontogenic cause.