

MAMATA DENTAL COLLEGE & HOSPITAL, KHAMMAM
DEPARTMENT OF PEDODONTICS&PREVENTIVE DENTISTRY

IVBDS: ASSIGNMENT (RE-EXAM) - 35M

Answer the following Questions

I.ESSAY QUESTIONS:

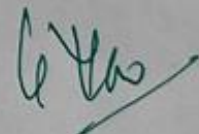
1. Local Anaesthesia- Definition, Mechanism Of action, Composition, Theories of LA -7M

II.SHORT QUESTIONS:4×5=20M

- 1.Maxillary Injection techniques
- 2.Mandibular Injection techniques
3. Inferior Alveolar Nerve Block modifications in children
4. Dry Socket in Children

III.VERY SHORT QUESTIONS: 4×2=8M

- 1.Rule of 10
- 2.Complications of Local Anaesthesia
3. Local Anaesthesia in acidic medium
- 4.Vazirani-Akinosi Technique



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28

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Mishra

① Local Anesthesia is defined as a loss of sensation in a circumscribed area of the body caused by a depression of excitation in nerve endings or an inhibition of the conduction process in peripheral nerves.

V. V. S.

⇒ Mechanism of action of local anesthesia:-

- Altering the basic resting potential of the nerve membrane.
- Altering the threshold potential (firing level).
- Decreasing the rate of Depolarization.
- Prolonging the rate of repolarization.

⇒ Composition of local anesthetic solution:-

- Local anesthetic agent :- lignocaine, etc.
- Vasoconstrictor :-
 - ① Decreases blood flow to site of injection.
 - ② Absorption of the LA into the cardiovascular system is slowed.
 - ③ Decreases the risk of LA toxicity.
 - ④ Higher volume of the LA agent remains in and around the nerve for longer period, thereby increasing the duration of action.
 - ⑤ Vasoconstrictor decreases bleeding at the site of their administration.
- Reducing agents :- Vasoconstrictors are unstable in solution and may oxidize, especially on a prolonged exposure to sunlight.
- ⇒ Sodium metabisulfite which competes for the available oxygen is

Surface charge (Repulsion) Theory [Wei, 1969] - LA molecules carried a net positive charge they made the electric potential at the membrane surface more positive thus decreasing the excitability of the nerve by increasing the threshold potential.

Membrane Expansion Theory [Lee, 1976] - Local anesthetic molecules diffuse to hydrophobic regions of excitable (nucleus) membrane. LA that are highly lipid soluble can easily penetrate the lipid portion of the cell membrane, producing a change in configuration of lipoprotein matrix of the nerve membrane.

Specific Receptor Theory [Strichartz, 1987] -

Displacement of Ca^{++} ions from the sodium channel receptor sites.



Binding of the LA to the receptor site.



Blockade of the sodium channel.



Decrease in sodium conductance.



Depression of the rate of electrical depolarization.



failure of to achieve the threshold potential level.

root of the first molar on the side injected, including bone and soft tissue, upper lip and a portion of nose on the same side.

Indications → Anesthesia of five anterior maxillary teeth on the same side of the median line.

→ Posterior Superior-Alveolar Nerve Block :-

Nerve anesthetized → Posterior superior alveolar nerve.

Areas anesthetized → Maxillary molars with the exception of mesiobuccal root of first molar, buccal alveolar process of the maxillary molar, periosteum, connective tissue and mucous membrane.

Indications → Operative procedures of molar teeth and supporting structures. This injection must be combined with palatal injection for extractions and instrumentation extending into this area.

→ Nasopalatine Nerve Block :-

Nerve anesthetized → Nasopalatine nerve as it emerges from the anterior palatine foramen.

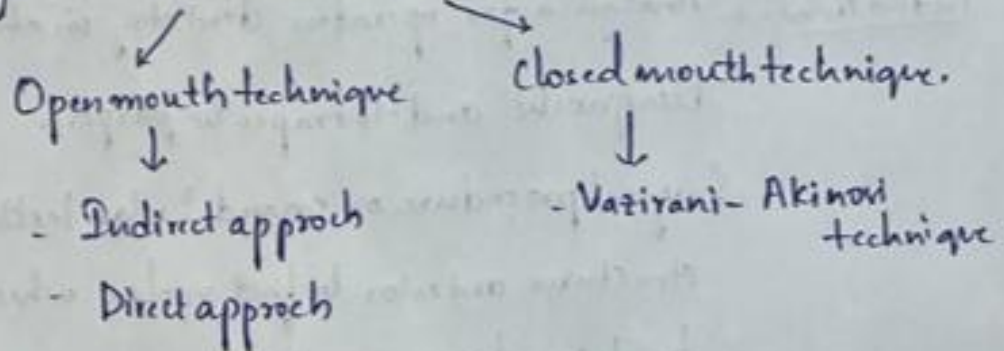
Areas anesthetized → Anterior portion of the hard palate and overlying structures back to the bicuspids.

Indications → for palatal anesthesia.

- To augment analgesia of six maxillary incisors.
- To complete anesthesia of nasal septum.

② Mandibular Injection techniques:-

Intraoral - Inferior alveolar nerve Block:-



⑱ Buccinator nerve block.

⑳ Mental nerve block.

㉑ Incisive nerve block.

㉒ Local infiltration.

㉓ Mandibular nerve block: Gow-Gate technique.

Extraoral - ~~Inferior alveolar Nerve block.~~

~~Mental and Incisive nerve block.~~

~~Mandibular nerve block.~~

→ Inferior alveolar Nerve block:-

Nerves anesthetized → Inferior alveolar nerve
Mental nerve
Incisive nerve

Areas anesthetized → Mandibular teeth to midline.
Body of mandible.
Anterior two-thirds of tongue.

than the occlusal plane of primary teeth. So, injection is made at a lower level and posteriorly.

Age 0-6 years → level of injection is below occlusal plane.

Age 6-12 years → level of injection is at occlusal plane.

Age 12 and above → level of injection is above occlusal plane.

- land marks in inferior alveolar Nerve Block:-

→ Lingual, mandibular sulcus, anterior border of ramus, distal border of ramus, coronoid notch, external oblique ridge, internal oblique ridge, mucobuccal fold and pterygomandibular ligament.

iii

(2) Complications of local Anaesthesia:-

Local → Complications occurring locally in the region of injection.

Systemic → Complications which are impact on the general bodily health.

Primary → Complications caused and manifested at the time of anaesthesia.



Ask patient to gently occlude cheek and muscles of mastication relaxed.



Syringe parallel to maxillary occlusal plane at level of mucogingival junction of maxillary 3rd molar.



Direct needle posteriorly, laterally advance to 25 mm, this distance is measured from tuberosity.



Aspirate and inject.

Zisha
16/09/23

RE-EXAM

I

1. LOCAL ANAESTHESIA:

DEFINITION:

Local anesthesia is defined as a loss of sensation in a circumscribed area of the body caused by a depression of excitation in nerve endings or an inhibition of the conduction process in peripheral nerves.

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IDEAL REQUIREMENTS:

- should have potency sufficient to give complete anesthesia.
- Relatively free from producing allergic reactions.
- low degree of local toxicity
- low degree of systemic toxicity

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STRUCTURE OF LOCAL ANESTHESIA

- 1) A lipophilic aromatic portion
- 2) ~~A~~ Hydrophilic amine portion
- 3) An intermediate hydrocarbon chain containing either an ester or an amide linkage.

2) Injectable

- low potency
- short duration

Procaine

Chlorprocaine

Prilocaine

Lidocaine

- Intermediate potency and duration

3) surface anesthetic

soluble : cocaine
lidocaine

Insoluble : Benzocaine
Oxethazine

COMPOSITION :

~~Local anesthetic~~ - lignocaine

vasoconstrictor - Decrease bleeding at the site of their administration

- Absorption of LA in CVS is slowed.

2) CALCIUM DISPLACEMENT THEORY

stated that LA nerve block is produced by displacement from some membrane site that controlled permeability to sodium.

3) SURFACE CHARGE THEORY

LA binds to the nerve membrane and drug molecules were aligned at the membrane water interface and because some of LA molecules carried a net (+ve) charge they made the electric potential at the membrane surface ion (+ve) decrease the excitability of nerve by increasing the threshold potential

4) MEMBRANE EXPANSION THEORY

This theory explains the action of benzocaine which doesn't exist in cationic form yet still exhibits potent topical anesthetic activity.

II)

1. MAXILLARY INJECTION TECHNIQUES

INTRAOURAL TECHNIQUES

- Anterior, middle superior alveolar, and infraorbital nerve block
- posterior superior alveolar nerve block (zygomatic)
- nasopalatine nerve block
- Anterior palatine nerve block
- Maxillary nerve block

EXTRAORAL TECHNIQUES

- Anterior and middle superior alveolar nerve block (infraorbital)
- Maxillary nerve block.

ANTERIOR / MIDDLE SUPERIOR ALVEOLAR AND INFRA ORBITAL NERVE BLOCK :

Nerves anesthetized : Infraorbital, anterior and middle superior alveolar nerves, inferior palpebral, lateral nasal and superior labial nerves

Areas anesthetized : Incisors, cuspids, bicuspids and mesio buccal root of first molar on the side injected including bone and soft tissue, upper lip and a portion of nose on the same side

patient's maxillary occlusal plane
45° to floor



locate infraorbital notch



MAXILLARY NERVE BLOCK:
Nerves anesthetized: Entire maxillary nerve and all its subdivisions peripheral to site of injection.

