المحاضرات يلي طلعولي كتير طوااااااااااااااااااااااااااااااااااااااااال

Cons 4th year sheets 9-10-11-12

**Periapical diseases :**

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

**Acute apical periodontitis:**

 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.

**Causes:bacteria/over filling/overinstumentation [tooth can be vital/necrotic].**

**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 there is an inflammatory process which means that there is an exudate coming out.

**Diagnosis**: tender to percussion, palpation ,x-ray

**Treatment**: depend on the cause and the vitality test ,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.

postoperative pain after RCT cause 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 ,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.

**Diagnosis :** necrotic pulp

**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 in the cancellous bone we may not see it.

**Condensing osteitis (ostesclrosis):**

it's over production of the bone ,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**: x-ray–

-**Treatment**: root canal treatment

**apical abscess :**collection of pus

**Acute apical abscess**

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

**Causes: necrotic pulp/**Trauma to periapical tissue

Necrotic pulp [always]🡪 bacteria 🡪acute apical abscess 🡪chronic apical abscess🡺acute abscess in case sar reactivation ll disease [influenza(bacteria)].

**Symptoms:** 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).

**Treatment** **:**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.

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.

**Chronic periapical abscess :**

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

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

Patient complains from gum boil or bad taste in his mouth/painless

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

a gutta percha **in diagnosis**

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

**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)

**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

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Pain: is "An unpleasant sensory

Local anesthetics esters or amides[most common like lidocaine/articaine]

* LA work by blocking the sodium channels, Vasoconstriction response is achieved by interaction of the adrenaline with adrenergic receptors of alpha type which are found in the rest of the tissues all over the body /vasodilations with beta type
* In all these cases LA should be without adrenaline - they should not receive a local anesthetic containing a vasoconstrictor and they should consult their physicians before undergoing endodontic treatment:
* Unstable angina pectoris
* Recent History of MI or stroke (within the past 6 months)
* Severe hypertension
* Uncontrolled congestive heart failure
* Heart transplant

Pregnancy We prefer after delivery BUT if it is an emergency treatment, it HAS to be done , the risk of giving a pregnant lady LA is much less than the damage that may be caused by pain or infection if left without treatment)

The only issue of concern is that; in the past the Prilocaine used to come with felypressin as a vasoconstrictor. Felypressin lead to uterus contraction, so in concentrated amounts this may cause a problem. But now Prilocaine is rarely found! Other type all of them are safe.

Local anesthetics may interact with other medication, in particular any medication that causes CNS depression (e.g.: Tri-cyclic antidepressant).

Complications of LA: vasovagal attack/Toxicity ( related to over-dosage), Temporary or Permanent Nerve Damage,facial palsy, allergic reaction .

To reduce the risk: aspirating before injection/Inject slowly/proper dose

 After giving the ID block, the first thing we do is to check the lip anasthesia

* (Inflammation increases blood flow so it is only normal to expect that LA will not last as long as in healthy individuals)
* it is much easier to anesthetize someone with a necrotic tooth than irreversible pulpitis.
* patient tells you that the Dr. anesthetized him 4 times but it didn’t work. This patient is a red flag.
* High level of anxiety – a scared patient is a red flag.

In case of failure anesthesia🡺

* + Simply increase the dose
	+ Exposes a greater length of the IAN
	+ Use anesthetic with a lower pKa:e.g.: 3% Mepivacaine to decrease the potential for ion trapping
	+ Use a different technique. Gow-Gates, The Varizani – Akinosi technique

The Gow-Gates technique:

* Target area :the medial anterior aspect of the condyle just below the insertion of the lateral pterygoid muscle
* Extra-oral landmarks

 ⮚ Draw a line from the tragus of the ear to the labial commissure. Our syringe should be parallel to this line.

* We need to hit bone – very similar to an ID block; if we do not hit bone, we you are probably too deep in the tissues and we are at risk of injecting in the parotid gland

The Varizani – Akinosi technique:

* This is a closed mouth technique (an advantage)
* Using a long 30 mm needle, half of the needle should stop just at the upper second molar, parallel to the muco-gingival junction.
* Intra-ligamentary injection:
* Deposit LA in the periodontal ligament space.
* There are three points that need to be considered;
1. it is a very painful technique
2. it needs to be done very slowly because the resistance is massive
3. sometimes there is risk of inducing infection (if the patient has very poor oral hygiene, the plaque and bacteria found in the sulcus can be transmitted to the bone)
* The Wand:

computer-assisted LA delivery system that can be used to administer intra-ligamentary injections.

