Cons#9

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Last lecture we talked about pulpal disease this lecture we will study periapical diseases which are the source of diseases of endodontic and because of this we call them lesion of endodontic origin , and we will see that some lesion are not from endodontic origin .

**Periapical diseases :**

disease in the periapical area coming from the pulp wither its vital or necrotic.

We will talk about acute periapical periodontitis, chronic periapical periodontitis,osteomyelitis, acute periapical abscess, chronic periapical abscess; we will concentrate on those which their source is the pulp.

**Acute apical periodontitis:**

Its localized interruption of the periodontal ligament, if the irreversible pulpitis does not treated it will continue and go beyond the root canal and go out the canal to the periapical area to the periodontal ligament and the bone, so that will lead to a localized inflammation in the PDL in periapical region, there are two types acute and chronic .

**Causes:**

1. any irritants diffusing from inflamed or necrotic bone , any bacteria enter to the pulp and make irreversible pulpitis then we may get pulp necrosis the bacteria will go out of the canal to the periapical area and cause the inflammation
2. itragenic by canal over instrumentation if we do cleaning and shaping and we are out of the canal the working length are out about 2-3 mm mainly we are going to cause an inflammation of the periapical area
3. may occure in a vital tooth that has a recent restoration beyond the occlusal plane " high filling , premature occlusion " when the Pt. bite he/she will feel pain in this case it is not extending from the pulp it is right away in the periodontal ligament there is a trauma in the periodontal ligament " direct trauma to the periodontal ligament from the high filling and it will cause acute apical periodontitis.

**Symptoms**: pain and tenderness on chewing and the Pt. will find difficulty on chewing on the tooth, and the patient will feel the tooth is elevated from the socket "the tooth is coming out of the socket why? because there is an inflammatory process which means that there is an exudate coming out the inflammatory cells and accumulating in the periapical area and pushing out the tooth from the socket "we are talking about relatively speaking not pushing 5-6 mm its out 1-2 mm maximum "

**Diagnosis**: tender to percussion " when we percuss we percuss on each cusp of the tooth " , palpation : the mucosa might be tender to palpate , radiographical examination shows normal or slight thickening periodontal ligament

**Treatment**: consist of terminating the cause and reliving the symptoms, it is particularly important to determine whether the apical periodontitis associated with vital or non-vital pulp because if its vital pulp and the cause was high filling we have to reduce the filling down, and if its necrotic we have to do RCT.

**Prognosis:** it is usually good if we treat it.

the occurrence of symptoms with acute periapical periodontitis during endodontic treatment is usually normal and does not affect the ultimate outcome of root canal treatment , sometimes when you finish the root canal and the patient goes home he will feel some kind of pain when he chew on the tooth as result of root canal treatment we call it postoperative pain because of instrumentation and it does not need any treatment except 2 tablet of panadol up to 4 weeks , if the patient after 4 weeks still have symptoms it means that there is something wrong.

**Chronic apical periodontitis:**

It is periapical lesion or Granuloma,in the past when we see a periapical lesion we call it a tooth has granuloma but now we cannot use it because it is a histological term.

Chronic periapical periodontitis is a low grade defensive reaction of the alveolar bone to irritation from the root canal, the immune system cause inflammation and the inflammatory cells which resorps the bone so the lesion will be radiolucent

If the tooth is endodontic treated and there is a periapical lesion persist for a long time after treatment this means that there is endodontic failure so we have to redo the case (No healing).

**Symptoms:** usually asymptomatic, most of time we discover it by taking x-ray.

**Histopathology:** granulation tissue : inflammatory cells like lymphocytes , plasma cells and fiber capsules.

**Diagnosis :** the pulp usually necrotic therefore it will not respond to electric or thermal test , percussion little or there is no pain , palpation may cause some discomfort , radiographic finding are the diagnostic key "periapical radiolucency "

**Treatment:** consist of elimination of infection in the root canal then healing to the periapical tissue take place.

Chronic apical periodontitis cannot be detected rediographically unless the cortical bone has been involved or perforated, so maybe the patient suffering from one of his teeth and we did the vitality test and we find that the tooth is necrotic but there is no periapical lesion, when we can see the periapical lesion on radiograph? we can see the periapcal lesion on radiograph once the lesion involved the cortical bone plate , if the lesion is still in the cancellous bone ( we have buccal cortical plate , cancellous bone then lingual plate ) we do not see it why ? we can't see periapical lesion until the calcium have been removed from the cortical plates. If the lesion is still in the cancellous bone we do not see because there is no calcium in the cancellous bone

Using the radiograph as aiding in the endodontic diagnosis, the clinician must realize that the periapical lesion or bone destruction may be present but not radiographically apparent "that’s mean when the lesion in the cancellous bone we may not see it but when it is in the cortical bone plate we can see it and the pulp should be necrotic.

**Condensing osteitis (ostesclrosis):**

it's over production of the bone as response to low grade of chronic inflammation of the periapical area as result of mild irritation in the root canal that’s mean we have involvement of the root canal and the pulp is involved and the inflammation of the pulp is going out of the canal to the bone and here there is no bone resorption (no periapical radiolucncy) we have over production of bone (periapical opacity) due to low irritation of the pulp at young patient because they have a good vascularization of the pulp, usually asymptomatic and sometimes symptomatic so we do RCT (it's depends on electrical and thermal stimuli and what we see on the x-ray)

**Diagnosis**: usually from the x-ray which shows localized area of redioopacity–

-**Treatment**: root canal treatment which will change radiopaque area into normal area but it takes longer time for the radio opacity to be normal bone and trabeculation of bone after 6 months.

**apical abscess**

-Definition: localize collection of pus based on a degree of exudates formation and the clinical signs and symptoms we can divide it into acute apical abscess and chronic apical abscess.