Areas anesthetized: Maxillary teeth on affected side, Alveolar bone and overlying structures, upper palate, cheek, side of nose, lower eyelid.

Indications:

- when anesthesia of entire distribution of maxillary nerve is required for extensive surgery
- local injection makes blocks of terminal branches unfeasible

GREATER PALATINE NERVE BLOCK:

Nerves anesthetized:

Anterior palatine as it leaves the greater palatine foramen.

Areas anesthetized:

posterior part of the hard palate and overlying structures up to the first bicuspid area on the side injected.

Indications:

- For palatal anesthesia to be used in conjunction with posterior superior alveolar nerve block or middle superior alveolar nerve block.

• BUCCINATOR NERVE BLOCK:

Nerves anesthetized: Buccinator nerve

Areas anesthetized: soft tissues and periosteum, buccal to mandibular molar teeth

Area of insertion is mucous membrane distal and buccal to most distal molar tooth



pull buccal soft tissues and make them taut



Bevel towards bone, syringe parallel to occlusal plane, buccal to mandibular molar with depth of penetration 1-2 mm



Aspirate and inject.

MENTAL NERVE BLOCK:

Nerves anesthetized: mental nerve

Areas anesthetized: soft tissues of lower lip, chin and buccal soft tissues anterior to mental foramen are anesthetized

place thumb in mucobuccal fold against the body of the mandible in the 1st molar area.



move anteriorly till bone becomes irregular.



pull lower lip and buccal soft tissues laterally.



penetrate at canine/1st premolar towards mental foramen.

III)

2) COMPLICATIONS OF LOCAL ANAESTHESIA

complications that are attributed to solution:

- Toxicity
- Idiosyncrasy
- systemic drug reactions
- local irritation / tissue reaction.

complications that are attributed to insertion of needle:

- Syncope
- Edema
- Infection
- Broken needle
- Facial nerve paralysis
- Edema
- Burning.

I

①

Esters :- Amides - Lidocaine
Quinoline - Cetylucaine

Esters of benzoic Acid - Bupivacaine
Cocaine - mepivacaine
Butacaine - Diprivate

Ethylamino benzoate - Etidocaine
Icobucaine - Ropivacaine

Esters of PABA - chlorprocaine, procaine
propoxycaine

Esters of meta amino benzoic acid

[Signature]

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2. Injutable
Lidocaine . short duration
procaine

~~Intermediate potency & duration
Lidocaine
prilocaine~~

3. Surface anesthetic
Soluble :- Cocaine

22/35 pm

2. Calcium displacement theory :-

Stated that the nerve block produced by the displacement from produced by the some membrane site that conducted permeability to sodium. There is evidence that varying the concentration of Ca^{2+} ion bathing a nerve does not affect LA potency.

3. Surface charge Repulsion Theory :-

LA binds to the nerve membrane Ca^{2+} drug molecule were aligned, as the membrane water interface \rightarrow because some of the LA molecule carried a net (ve) charge they reduce the electric potential at the membrane more the excitability of the nerve by increase the threshold potential.

4. Membrane Expansion Theory :-

This Theory Explains the action of benzocaine which does not exist in carbonic form yet still exhibits from potential topical anesthetic activity.

Maxillary Superior Techniques

- Intraoral Techniques:
- Anterior middle Superior alveolar → Infraorbital nerve block
 - posterior superior alveolar nerve block (Zygomatic)
 - Nasopalatine nerve block
 - Anteropalatine nerve block
 - maxillary nerve block

- Extraoral Techniques
- Anterior → middle Superior alveolar nerve block
 - maxillary nerve block

- Anterior / middle Superior alveolar → Infraorbital nerve blocks
- Nerve Anesthetic:
- Infraorbital, anterior → middle Superior alveolar nerve, inferior palpebral, lateral nasal. → Superior nerve.

Area anesthetized: Incisors, Cusps, Incusps & mesio buccal roots of the first molar on the same side. Puncturing bone & soft tissue, upper lip & a portion of nose on the same side.

Indications: Anesthesia of the anterior maxillary teeth on the same side of the maxilla

Greater palatine nerve block;

Nerve Anesthetized: Anterior palatine or it lead
the greater palatine foramen

Areas Anesthetized: - posterior portion of hard palate
overline st. upto the first
bicuspid area of the side injected

Indications - for surgery of posterior portion of hard
palate for palatal anesthesia to be
used in conjunction of posterior superior
alveolar nerve block or middle
superior nerve block.

②

Mandibular Infiltration techniques:-

Intraoral:-

Inferior alveolar nerve block

- open mouth technique
- closed mouth technique

Buccinator nerve block

~~mental nerve block~~

~~incisive nerve block~~

local infiltration

mandibular nerve block

Extra Oral:-

- Inferior alveolar nerve block

- mental → incisive nerve block

- mandibular nerve block

Mental Nerve Block:-

Nerve Anesthetized :- Mental nerve

Area Anesthetized :-

Soft tissue of lower lip
Chin, → buccal soft tissue,
arteries to mental foramen
are anesthetized.

plus there is neural bundle against the body
of the mandible in first molar area

more anteriorly full bone become irregular

pull overlap → buccal soft tissue laterally

penetrated Cornea / first pm toward
mental foramen

③ Inferior alveolar Nerve block Modification in Children:-

In children mandibular foramen is situated at a
level of lower than the occlusal plane of a
primary teeth

So Superior is made at a lower level → posteriorly
age 0 to 6 yrs level of Superior is below
occlusal plane.

age 6 - 12 yrs

level of Superior is at
occlusal plane

age 12 & above

level of Superior is
at above occlusal
plane

Complications of Local Anesthesia

Complications that are attributed to solution

- Toxicity
- Idiosyncrasy
- Systemic drug reactions
- local irritation / tissue reaction

Complications that are attributed to insertion of needle:

- Syncope
- Edema
- Infection
- Broken needle
- Facial nerve paralysis
- ~~Edema~~
- Burning

DEPARTMENT OF PUBLIC HEALTH DENTISTRY
IMPROVEMENT EXAM (Theory) – IV BDS -18 batch

TIME:3 HRS

DATE :15.3.2023

MAX MARKS:70

LONG ESSAY

2X9=18

1. Define & Classify Pit and Fissure Sealants? Write in detail about Sealant application.
2. Define epidemiology. Classify Epidemiological methods. Write in detail about Randomized Controlled Trial.

SHORT ESSAYS

8X4=32

3. Measures of central tendency
4. School dental nurse
5. Russells periodontal Index.
6. National pathfinder survey
7. COPRA
8. ART
9. Vipeholm study
10. Changing concepts of Health

SHORT NOTES

10X2=20

11. Comprehension
12. Ergonomics
13. Confidentiality
14. Principles of primary health care
15. Chlorhexidine
16. Anganwadi worker
17. Tools of Dental Public Health
18. UNICEF
19. Incineration
20. Smokeless tobacco


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MAMATA DENTAL COLLEGE - KHAMMAM.

Name of the Student : K. Ramya Sri

Year of Study : IV BDS

Roll Number : 02

Subject : Public Health Dentistry

11. Comprehension

level of understanding of people
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Should know the knowledge about oral hygiene & health education.
person learn about oral hygiene by knowing it when
for eg - Telling about brushing techniques, if he doesn't understand
we should tell him by showing any pictures, charts, models, etc.

12. Ergonomics

Ergonomics is defined as the scientific study based on
the working condition, posture & health problems of a dentist.
→ During this the dentist posture at the working condition, while standing
& sitting while providing care to the patient, this cause the
dentist back pain, Neck, discopathy, Carpal tunnel syndrome etc.

13. Confidentiality

It is the ethical principle that every dentist should follow.
→ When the dentist know personal information of the patient
during the treatment, it is his responsibility to maintain
it confidential & also observe that his staff, also maintain
this rule.

14. Principles of primary health care

1. Accessibility

1. Equitable distribution

2. Acceptability

2. Community participation

3. Participation

3. Intersectoral co-ordination

4. Appropriate Technology

15. Chlorhexidine

→ It is a chemical plaque control.

→ It is used for as mouthwashes

→ It consists of 0.2% chlorhexidine

→ It is in liquid form, used after brushing teeth.

16. Anganwadi worker

It was started on 2nd October 1949.

→ this come under IGDS.

→ Anganwadi workers are selected based on

1. they should be the resident of that village.

2. they should study at least upto 6th standard.

3. they should know basic first aid.

→ Anganwadi workers service is to provide basic Nutrition, Sanitation, ^{food supplements} to the children upto 3yrs & also for pregnant mothers & lactating women.

17. Tools of Dental Public Health

1. Epidemiology

2. Biostatistics

3. Social Sciences

4. Principles of administrative

5. Preventive Dentistry

18. UNICEF

→ Previously known as United Nations International children's Emergency fund.

→ Now the name changed to United Nations Child's Fund.

→ The main aim of UNICEF is to provide Nutrition, education, etc for children

→ Its Headquarters is present in New York.

Concepts of UNICEF are,

1. Child health
2. Child education welfare
3. Family & Nutrition
4. Education - Formal or Non-formal.

19. Incineration

→ It is a highly restorative temperature which converts organic, combustible waste to inorganic, incombustible waste that which reduce waste volume & weight.