The device is activated by a foot control, which automates the infusion of LA solution at a controlled rate; fast rate: 1.4 ml/min used for Buccal and Lingual infiltration

 slow rate: 1.4 ml/ 4 min 45 sec for intra-ligamentary injection

* The intra-osseous route:
* The intra-osseous is a VERY useful technique in cases of irreversible pulpitis.
* and insert our needle to deliver the LA solution directly inside the cancellous bone adjacent to the tooth to be anesthetized.
* It gives us IMMEDIATE onset of anesthesia but short duration.
* Two intra-osseous systems have been studied clinically and are available in the market:
* The intra-pulpal route:
* This is an indication for an intra-pulpal injection; injection of LA solution inside the pulp that gives immediate anesthesia
* Drawbacks: The pulp needs to be already exposed to allow direct injection, so this can be severely painful (therefore not very useful in that sense)/Short duration of pulpal anesthesia.
* Needs to be given under pressure
* Advantages:
* Produces profound anesthesia if given under back-pressure.
* The onset of anesthesia is immediate.
* No special syringes or needles are required (doesn’t need any fancy equipment).
* Topical anesthesia:
* Lidocaine – most common (5% ointment, 10% spray), Benzocaine – not very popular (7.5 – 20% gel)
* It does have a positive psychological effect on the patients (placebo effect).

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Case 1 :

A 35 years old pt female presented with complaint pain of lower right quadrant every time she eats or drinks something cold , pain started a few weeks ago but seems to be getting worse , she can't locate which tooth hurts most but it's in LRQ.

Medication : fit

Dx : several long standing moderately deep restoration in her posterior teeth ,

-poorly localized pain >>it indicate it's pulpal pain but we don't know if it's reversible or irreversible .

-problem start when we have chronic pain (3-4years ) this is difficult usually is not related to teeth .

We test the 6>> typical sever lingering pain , it was tenderness upon percussion >> indicate acute apical periodontitis ,so that straight forward .

Dx : irreversible pulpitis and acute per apical periodontitis .

Tx : RCT for LR6,

Case 2 :

29 years old male enter your practice carrying a cup of ice water

 he said" I have a terrible tooth ache for the last few days it hart when ever l eat or drink something hot ,, last night l tried to eat hot soup and the pain was worse , if l sip ice water >> the pain get relief ,,but as soon as I stop drinking the ice , the teeth ache com back "

-pt unsure of location of pain .

Medically :fit

DHx : deep restoration placed in teeth 6,7 in the last year.

-pt suffering from palpal pain ,in advance stage of irreversible pulpitis .

There for upon placing some thing cold >>this gases shrink>> so the pressure on vital nerve will decrease in that confined space of the pulp .

- in x-ray : No thing ,not confirmative ,u should listen to the pt .

-both teeth tender to percussion .

Cold test :We do hot test by hot water ( u isolate each tooth separately by rabber dam and u rinse with warm water .

\*so pt in pain now so use cold test and see when the pain disappear ,,

Result :

Cold test on 7 >>nothing

Cold test on 6 >>pain disappear

So Dx: irreversible pulpitis and acute apical periodontitis on lower 6 .

Clinical finding :necrotic pulp with acute apical periodotitis on 7 (this is true but it's not the cause of symptoms ,so RCT to 7 will not relief the pain .

Case 3 :

23 years old female,

Cc : pain upon chewing in URQ that started a few days ago following placement of composite restoration ,temperature change don't affect pain .

Medication :oral contraceptive pills .

\*pain upon chewing mean it's not pulpal problem .

\*OCP>> can't use antibiotics because interaction with OCP.

PA Rx -ray : not show any thing .

\*this symptoms may caused by high filling composite .

Dx: acute apical periodontitis .

Rx: occlusal adjustment and NSAID ( to relief pain ) .

Case 4 :

52 years old male ,

Cc: suffering from intermediate pain for a period of time in upper right quadrant .

MHx : control hypertension ,type 2 DM (u make sure the pt has breakfast and medication because stress in clinic may cause hypoglycemic shock to that pt ).

-in upper right 4 serves as an abutment for a 3 unit fixed –fixed bridge ,

3 has a distal amalgam restoration ,3and 4 equally tender to percussion palpation of the buccal vestibule revealed tenderness and a mild swelling between the two teeth .