**Acute apical abscess (acute alveolar abscess):-**

Localized collection of pus in the alveolar bone at the apex of the tooth with necrotic pulp

**Causes:**

1-Necrotic pulp, as a result of severe of bacterial invasion.

2-Trauma to periapical tissue

-So first the patient may have necrotic pulp as bacterial invasion then he will have chronic periapical abscess, then its stay, after 2 years may be the patient get diseased (like influenza), so here he will have acute periapical abscess because of the bacterial which came from the disease that going to invade the periapical tissue

Necrotic pulp 🡪 bacteria 🡪acute apical abscess 🡪chronic apical abscess

-Trauma, if a child fall down and had a trauma on his teeth and one of them had a necrotic pulp🡪 acute apical abscess.

**Symptoms:** we look at patient face, we found asymmetry in the face, swelling, sever pain on chewing, tooth has slight mobility, sever cases may have fever (cause of many bacteria 🡪give antibiotics) ,sever pain on percussion(usually we don't do it because of severe pain).

**\*NOTE**: necrotic pulp ALWAYS present in the acute apical abscess or in the case of chronic apical abscess, so abscess always related to necrosis

\*An acute abscess is one of the most serious dental diseases (the patients face may appear asymmetrical, and the patient is in pain (.

So the presence of bacteria is essential for the establishment of a periapical abscess.

-Radiograph: usually show Normal periapical area, and if we see cavity or affected restoration, and periapical lesion and the next teeth are virgin no wrong with them that's mean it’s the cause of swelling .Radiograph will show us the offending tooth, or you may take a radiograph show all teeth are normal.

**-Diagnose:** usually pulp not respond to electrical or thermal stimulation,because usually pulp is necrotic, and in these cases we can see the periapical lesions and above it acute alveolar abscess and if it's not showed in radiograph and all teeth were normal so we don't do percussion test or palpation or electrical and thermal test, because patient is already in pain.

**Treatment:** incision by blade and drainage after giving anesthesia around abscess area (but it will not be profound anesthesia ) and prescribing an antibiotic for one week and pain killer, (there will be swelling), and then if the patient come back and swelling is gone we make diagnose.

So this was the emergency treatment of acute periapical abscess: incision and drainage (IND) 🡪prescribing a strong antibiotic and pain medication for 10 days🡪 The swelling is gone and the pain is gone , at that time we can determine by 100% which tooth is causing the problem by electric pulp testing ,🡪 RCT for the tooth involved.

\*Differential diagnosis of the acute periapical abscess from lateral periodontal abscess:

The lateral periodontal abscess is usually associated with pocket, from its name periodontal (there's periodontal involvement) and is usually associated with vital tooth rather than a necrotic pulp, so the vitality test is useful in the establishment of correct diagnosis.

Usually the periodontal abscess is located between the two lower premolars, there will be a pocket and both of teeth are vital

**Chronic periapical abscess :**

Chronic perapical abscess is also called chronic alveolar abscess or suppurative apical periodontitis

Chronic periapical abscess is a long standing low grade infection of the periapical bone

Periapical lesion → infection → pus

Pus will drain by it self either by the sulcus or open a sinus (fistula) , NO swilling

chronic apical abscess in radiograph there is chronic apical periodontitis and the bacteria will cause abscess and from it will open in the sulcus or fistula

 Chronic apical periodontitis → necrosis of the pulp → invasion of the bacteria → Chronic perapical abscess

Patient complains from gum boil or bad taste in his mouth, gum boil that appear and after a while disappear, when disappear that’s mean the pus is drain out into the mouth

Chronic periapical abscess usually is painless, on the other hand, if the sinus tract drainage blocked then the patient feels pain

Clinical exam of a tooth with this lesion reveals range of sensitivity to percussion or palpation depending on weather the sinus tract is opened and draining or closed

\*The doctor showed us a pic of a fistula that opened into the skin

Usually in routine radiograph exam show bone resorption and the apex involve too , discoloration of the crown , vitality test are –ve

a gutta percha point size 40 or larger inserted into the tract to determine the cause of the lesion (sometimes the fistula is located between two bicuspids like premolars one of them is necrotic, so in order to determine which one of them is causing the problem we insert a gutta percha point into the fistula all the way down until it stops and we take a radiograph) this called **fistula tracing**

**Treatment of choice:** RCT for the involved tooth

Lesions discussed previously on this sheet are lesions of endodontic origin (the cause is the pulp) now we will discuss the **lesions of a non-endodontic origin:**

1. Primordial cyst : it’s a well demarcated lesion located beneath the roots of the lower2nd molar in case of a missing third molar , so if we do a vitality test to the lower 2nd molar we will find out that its vital
2. Dentigerous cyst
3. Lateral periodontal cyst (differential diagnosis done by vitality test)

Now we will move on to **non-odontogenic lesions** (they have nothing to do with the teeth)

1. Central giant cell granuloma usually in ant. Region of mandible (differential diagnosis is the pulp vitality cyst) , usually the teeth are vital , treatment : surgically
2. Globulomaxillary cyst (differential diagnosis is the pulp vitality cyst) , usually the teeth are vital , it can cause displacement to root of lateral and canine , treatment : surgically
3. Squamous cell carcinoma of the gingiva : a radiolucent area of the vertical bone loss resembling periodontal lesion , sometimes drs misdiagnose it as a periodontal lesion and they start scaling and root planning, thinking that everything will be alright , but the patient come back to the clinic with the same lesion but this time enlarged that before , so we have to take biopsy and the result will be squamous cell carcinoma of the gingival

In the end not all lesion at apical area means periapical lesion, we should examine the radiograph carefully and if the lesion from necrotic pulp , if it is then I will treat but , if everything is normal we need more investigation .