Types - 1. Double chamber incineration

2. Single chamber pyrolytic incineration

3. Rotary kilns pyrolytic chamber.

20. Smokeless tobacco

The person who consumes like Gutkha, ~~the~~ chup Pan, tobacco etc are called smokeless tobacco.

→ This causes oral cancer, carcinoma of cheek, tongue.

→ that which doesn't cause any smoke, like cigarettes, pipe smoke etc.

3. Measures of central tendency -

There are 3 measures.

1. Mean ✓

2. Median ✓

3. Mode ✓

1. Mean -

$$M = \frac{\sum x_i}{n}$$

→ Mean is the largest value which is obtained from the central value.

2. Median -

→ Median is the smallest value of all the given values is called median

for eg - Total no. of people having dental caries according to their age.

- 1, 2, 5, 5, 3, 4, 5, 1, 2, 2.

3. Mode -

→ Mode is the most repeated value of all given values.

4. School dental Nurse

School dental Nurse is a operating Auxillary, who provide minimum dental care such as restorations, oral prophylaxis etc, mainly to the school going children.

→ they are also called as Newzealand dental Nurse.

Duties of School Dental Nurse -

- Oral prophylaxis
- Administration of local Anesthesia
- Temporary or permanent restoration for deciduous or permanent teeth.
- Extraction of deciduous teeth.
- Cavity preparation
- Sealant Application
- Fluoride Application
- Educating the ^{child-}parent - teachers about oral hygiene management.

5. Russell's periodontal Index

Russell's periodontal Index was given by Russell A.L in the year 1964.

- It is a full mouth index.
- It is a 10 yrs study.
- It is simple but time consuming.
- It is studied based on the gingival condition of the person.

Scoring criteria

Score	Criteria
0	Negative ✓
1	Mild Gingivitis ✓
2	Gingivitis ✓
4	used only when radiograph available ✓
6	Gingivitis with Pocket formation ✓
8	Attachment loss & loss of mastical function ✓

Calculation -

$$\text{Periodontal index} = \frac{\text{Total number of teeth examined}}{\text{Number of teeth present}}$$

Interpretation

1. 0.0 - 0.2 - clinically supportive tissue
2. 0.3 - 1.9 - simple gingivitis
3. 2.0 - 3.0 - Beginning destructive gingivitis
4. 3.1 - 3.9 - Generative destructive gingivitis
5. 5.0 - 8.0 - Terminal gingivitis

6. National Pathfinder Survey -

this includes ages or subgroups of a group of the population. this study is used for the clinical examination:

- the ages are -
- 5 years ✓
 - 12 years ✓
 - 15 years ✓
 - 35-45 years ✓
 - 64-74 years ✓

5 years

At this age the primary dentition is present in the person may develop the starting of dental caries.

12 years

At this age there will be eruption of all permanent teeth and the caries progression takes place.

15 years

At this age all permanent teeth except the third molars and there will be decayed tooth & increasing of other problems.

35-45 years

At this age, the person not only have decayed teeth but also pocket formation, recession, gingival inflammation etc.

65-75 years

At time of this age the person almost loose of all his teeth and result in bone resorption.

8. ART

Atraumatic Restorative treatment.

→ It is defined as the removal of the caries present the tooth without damaging other structure and placement of the material.

Principles -

1. Removing of tooth surface tissue with hand instrument.
2. Removing of carious tooth structure.

Area Instruments used -

- Mouth mirror
- Explorer
- Spoon excavator
- Enamel hatchet
- probe
- tweezers
- Cotton pellets
- Cotton rolls



Procedure -

1. Select the tooth
2. Clean the surface of tooth
3. Isolate the tooth using cotton pellets/rolls
4. Dry the tooth
5. Remove the carious substance present inside the tooth with spoon excavator.
6. Enamel hatchet is use to break the contacts.
7. Place the material inside the tooth.
Dentin Conditioning the tooth
8. Place the material inside the tooth
9. Apply vasline with ^{gloved} index finger.
10. Check for high points using articulator
11. Remove excess material if present.

9. Vipeholm study

- It is done in the year 1954, 5 year study, Sweden.

→ In this study it is divided into 5 groups - (5)

1 Control group

4 Study group.

- 1 Control group

→ In this 300 males are selected based on age upto 35 years.

→ In first year, they are served with normal diet, without any sticky or sugar contents.

→ So, they were caries susceptible.

→ In second year, they were served with 110 grams of sugar as their added in their.

→ therefore, they can see slight increase of caries.

- 4 Study groups are -

1. Sucrose group

2. Bread group

3. Caramel group

4. 8 toffe group

24 toffe group

1. Sucrose group

→ After the control group, in the Sucrose group they were given sucrose containing food items in their diet which causes increase of caries.

2. Bread Group

In this group the persons were given bread that which contains sweetness in it, in the next year they have high caries index. They served them in the meals & also in between meals.

3. Caramel Group

In next year, the caramel is supplied to the people at meals time, in between meals, in the morning, so they are also caries & more in this group.

4. 8 toffees

In fourth & fifth years the toffees were given to the people, there is a slight decrease of caries in this because only 8 toffees were given.

24 toffees -

In this the people has increased their caries susceptibility, because there are the sticky food items given to them.

Drawbacks -

The drawbacks of this study are,

- the people selected are mentally challenged people.
- they did not follow the proper diet as instructed.
- they used to eat what they want to eat.
- So, there is no correct analysis for their caries in them.

10. Changing concepts of Health.

Health -

Health is defined as complete state of physical, mental, social well-being and not merely the absence of disease or infirmity.

Changing concepts of Health.

1. Biomedical concept

2. Ecological concept

3. Psychological concept

4. Holistic concept

1. Biomedical concept

In this concept the person is considered healthy, when there is absence of any disease or free from the occurrence of disease. Based on this concept, the Medical professionals considered human body as a machine. So, if there is any repair in machine, one's doctor's task is to repair the machine. So, in this narrow view this comes under Biomedical concept.

2. Ecological concept.

In this concept, they mean should maintain dynamic equilibrium with environment and man. Dub defined Health saying health that implies the absence of Pain & Comfort, and adjustment to the environment

MAMATA DENTAL COLLEGE - KHAMMAM.

Name of the Student : A. Pranay Kumar

Year of Study : 2022-23

Roll Number : 03 (18 batch)

Subject : PHD

14A: Principles of Primary Health care :-

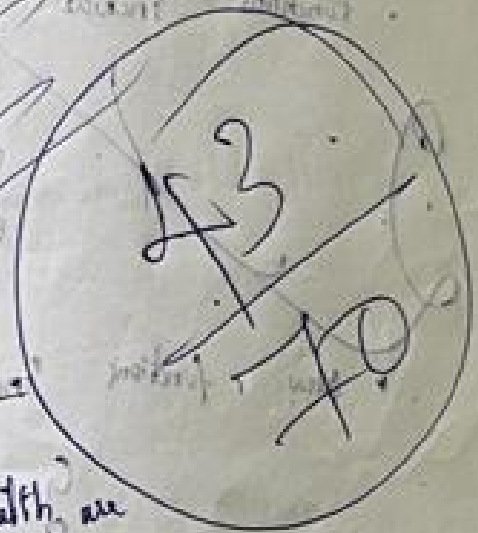
The four main principles of PHE are

①. Equitable distribution

②. Community Participation

③. Intersectoral coordination

④. Appropriate technology



17A:

Tools of Dental Public Health :-

The tools of dental public health are

① Epidemiology

② Biostatistics

③ Social sciences

④ Principles of Administration

⑤ Preventive dentistry

18A:

UNICEF :-

• United Nations International Children Emergency Fund.

• It was formed in 1979 by General assembly

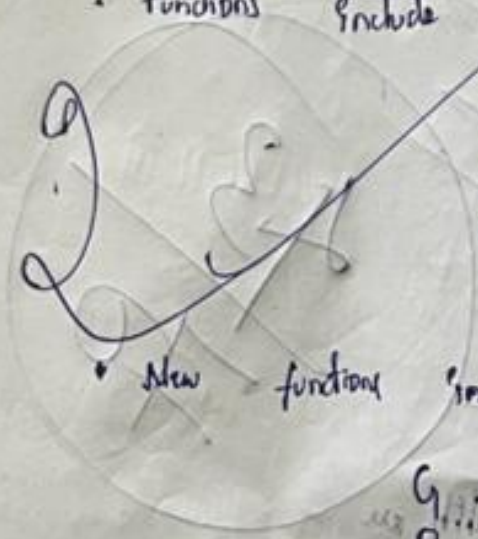
• during their first meeting

P.T.O

- It was later changed into United Nations Children's emergency fund but UNICEF was retained
- It has 8 regional offices of which Regional Office of South Asia (ROSA) was located in New Delhi

• Functions include

- ① Children Nutrition
- ② Mother and Child Nutrition
- ③ Education both formal and non-formal etc.



• New functions include

- G - Growth charts
- O - Oral rehydration
- B - Breast feeding
- I - Immunisation

Q.1

Incineration :-

• Definition :-

It is a high temperature dry heat oxidation process which reduces organic and combustible waste

into inorganic uncombustible waste. It results in reduction of size of waste.

• It is used to management of waste which is either recyclable or disposed in

land fills.