X-ray :radiolucency >>necrotic pulp and chronic per apical periodontitis .

Cold test :

Normal response on UR 4 .

Negative response on UR3.>> that indicate defective amalgam on 3 and large apical radiolucency related to canine (lamina dura not clear )

Dx: necrotic pulp and acute apical abscess of UR 3.

Tx:

RCT to UR3 and antibiotics (depend on systemic involvement ).

Case 5:

30 years old pt ,

Cc : pain upon chewing in LRQ that started a couple of weeks ago ,pain is sharp ,quick ,last for few second not affected by change in temperature . DHx : good OH ,fair amalgam restoration in 6 and 7 lower right .

Medically : fit and well .

\* examination 6 and 7 are slightly tender (this happen a lot and not indicate any thing )

So pulp test doing :

-On 7 negative response .

-on 6 positive response .

- probing depth >>normal >>no pocket .

x- ray :on 7 there is large periapical lesion and necrotic pulp .

So pain on chewing usually mean a problem with the periapical tissue .

\* Bite test :

\* in fact :

The pain is felt instantly after the pt stop biting .

The are two response to the bite test:

1. Upon biting the pt feel pain .>> inform us if there is apical periodontitis (chronic apical ,abscess ,high filling ).
2. Upon biting no pain is felt .>> inform crack and upon biting the crack closes and upon relieving the bit ,the crack re opens; stimulating the pressure increase and the toxins and irritant will re enter the pulp causing pain .

Dx: cracked tooth LR6.

Clinical finding :

No pulpal involvement yet ,so no need to RCT.

It's chronic periapical periodontitis because associated with radiolucency and the pain is dull but in acute apical periodontitis we don’t see any thing in x-ray .

Case6:

Mohammed 42 years old ,pain on chewing ,problem in LRQ , started a few months ,

The pain was bearable and kept under control using simple analgesics ,,

Two days ago the pain had become sever and analgesics not help him .

Medically :HIV ( no treatment received ) .

DHx:

Irregular attending ,poor OH , heavy restored dentition .

\*\* no extra percussion should be taken by the dentist when treated HIV pt because it is necessary to be caution with all pt entering your clinic and treat them all as HIV pt .

- palpation percussion :LR6.

-pocket probing :LR6=12mm mesially and buccally .

Pulp test :positive response to EC.

Dx:

It 's not a pulpal problem >>we don't need RCT. >> totally periodontal problem .

Pt suffering from an acute periodontal abscess on LR6.

R x : sub gingival debridement and root planning ,

U may describe antibiotics if there is systemic involvement (CD4 is above 400 ).

Tx:

Nothing to do with this tooth just take it out .

Case 7:

53 years old female ,

Sever sharp pain in the right side of her face started few weeks ago , pain is sporadic , last for a few second ,,

\*U need to ask pt about severity ( how much sever ).

 \_And between the episodes , there is no pain at all >> not constant type of pain , she is fine until this come again , she dosen't use pain killer , because pain lasts few second only .

\* pain kick off upon eating and brushing .

Medically :

She take aspirin, prosthetic hip joint ( antibiotic needed);

DHx:

Irregular tender, recent RCT on LL6.

\* palpation of labial vestibule between 4and 5 (trigger zone ) is very pain full ( RT side) ,as soon as the area is touched ,the symptoms manifest .

\* percussion :LR 1-7 no TTP

\*probing depth is normal .

\*pulp test : normal response .

\* X-ray : tiny cavity which is trigeminal neuralgia .

Dx :

Neuropathic pain /trigeminal neuralgia .

\*we are not asked to diagnose trigeminal neuralgia but we shouldn't do RCT because we couldn't diagnosis the case .

Clinical finding :

Generalized tooth surface loss , mesial occlusal cavity on lower right 6 .

Tx : referral to a neurologist .

If your pt on anticoagulant ,you should know about bleeding tendency by PT( prothrombin time ) /INR ( international normalized ratio)

\* if your pt on warfarin DON’T give him ID block because the bleeding in parapharyngeal space may cause a large hematoma that can obstruct the air way .

\* no ID block even thought you do aspiration.

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-the root surface is rougher than the enamel, more plaque formation .

- the cementum covering the root surface is extremely thin, providing little resisting to caries attack.

Root caries= class V

Root caries are usually more rapid than other forms of caries

CEJ:

This diagram shows the relation between cementum and enamel. All these situations may present in the same tooth.