• Types of incinerators :-

3 types of incinerators are

1. Double Chamber pyrolytic incinerator
2. Single chamber pyrolytic incinerator.
3. Rotator kilns.

209: Smoked tobacco :-

• Various types of smoked tobacco are

- Cutka

- Pan

- Pan masala

- Tobacco with - Arca nut. etc.

• Smoked tobacco mainly consists of chewable tobacco

• It is major cause of oral cancer.

• Persons who use this type of tobacco are drivers and workers.

• Effects include many oral diseases & mainly

1. Oral Cancer

2. DMF

3. Pre malignant conditions like leukoplakia etc.

119: Comprehension :-

• It is one of the major principle of health education.

- It mainly deals with comprehension capability of people.
- When educating the people, health educator should come to the level of ^{comprehension of} people to explain something.

For example:

Don't eat cariogenic food

The above sentence is understood only by some people, but majority of people doesn't understand it.

To explain those people Dentist / health educator must say sentences like "Don't eat sticky food as don't eat high sugar containing food items". "Eat high fibrous food like vegetables etc".

12A: Ergonomics

- Ergonomics is defined as study of people in their working environment and use application of this studies in improving the working conditions and efficiency.

Usage of ergonomics in Dentistry:

- Dentists will assume more straining position in treatment of patients.

- He is likely to get back pain, PNS disorders and carpal tunnel syndrome.

- So by using ergonomically designed equipment will reduce these complications and improve dentist efficiency in treating patients.

13A: Confidentiality :-

- Confidentiality is the major ethical principle.
- It deals with Doctor - Patient relationship.
- Patient will tell doctor about his or her problems to ailing doctor will keep it confidentially.
- If the doctor does not keep this confidentially, it results in breaching Doctor Patient trust and is ethically not acceptable.
- Doctor - Patient trust must be necessary in maintaining relationship.

15A: Chlorhexidine :-

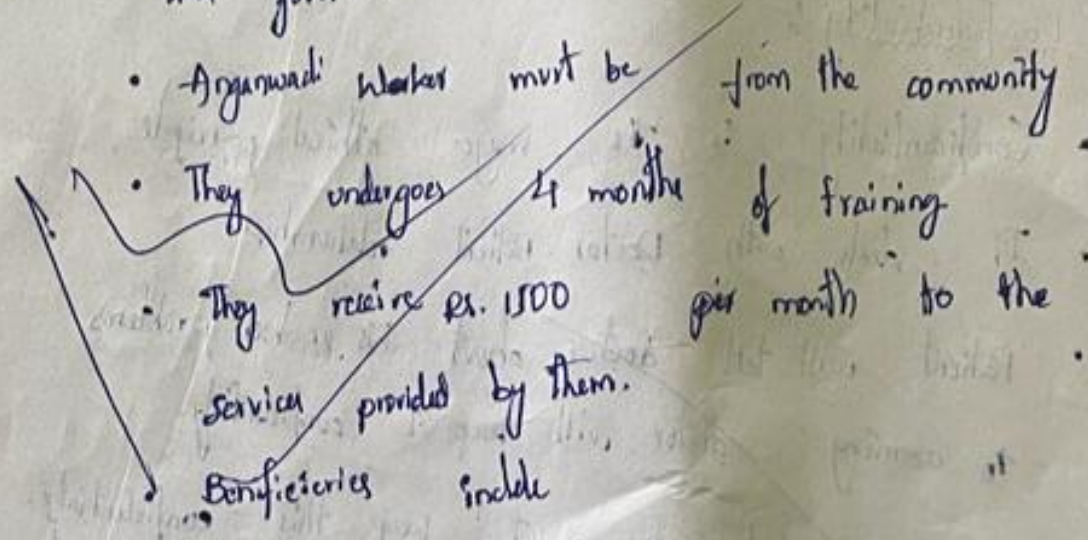
- Chlorhexidine is the antimicrobial agent used as antiplaque agent.

- It is used in Full mouth disinfection.
- It is used in RCT procedure.
- It is used as mouthwash.

- It is commercially available as liquid and gel.
- It is a chemical also in plaque control methods.

16A: Anganwadi Worker ?

- They come under ICDS programme.
- They act as first contact between community and government.
- Anganwadi worker must be from the community.



1. Pregnant women
2. Adolescent girls
3. children below 5 years of age etc.

1A: Pit and Fissure Sealants ?

Contents

- Definitions
 - Pit
 - Fissure
 - Pit and fissure sealants
- Classifications
 - Pit and fissure
 - Pit and fissure sealants
- Indications

- Contraindications
- Armamentarium
- Procedure
- Conclusion
- References

* Definitions :-

1. Pit : A pin point depression at the junction of developmental grooves or at the end of developmental grooves
2. Fissure : A cleft in between two adjacent cusp of teeth
3. Pit & fissure sealant : Pit and fissure sealant is material that is introduced into pits and fissures of caries susceptible teeth so as to form a micromechanically bonded protective layer which prevents caries causing bacteria from getting Nutrition

* Classification :-

1. Pits and fissures : They are classified into

1. U

2. V

3. IK

4. Inverted Y

2. DFT and resin sealants :-

i. Based on generation :-

a. First generation - UV light cured
ex: NovaLite

b. Second generation - Chemical cured
ex: Heliobond

c. Third generation - Light cured
ex: Conise white

d. Fourth generation - Fluoride releasing
Est. Filp dent.

ii. Based on filling material :-

a. Filled;

b. Unfilled

iii. Based on colour :-

a. Clear

- not visible in subsequent visit

b. Tinted or opaque - Able to differentiate.

c. Colored

- easy to differentiate

iv. Based on curing :-

a. light cured

b. Chemical cured

• Indications :-

- Deep retentive pits and fissures
- Not clinically visible caries
- Patients request.
- Below age of 14 years. etc.

• Contraindications :-

- Unable cleanable pit and fissures
- Caries affected teeth.
- Radiographically visible caries etc

• Procedure in Sealant Application :-

Before going to procedure necessary instruments are taken.

• Instrumentarium :-

- Mouth mirror
- Probe
- Cotton roll and pellet
- Rubber dam.
- Acid etchant
- Sealant
- Articulating paper.

Carvers

- Attriter and bur

Procedure :-

Selection of tooth

↓
Isolation of tooth with rubber dam

↓
Widening the pit and fissure with using bur

↓
Cleaning the tooth surface with wet cotton pellet.

↓
Dry the tooth surface

↓
Acid etching a white frosty appearance is observed.

↓
Clean and dry the tooth surface

↓
Placement of sealant

↓
U.V light is used to cure.

↓
After curing check for bit and occlusion using articulating paper

↓
If any excen is there remove it

↓
Recheck the occlusion and patient.

Give instructions to the patient.

Conclusion :- It is better to prevent the disease than to treat it. Pit and fissure sealant is a preventive procedure in treatment of dental caries.

References :-

Soben Peter. Textbook of ^{Essential of} Preventive and Public Health Dentistry. Chapter. Pit and fissure sealant.

SA :- Epidemiology :-

Contents :-

- Introduction
- Definition
- Classification of Epidemiological methods
- RCT
- Conclusion
- Reference

Introduction :-

Epidemiology is derived from the Greek

words

Epi - upon
 demo - People
 logy - study

Epidemiology does not only study the disease but helps in prevent controlling them.

Definition :

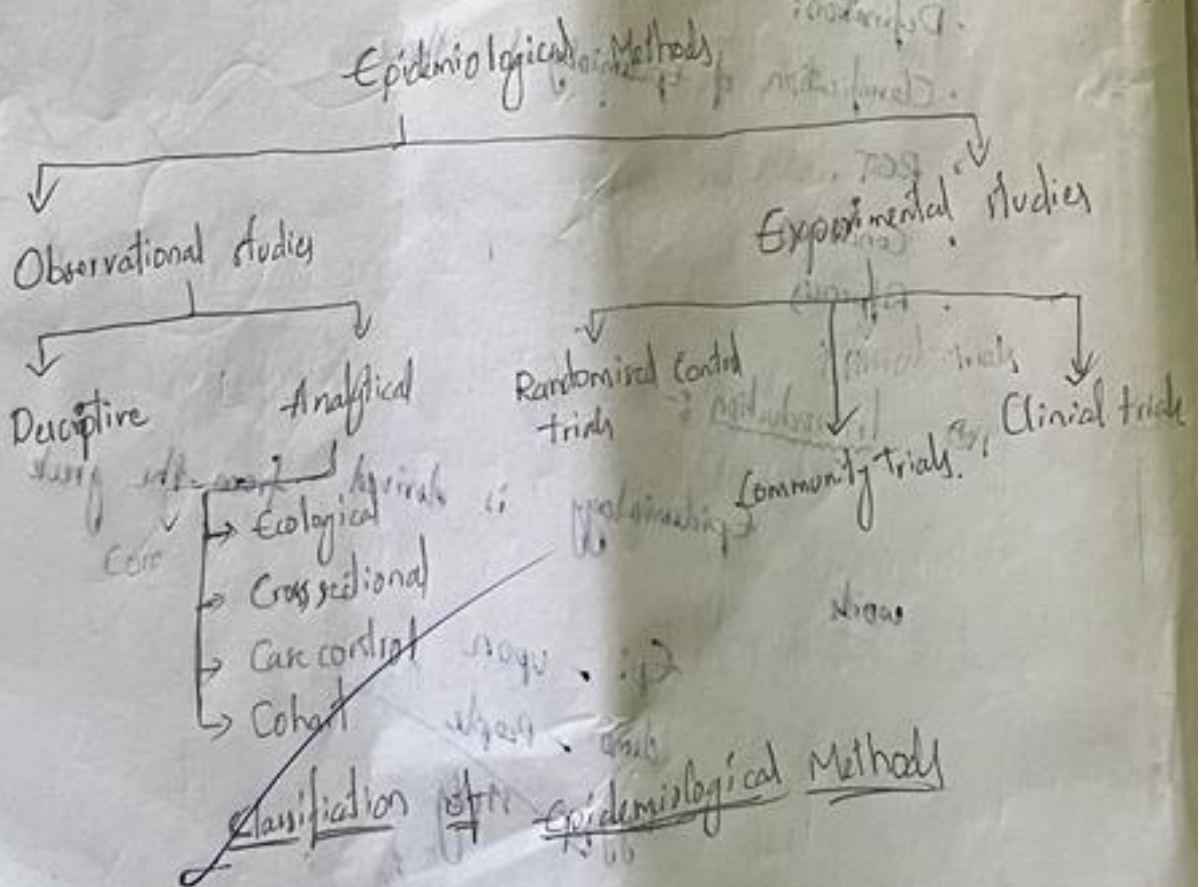
Epidemiology is defined as study of distribution and determinants of health related states or events in a specified population and application of this study to control of the health problems.

- John M. Last (1988).

Classification of Epidemiological Methods

Epidemiological methods are mainly classified

- into
1. Observational Studies
 2. Experimental Studies



* Randomized Controlled Trials :-

- It is a part of experimental epidemiology.
- It gives scientific explanation to etiological hypothesis.

- Steps in Randomized Controlled Trials :-

1. Drawing of Protocol
2. Selection of cases and reference groups
3. Randomization
4. Manipulation
5. Follow up.
6. Analysis.

1. Drawing of Protocol :-

- Drawing of protocol is the first and foremost step.
- Defining objectives is done.
- In it, a necessary outline of the plan, is formulated.

2. Selection of Cases and reference groups :-

- Case and reference group are selected from the population.
- Cases are the individuals with illness.
- Reference groups are healthy individuals.
- Case are the actual experimental group of population.

3. Randomization :-

- The cases and referenc are selected from the group randomly from respective groups.
- It gives equal oppor^t opportunities to all.

4. Manipulation :-

- The experimental material or substance given to cases and referenc are not given same.
- It eliminates bias.

5. Follow up :-

- After giving experimental material, follow

up is necessary

- Data is collected in these visits

6. Analysis :-

- After collecting the data analysis is done to check whether the hypothesis considered is true or not.

* Advantages :-

- Give accurate results.
- Bias is eliminated used Blinding Methods
- Risks are lowered.

Disadvantages:

- Takes long period of time
- Expensive etc.

Conclusion:

- RCT provides necessary scientific proofs to test the etiological hypothesis.

References:

Soban Peter. Text book of ^{Essentials of} Preventive and Public Health Dentistry

Chapter: General epidemiology

4A:

School Dental Nurse:

Definition:

School Dental Nurse is a operating dental auxiliary who is permitted to diagnose a dental disease and to plan and carry out certain specific preventive and treatment measure including some operative procedures in treatment of dental caries and periodontal diseases in a group of people usually school children.

Duties of School Dental Nurse:

- Oral Examinations

- Oral Prophylaxis
- Topical fluoride application
- Advice on dietary fluoride supplements
- Administration of local anesthesia
- Extraction of primary tooth
- Preparation of cavities and restoring them in both primary and permanent tooth
- Education on brushing methods and oral hygiene
- Conducting parent-teacher meeting and educating them
- Referral to private clinicians for complicated treatments include permanent tooth extraction and orthodontic treatment

SA: Russell's Periodontal Index :-

- Russell's periodontal index was introduced in the year 1964 by Russell A.L.
- It is a full mouth index.

Principle :-

- All teeth present are examined
- Gingiva surrounding the teeth is checked for inflammation and pocket formation.

ROLL No. 03. A. Pranay Kumar

Instruments used :-

- Mouth mirror
- No. 23 Explorer

Criteria :-

Clinical Condition

Score

① Negative :- There is neither overt inflammation or loss of function.

0

② Mild gingivitis :- There is overt inflammation but not circumfering the tooth. There is no attachment loss.

1

③ Gingivitis :- Overt inflammation circumfering the tooth but there is no attachment loss.

2

④ Only when radiograph is available

4

⑤ Gingivitis with pocket formations

6

There is attachment loss and pocket formations but the function is not disturbed. Tooth is firm.

⑥ Periodontitis with advanced destruction

8

• Tooth is mobile, depressible in the socket and loss of function.

• Calculation :-

$$\text{Randy Index} = \frac{\text{Sum of individual scores}}{\text{Total No. of tooth examined}}$$

• Interpretation :-

Clinical condition	Score
• Normal	0 - 0.02
• Gingivitis	0.02 - 0.9
• Beginning of dentative disease	1 - 1.9
• Established dentative disease	2 - 2.9
• Terminal disease	3 - 3

6A:- National Pathfinder Survey :-

• It is conducted in several age groups.

• A minimum of 3 age groups are necessary.

• Index age and age groups :-

• 5 years

• 12 years

• 18 years

• 35 - 44 years

• 65 - 74 years.

1. 5 years :-

- This the age group in which the primary teeth are completely erupted.
- This age group is selected to know prevalence of dental caries and other problems in primary dentition.

2. 12 years :-

- This the age where all permanent teeth are erupted except 3 molars.
- It is the basic age group.

3. 15 years :-

- By this age permanent teeth have exposed to oral cavity for 3 years.

- In this age group caries and other diseases are much appreciated than 12 years.

4. 35-44 years :-

- In this age group the people are of working group.

- It is selected to know periodontal status and dental caries prevalence.

5. 65-74 years :-

- This group consists of old age people.
- It is selected to know periodontal status.

ART :-

- Atraumatic Restorative treatment
- It is mainly used in backward areas where there is no electricity

Principles :-

- Removing caries both dentine using hand instruments only
- Using adhesive material as restorative material.

Indications :-

- Occlusal caries
- Caries not involving proximal surface
- No pain
- No swellings
- No cysts or tumours etc

Contraindications :-

- Proximal caries
- Swellings, cyst tumours are present
- Pulpal involvement etc

Advantages :-

- Less expensive
- Easy to perform
- No expensive equipment is not need.
- No electricity
- Less time consuming.

Disadvantages :-

- GIC restoration will not last more than 2 years
- hand fatigue
- GIC is less resistance to wear and has low strength. etc.

Procedure :-

Selection and isolation of teeth



widening of cavity using enamel hatchet



Removing the carious teeth using spoon excavator.



cleaning with cotton pellet.



If necessary CaOH paste is used



Mix the GIC under manufacturers rule



Place the liquid on the surface



Place the GIC in the cavity



Used gloved fingers smeared with petrolatum
press the surface with firm pressure

3 Evaluate bite and occlusion

↓
If there is over exposure of corona

↓
Recheck bite and occlusion

↓
Aristolam gelly is applied again

↓
Ask the patient not to bite for at least 30 min

Q41 Vipeholm study?

- It conducted in 436 adult individuals
- Time period is 5 years
- It is done in vipeholm house
- The inmates are divided into

1. Control group

6. Experimental groups

Control group?

- This group consists of 47 men
- They are given normal diet.

Experimental groups

- There are 6 experimental groups in vipeholm study

They are

- ① Sucrose
- ② Bread
- ③ Chocolate
- ④ Caramel
- ⑤ 8-toffee
- ⑥ 24-toffee

① Sucrose group

- They are given sucrose dissolved in water
- There is no significant rise in dental caries

② Bread group

- They are given sweet bread two times a day
- The last 2 years it is increased to 4 per day
- There is significant increase in last 2 years

③ Chocolate

- They are given soft chocolates ~~in between~~ at time of meals
- In last 2 years they are given in b/w the meals.
- There is significant increase in dental caries present in last 2 years

① Control group 2

- They are given ^{control} ^{in the} ^{trial}
- There is significant ^{rise in} ^{debt} ^{over} ^{period}

② 1 coffee 2

- They are given 1 coffee per day
- There is significant ^{rise in} ^{debt} ^{over} ^{period}

③ 2 coffee 2

- They are given 2 coffee per day
- There is significant ^{rise in} ^{debt} ^{over} ^{period}

Interpretation

MAMATA DENTAL COLLEGE - KHAMMAM.

Name of the Student : A. NOKELITHA

Year of Study : IV B03

Roll Number : 1802103002

Subject : public health dentistry

100
70

[Signature]
Dean & Principal
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1A.

Comprehension:

- It is one of the principles of health
- It is a process in which the patient is educated at their level of understanding.
- The words used should be simple but not complicated.

Example:

patient should not be advised by saying "don't consume food which is cariogenic." but should be told as "don't take sweet and sticky foods which adhere to the tooth surface and to take raw and fresh vegetables which are also healthy."

13A.

Confidentiality:

- The patient's details and disease related details should not be discussed with others.
- patient's privacy should be taken into consideration.
- discussing the patient's privacy matters with people other than the supporting staff should not be done.
- patient may feel depressed to share their problem to others.
- so, the privacy should be maintained.