-cementum is thin, and while scaling and polishing it might me easily removed and then the dentine is expose [root caries=dentine caries].

-Root caries **occur** supra-gingivally most often at or close to the CEJ within an area of 2mm.

- **the first step for root caries to occur is gingival recession**[normal situation root is covered be ginigiva].

- recession - might be due to :

**1-palque induced gingivitis and then periodontitis then gum recession.**

**2-chronic fault tooth brushing or bad habits.**

**3- Iatrogenic causes, due to invasion of biological width or following perio surgery.**

-the four factors needed for a carious lesion to start are:

1-susciptable root surface (enamel or dentine). 2-fermentable carbohydrates.3-bacteria.4-time.

The PH for dentine to be dissolved and for demineralization to start is about 6.2 (critical PH)[root caries]. For coronal caries it’s 5.3.

**The most comonly used clinical signs** to describe root caries is visually

-Color: carious lesions are brown to yellow in color rapidly progressive one (especially brown one)>> active lesions. Dark brown lesions usually of a slow progression.

-Contour: **well defined: active caries lesion** or **ill defined**: arrested lesion.

**Management of root caries :** Removal of caries and restore will proper restoration

Which is Glass Ionomer cement. Why? 1-we may have difficulty in isolation. 2- bond to tooth structure 3-it release fluoride

Root caries are more common in males than females, most commonly they are seen in **mandibular** molars followed by PM , canine, and incisors, **this order is reversed in maxilla** (incisor, canine, PM, and then molars) .facial and proximal surfaces are more susceptible than palatal and lingual surfaces.

\*Always remember that the best bur to remove any caries specially root caries is large round bur with slow speed hand piece (small round bur is more time consuming and more possibility of pulp exposure.

Remember that the shape of the carious lesion is cone shape, whether in class 1 or class 5 and even in class 3

**Conventional GIC :**

**Advantages:** fluoride release, esthetic, bond to the tooth structure

**Disadvantages:** typical handling, typical finishing, water contamination during placement leads to weak and opaque restoration, dehydration causing crack of the restoration (so you need to apply protective layer or cauting agent)

How fluoride released from conventional GI and resin modified GI ?they both set by acid-base reaction, fluoride released as byproduct of setting reaction

**\*powder is flouro aluminum silicate, and the acid is polyacrylic acid.**

don’t over finish the margin of GI restoration, because GI develop strength slowly, and finishing should be done with light pressure and less abrasive disks.

Rechargeability of fluoride in GIC is higher than composite, however avoid using acidic topical fluoride to prevent erosion of GI

how fluoride initially released to the tooth structure to enamel and dentin make them less susceptible to acid attack, and then fluoride start to release into the oral cavity and hence decrease the amount of microorganism and act as anticariogenic.

**2- resin modified GIC, which is conventional GIC plus some amount of resin**

It sets by **2 setting reactions**: 1- conventional acid-base reaction

2-light cure free radical polymerization of resin content

**Main advantages:** higher early strength, easier finishing and polishing

The most important tool to do proper class 5 restoration is to use **cervical matrix.**

Advantages of cervical matrix: 1- **contouring**,

2-smooth surface (**best smoothness** u can get is from Mylar strip or cervical matrix).

3- **adaptation**

Over time resin modified GIC tend to expand, therefore it requires trimming in later appointments.

**3- Compomers**

Compomers used mainly for restoration in **low stress bearing area**.

It’s mainly **composite with some amount of GIC.**

Some compomers have modified monomers that provide additional fluoride release.

Setting occur primarily by light cure polymerization, but an acid-base reaction also occur as compomers absorb water after treatment and upon contact with saliva.

**4- Composite**

**Microfill** composite is the recommended one, because it has low modulus of elasticity (class 5 here is within the root, and the tooth may flex, so if the material we have has high modulus of elasticity the restoration will fall)

**Low modulus of elasticity** means that when the tooth flex, the restoration flexes as well.

You have to apply a layering technique, even in class 5 or root caries you have to apply the restorative material “composite” **incrementally**.

**Main advantages:** esthetic, bond to the tooth structure.

**Main disadvantage:** polymerization shrinkage

Fluoride releasing composite: some branch of composite resin are modified to release fluoride from their filler particles

**5- amalgam**

**Main disadvantages:** esthetic, poor fluoride release, lack of adhesion, disposal and safety concern

**Main advantage:** technique insensitive, self-sealing margin, wear resistance