Principles of primary health care

1. Equitable distribution: equal ^{health} care should be given to the people irrespective of status, region etc.

2. Community participation: every individual should be motivated to show interest in knowing the health related issues and prevention of diseases.

3. Intersectorial coordination: Many sectors which are present should support each other so that the care can be given eventually.

4. Appropriate Technology: Advanced technology and equipments help in proving the health care in a faster way.

A.

Chlorhexidine:

- It is a chemical plaque control Agent.
- It is used in form of gel and mouth washer.
- Mouthwasher consists of 0.2% of chlorhexidine.

Advantages

- prevents the ^{action} of bacteria and microorganisms in the oral cavity.
- reduces the Infections.
- helps in maintaining hygienic conditions in mouth.

disadvantages:

- stains the teeth in brown colour in long usage.
- may cause gingival irritation.

16A.

Anganwadi worker:

- Is a member of Integrated child development scheme, service.
- They are permitted to carry out programs involving nutrition, primary education, health in children.
- They take measure of health and sanitation in Adolescent girls.
- They are under the guidance of Mukhya sevikar and guide/ ASTHA workers.

1 anganwadi worker for 1000 people.

Duties of Anganwadi worker:

- nutrition and primary education for children less than 6 years.
- act conducting activities for children under 6 years for their development.
- Educating Sanitation in Adolescent girls.

17A.

Tools of Dental Public Health:

1. Epidemiology
2. Biostatistics
3. Social sciences
4. preventive dentistry
5. principles of administration.

- Epidemiology: It studies about the disease and causing factors.
- Biostatistics: It is analyzing and interpretation of the collected data.
- social sciences: appropriate measures taken from the community.
- preventive dentistry: preventing the further destruction of sound or

- principles of administration: Ruler and the objectives should be followed correctly.

18A. UNICEF - United Nations International Children's Educational Emergency Fund:

- It was given by General Assembly.
- It has head quarters at New York
- Other 8 region offices are present.

Functions:

- It supports the beneficially schemes and activities involving child welfare.
- also supports women empowerment.
- It fights for the primary education and nutrient food supply for children, Mother and child welfare programs.
- Breast feeding, Family planning methods etc are also taken care.

19A. Incineration:

- It is defined as dry oxidation procedure which converts combustible organic material into inorganic incombustible material thus reducing the weight and volume of the waste.

Types of Incinerators:

1. Double chambered pyrolytic incinerator.
 2. Single chambered furnace static grate.
 3. Rotary kiln heat device.
- Single chambered furnace static grate is used only when double chamber is not available.

20A. Smokeless tobacco:

- It can be used as particles or leaves.
- The tobacco is not lighted but used to chew (or) kept in specific areas of in the area of buccal mucosa and teeth.
- It is used equally by male and female in backward areas.
- These also leads to the development of oral cancers in chronic users.

4A. School dental nurses:

Is defined as an "operating dental Auxiliary who is permitted to diagnose dental caries and to plan and carry out, specified preventive and treatment measures including operating procedures in treatment of dental caries and periodontal diseases in a specified group of populati people usually school children."

- They are permitted to take preventive measures in school children.

Functions (duties) of school dental nurse:

1. Examination of oral cavity
2. oral prophylaxis.
3. Topical Fluoride application.
4. Food and dietary suppliments.
5. Administration of local anaesthesia.
6. cavity preparation and restorations.

7. Extraction of primary teeth.
8. pulpcapping.
9. Educating the staff and parents regarding the oral health.
10. Referring the patient with major problems to get checked in hospital.
Eg: Extraction of permanent teeth
orthodontic treatment.

5A. Russell's periodontal Index:

contents:

- Introduction
- Instruments used
- Methods.
- criteria
- calculation of Index
- Interpretation.

Introduction: - It is given by Russell in year 1956.

- Entire oral cavity is examined in this Index.

Instruments used:

- Mouth mirror
- probe.

Methods:

- All the teeth present in the oral cavity are examined.
- Area around tooth with the adjacent structures should be examined by moving the probe in success.

Criteria:

The scores are given as 0, 1, 2, 4, 6, 8 so as to measure the periodontal disease Index.

Score

Criteria

Radiographic Findings

0

Negative - No overt inflammation is observed.

Normal.

1

Mild Gingivitis -

Overt inflammation seen in free gingiva & circumscribed tissue does not show inflammation.

-

Gingivitis -

Inflammation seen around the tooth but there is no epithelial breakage seen.

-

4.

used ~~seen~~ only if radiographic findings seen.

Small resorption seen in the Alveolar Crest area.

6.

Gingivitis with attachment loss

- The breakage of epithelium is seen, but the tooth is fixed in the socket.

Horizontal loss is seen along with resorption. Alveolar crest is half of tooth.

8.

Advanced destruction of Masticatory function. -
Teeth are mobile, attachment

Horizontal bone loss more than of tooth length

Calculation of Index =

Sum of
All the scores of Individual
teeth

No. of teeth examined

Interpretation:

<u>Clinically visible</u>	<u>periodontal Index score</u>
clinically Normal	0.0 - 0.2
simple gingivitis	0.3 - 0.9
Beginning destruction of periodontal tissue.	1.0 - 1.9
Established destruction of periodontal tissue	2.0 - 2.9
Terminal disease	3.0 - 5.0

6A.

National pathfinder survey:

- It is survey which takes more than 3 age groups into consideration.
- It is used to know the information regarding of regio.

Age groups taken into consideration:

- 5 years
- 12 years
- 15 years
- 35 - 44 years.
- 65 - 74 years.

5 years:

- Early caries in the primary dentition can be studied.
- dietary and oral hygiene measures can be seen.

12 years:

- Most widely used age group for the survey.
- by this age all the permanent teeth (except III Molar) erupt into the oral cavity.
- The oral cavity condition at this age can be taken under consideration.

15 years:

- by this age permanent teeth have been exposed in the oral cavity for 3-9 years.
- Early diagnosis of periodontal disease in the adolescence can be done.

35-44 years:

- periodontal condition and oral environment conditions can be seen in adults.

65-74 years:

- conditions regarding age related can be seen.
- Mobile and drifted teeth and resorptive conditions can be seen.

Atraumatic restorative Treatment :

Contents :

- Introduction.
- Instruments used.
- procedure
- Advantages
- Disadvantages.

Introduction :

Definition. A traumatic restorative treatment is a procedure in which hand instruments are used alone and for removing dental caries and filling the cavity with adherent restorative material.

- No other electrical instruments are used in the process

Instruments used:

- Mouth mirror , probe
- Explores
- Tweezer
- Cotton pellets
- Cotton rolls
- Mixing spatula and slab.
- Enamel hatchet.
- Petrolatum Jelly.

procedure:

Selection and Isolation of tooth
 ↓
 drying the tooth surface by cotton pellets.
 ↓

↓
widening the cavity opening with enamel hatchet

↓
excavate the dental caries with small or medium sized spoon excavator.

↓
cleaning the margins of the cavity upto the occlusal level.

↓
drying the cavity with cotton pallets.

↓
Acid etching

↓
Mixing the glass ionomer cement according to manufactures instructions.

↓
Filling the cavity with the cement, some over filling is done

↓
gloved finger, with petrolatum jelly is gently pressed on the tooth surface

↓
bite is checked
Excess is removed with sharp carver

↓
bite is rechecked

↓
Removing the high points.

↓
Application of petrolatum jelly or varnish on the tooth surface.

↓
Advising patient not to bite on that surface for atleast half an hour.

Advantages:

- only hand instruments which are easily available are used.
- less cost.
- Fluoridated cement prevents the occurrence of secondary caries.
- easily performed.
- less part of tooth is excavated so that sound tooth is mostly preserved.

Disadvantages:

- last only for a short period like 2 years.
- wears off easily.
- Not accepted by all the members.
- Cannot be performed to severe dental caries.

9A Vipeholm study:

- It is given by Quartsten in 1954.
- done in Sweden
- 464 adults were taken in the study
- conducted for 5 years.

Food taken in study are:

1. Bread
2. Sucrose
3. chocolate
4. 8 Toffee
5. 24 Toffe.
6. Carbohydrate.

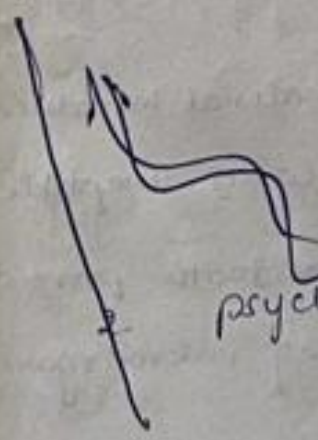
- various experiments are done by given specific food to specific group of people.
- some food are given prevented in group of people to see the evidence of the disease.
- strictly follow diet is given for the sake of study.
- After the study the food related resulted in the most dental caries and less dental caries are classified.

10A. changing concepts of health:

1. physiological health ✓
2. psychological health ✓
3. Environmental health ✓
4. social health ✓

1. physiological health:

- The person is considered healthy if he is able to perform his functions by himself with out depending on others.



2. psychological health:

- person with stress and other neurologic problems are not considered health as there may be fluctuations in the health issue.

Environmental health:

- surrounding environment like periodical and seasonal changes may lead to the health of the individual.

Social health:

- If the person is aware of the do and don't of the society is considered normal.

- active participation in the community is required.

Pit and fissure sealants:

Contents:

definition

classification

steps

Types

Advantages. Indications

disadvantages Contraindications

Definition:

pit and fissure sealant is a material introduced into the occlusal pits and fissures of caries susceptible tooth, which forms a microlayer covered over tooth preventing the access to caries producing microorganisms.

Classification of pit and fissure:

1. I-type
2. U-type

3. V-type
4. IK-type
5. Inverted Y-type.

Steps of sealant application:

1. Tray set-up - required tray is taken for application of sealant. like instrument etc.
2. Isolation of tooth - tooth is made free from contamination.
3. Tooth preparation - The surface is cleaned and the area is prepared for application of sealant.
4. Acid etching - It is done to make the surface get more retention.
5. Curing of tooth - light curing is done.
5. surface cleaning - cleaning and drying of tooth is done.
6. Sealant application - sealant is filled.
7. curing is done - light curing is done.
8. Reevaluation of occlusion - high points etc are checked.

Types of pit and fissure sealants:

- Based on Generation:

- 1st generation - UV light ~~Eg~~
- 2nd generation - self curing Eg: Concise sealant
- 3rd generation - visible light Eg: Heliobond
- 4th generation - Fluoride application Eg: Pulpdent

Advantages:
Indications:

- They are used in presence of pits and fissures.
- where there are no deep dental caries.
- patients opinion.
- where is no need of restoration.

contraindications:

- where there are deep dental caries.
- highly damaged tooth structure.

2A.

Epidemiology:

contents:

Definition
Components
classification

Steps.

Definition:

Epidemiology is defined as study of distribution and determinants of health related states (or) event in a specified group of population and application of this study to the ^{control} prevention of health problems.

- John. M. Last (1988)

components:

Three components of epidemiology are:

1. disease of prevention.
2. disease of distribution.

Classification:

Epidemiology is classified into:

- Observation epidemiology
- Experimental epidemiology.

Observational epidemiology:

- cross sectional study
- longitudinal study.
- descriptive study.
- Analytical study.

Experimental epidemiology:

- Randomized controlled trial.
- Field trial.

Randomized controlled trial:

Steps:

1. Drawing a turbulence
2. selection of reference and study case
3. Randomisation.
4. Manipulation and Interpretation.
5. Follow-up
6. Analysis.

1. Drawing the turbulence:

- A specific issue to be examined is to be taken.
- The guidelines and requirements are to be considered.

2. selection of reference and experimental study:

- The accurate information should be collected.
- It is compared to the experimental study to notice the differences or changes.

3. Randomisation:



- Randomly the cases or sample to be experimented are taken.
- The experiment is conducted randomly.

4. Manipulation and Interpretation:

- The result to be obtained is recorded and any alterations needed should be done in the procedure or experiment.

5²

Follow-up:

The acquired data is checked for the accuracy and bias and proper ~~future~~ experimental study is taken forward.

6

6. Analysis,

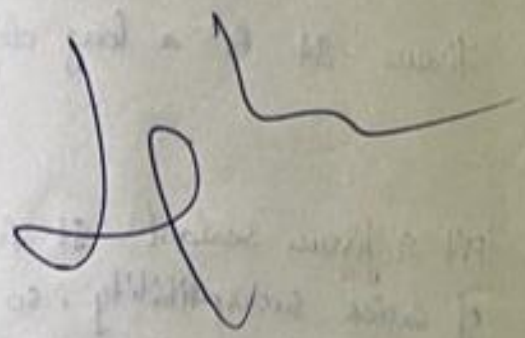
- The outcome of the experiment is collected.
- The assessment is done based on the outcome.
- The accurate result is obtained.

2. Epidemiology [John M. Last 1988]

Epidemiology is defined as the "study of distribution, determinants of health related states or events in a specified population and application of this study to control health problems."

Principles -

1. Exact observation
2. Correct interpretation
3. Rationale explanation
4. Scientific Analysis development



Classification

1. Descriptive epidemiology
2. Analytical epidemiology
 - case control study
 - cohort study
3. Experimental epidemiology
 - Randomized controlled trial
 - Non Randomized controlled trial

Randomized controlled Trial

It is a experimental study trials

Steps

1. Drawing up of a protocol
2. Selection of reference or experimental studies
3. Manipulation Randomization
4. Manipulation
5. Follow up
6. Analysis or interpretation.

- It is of 2 types
- 1. Clinical trial
 - 2. Preventive trial
- Prophylactic
Therapeutic

1. Definitions -

Pit - It is a small pin point depressions present on the occlusal surface of teeth.

Fissure - It is a long clefts present between the grooves.

Pit & fissure sealant - It is a material introduced in pits & fissures of caries susceptibility, so as to form a micromechanically bonded protective layer that prevents caries causing bacteria from getting nutrition.

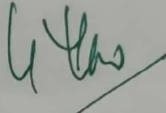
Classification of pit & fissure sealant.

1. Based on generations
 - 1st generation - visible light
 - 2nd generation
 - 3rd generation
 - 4th generation
2. Based on filled surface
 - Filled surface
 - Unfilled surface
3. Based on colour
 - clear
 - Tinted/opaque
 - Colored.

DEPARTMENT OF PROSTHODONTICS AND CROWN & BRIDGE
RE-EXAM, IV BDS

Answer the following questions: 30M

1. Write about selective pressure impression theory. 4M
2. Salient features of centric jaw relation. 4M
3. Kennedy's classification. 4M
4. Applegate's rules to govern Kennedy's classification. 4M
5. Posterior palatal seal area. 4M
6. Define Retention and write in detail about factors affecting denture retention. 10M


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19
30

[Signature]

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1. Selective Pressure Theory:

- It was proposed by Boucher.
- He combined merits of the mucostatic and mucocompressive
- Based on anatomical landmarks and histology of supporting tissues.
- A custom special tray, is designed contacts the tissues in stress bearing and supporting areas.
- A layer of wax is adapted on area that are to be relieved.
 - maxilla: Incisive papilla & mid palatine raphe
 - Mandible: crest of residual alveolar ridge, mental foramen & genial tubercle.
- Impression made under finger pressure, made with low viscosity impression materials such as ZnOE impression paste or light body elastomer.
- Medium bodied elastomer (monophase), uniform layer of space should be added with relief wax.

2. Significance features of Centric Relation:

- Proprioceptive impulses, guide the mandible movement
- In edentulous patient, Centric position acts as proprioceptive center to guide the mandibular movement.
- 1. It is learnable, repeatable and recordable position which remains constant.
- 2. Definite learned position, move to any eccentric position (go to centric relation) advancing the target eccentric position acts as a center from all movement.
- 3. Mandible move from one eccentric position to another, centric relation before advancing to target eccentric position.
- 4. Functional movements, chewing & swallowing are performed in this position.
- 5. Muscles that act on TMJ, easy to move mandible to centric position.

6. Cast should be moulded in centric relation; all the movements can be made or stimulated into articulator.
7. Help in adjusting condylar guidance in articulator to produce balanced occlusion.
8. definite entity, reference point in establishing centric occlusion.

3. Kennedy's classification

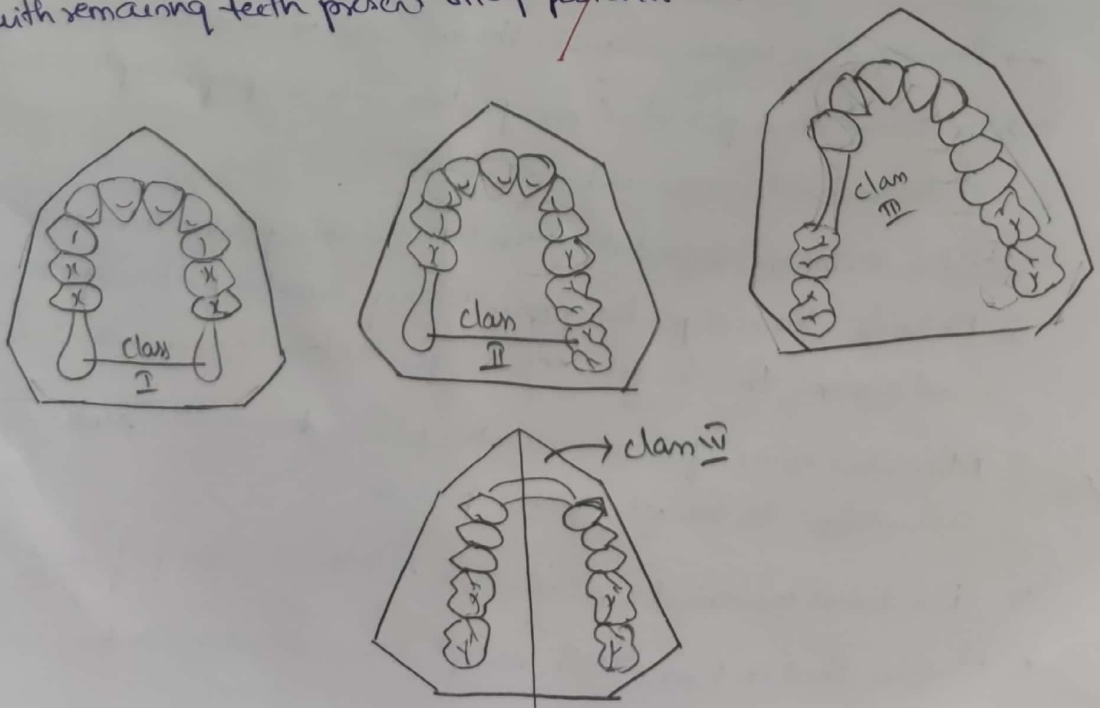
Dr. Edward Kennedy, 1923 classified partially edentulous arches.

Class I: Bilateral edentulous area located posterior to the remaining natural teeth, there are 2 edentulous spaces located in posterior region without any teeth posterior to it.

Class II: Unilateral edentulous area located posterior to the remaining natural teeth, i.e., there is a single edentulous space located in posterior region without any teeth posterior to it.

Class III: Unilateral edentulous area with natural teeth anterior and posterior to it.

Class IV: Single, bilateral edentulous area located anterior to the remaining natural teeth. This is single edentulous area, which crosses the midline of arch, with remaining teeth present only posterior to it.



Applegate's Rules:

Rule 1: Classification should follow rather than precede extractions that might alter the original classification.

Rule 2: If the 3rd molar is missing and not to be replaced, it is not considered in the classification.

Rule 3: If the 3rd molar is present, is to be used as an abutment; it is considered in the classification.

Rule 4: If the second molar is missing and is not to be replaced, it is not considered in the classification.

Rule 5: The most posterior edentulous area or areas always determine the classification.

Rule 6: Edentulous areas other than those, which determine the classification are referred to as modification spaces & designated by their number.

Rule 7: Extent of modification is not considered, only the number of additional edentulous area is considered, the no. of teeth missing in the modification spaces are considered, only the number of additional edentulous spaces are considered.

Rule 8: No modification areas in class IV.

Posterior Palatal Seal Area

The soft tissues at or along the junction of the hard and soft palates on which pressure within the physiological limits of the tissues can be applied by a denture to aid in the retention of denture.

→ This is the area of soft palate that contacts the posterior surface of the denture base

→ Area b/w anterior and posterior vibrating line

Functions

1. Aids in retention by maintaining constant contact with the soft tissue.
2. Reduces the tendency for gag reflex as it prevents the formation of gap b/w denture base and soft palate.
3. Prevent food accumulation.
4. Compensates for polymerization shrinkage.

Posterior palatal seal → Pterygomaxillary seal
→ post palatal seal.



1. Pterygomaxillary seal

This is the part of posterior palatal seal that extends across the hamulae notch and its extends 3 to 4mm anterolaterally to end in the mucogingival junction on posterior part of maxillary ridge.

- Hamulae notch, contains loose connective tissue and few fibers of Tensor Veli palatini muscle covered by a thin layer of mucous membrane.
- Rounded accurately during impression making.
- Posterior extend of denture in region should end in hamulae notch.

2. Post palatal Seal

It extends between the two maxillary tuberosities.

Recording

1. Posterior border of dentures should not be placed over mid-palatine raphe. or posterior nasal spine.
2. Palatine tonsils, posteriorly so it interferes with posterior palatal seal, then tonsils should be removed.

3. Position of fovea palatina, posterior border of the denture. It can extend 1-2mm across the fovea palatina.

4. Mid palatine fissure, posterior palatal seal should extend into it obtain a good peripheral seal.

6 Retention

That quality inherent in the prosthesis which resists the force of gravity, adhesiveness of foods, and the force associated with the opening of the jaws.

Factors that affect retention can be classified as:

1. Anatomical factors.

- Size of denture base area
- Quality of denture base area

2. Physiological factors.

- Salivary flow
- Salivary consistency
- Spinnbarkeit

3. Physical factors:

- Hall concept - Adhesion
- Cohesion
 - Gravity
 - Atmospheric pressure.

Tyson concept - peripheral seal.

4. Mechanical factors:

5. Muscular factors:

1. Anatomical Factors:

→ Size of the denture bearing area - Retention increases with increase in size of denture bearing area.

- Maxillary: 24cm^2 - Mandibular: 14cm^2 .

→ Quality of denture bearing area - displaceability of tissues influences the retention of the denture.

2. Physiological Factors:

Saliva: viscosity of saliva determines retention.

Thick andropy saliva gets accumulated b/w tissue surface of denture.

Average flow of saliva is 150 mL/min .

Mucins, stringiness of saliva which is called spinnbarkeit.

3. Physical Factors:

→ Adhesion.

→ Cohesion.

→ Interfacial surface tension.

→ Capillarity or capillary attraction.

→ Atmospheric pressure and peripheral seal.

Adhesion: The physical attraction of unlike molecules to one another.

↳ Role of saliva: saliva wets the tissue surface of denture, mucosa.

The amount of adhesion present is proportional to denture base area.

Cohesion: The physical attraction of like molecules for each other.

↳ forces act within thin film of saliva & is more cohesive than thick mucus saliva.

Interfacial Surface tension: The tension or resistance to separation possessed by the film of liquid b/w two well-adapted surface.

- Thin film of saliva tends to resist the displacing forces.
- major role in retention of maxillary dentures.
- Dependent on presence of air at margins of liquid and solid contact.

Stefan

Interfacial surface tension

$$F = \left[\frac{\frac{3}{2} \times 3.14 \times K_s^4}{H^3} \right] V$$

O'Brien and Ryge

- Adhesive action of thin film of saliva

$$F = \frac{2\pi\eta s^2}{4+H^2} + \frac{2K_s^2 \cos\theta}{H}$$

Schulze

force of retention

$$F = \frac{2\delta A}{H}$$

Cox - retentive force

$$F = \frac{2\delta A \cos\theta}{H}$$

Roddyhouse: atmospheric pressure + surface $F = \frac{3\pi\eta s^4}{4+H_1} + \frac{2\delta}{H}$

Maximum interfacial Surface-tension.

1. Saliva should be thin and even
2. Perfect adaptation
3. Denture base, cover large areas
4. good adhesive & cohesive force - enhance interfacial surface-tension.

Capillarity attraction:

Quality or state, because of surface tension causes elevation or depression of surface of liquid that is in contact within a solid.

Factor:

- closeness of adaptation
- Greater surface of denture bearing area
- thin film of saliva.

Peripheral seal: denture borders should rest on soft & resilient tissue.

- It is called the natural suction of a denture.

4. Mechanical forces:

- Undercuts
- Retentive springs
- Magnetic forces
- Dentures adhesive
- Suction chambers and suction disks.

a. Undercuts: unilateral undercuts aid in retention
bilateral undercuts will interfere with denture insertion & surgical condition.

b. Magnets for denture retention: Jaw implant magnets
- Reduced patient discomfort & good biocompatibility.

Physical: magnets attract iron

- magnetic field around them $N \rightarrow S$

- magnetosient in $N-S$.

- change in medium, change observed in magnetic pole & flux.

- Field strength = $\frac{\text{Force of attraction}}{\text{Repulsion}}$

Types of Magnet Systems: \rightarrow Conventional systems: Aluminium-Nickel-Cobalt
- Platinum-Cobalt-ferite.
 \downarrow
Rare earth magnets: small in size, \uparrow ed performance.

Properties: magnetic property:

- small magnets are sufficient
- innocuous magnets

coercivity property - resists demagnetization

Biocompatibility of magnet.

d. Denture adhesive: Available as creams or gels or powders.

↳ They should be coated on tissue surface before wearing denture.

e. Suction chambers and suction disks:

Suction chambers in maxillary dentures were used aid in retention.

- Negative pressure, which increases retention.

- Avoided, due to their potency for palatal hyperplasia

Physical factors:

Implants and Overdentures provide retention and stability to CD.

- Hader bar

- Dolbe bar

- Rothemann's clip

- Ball & stud

- O-ring

- Locator.

5. Muscular factors:

Muscles apply supplementary retentive forces on denture

- Balance b/w the force acting from buccal musculature and tongue. It is neutral zone.

→ Artificial teeth should be arranged in the neutral zone to achieve the best retention possible.

→ The occlusal plane should be parallel to residual ridge and divide the interarch space equally.

Other factors that affect retention.

→ Configuration of hard palate:

- patient with high palatal vault have narrow & steep posterior seal - compromise retention.

→ Polymerization shrinkage:

- Acrylic resin manufactured fluid wax technique have less volumetric shrinkage & better retention.

→ Denture base thickness:

- Thick and heavy maxillary dentures have poor retention.

LB
30

S. Sai Prasanna

Roll No: 11

1902103036.

Just

1. selective pressure theory:

- It was proposed by Boucha.
- He combined merits by of the multistatic and microcompressive theories.
- Based on anatomical landmarks and histology of supporting tissues.
- A custom special tray, is designed contact the tissues in stress bearing and supporting areas.
- A layer of wax is adapted to area that are to be relieved.
 - maxilla: incisive papilla and mid palatine sphae.
 - mandible: crest of residual alveolar ridge, mental foramen & genial tubercle.
- impression made under finger pressure, made with low viscosity impression materials such as ~~not~~ impression paste / light body elastomer.
- Medium bodied elastomer (mmphase), uniform layer of space should be added with self wax.

2. significance features of centric relation:

- proprioceptive impulses, guide the mandible movement.
- In edentulous patient, centric position acts as proprioceptive center to guide the mandibular movement.
- 1. It is learnable, repeatable and reproducible position which remains constant
- 2. Definite learned position, move to any eccentric position act as a centre from all movement.
- 3. It is learnable, mandible move from an eccentric position to another centric relation before advancing to target centric position.
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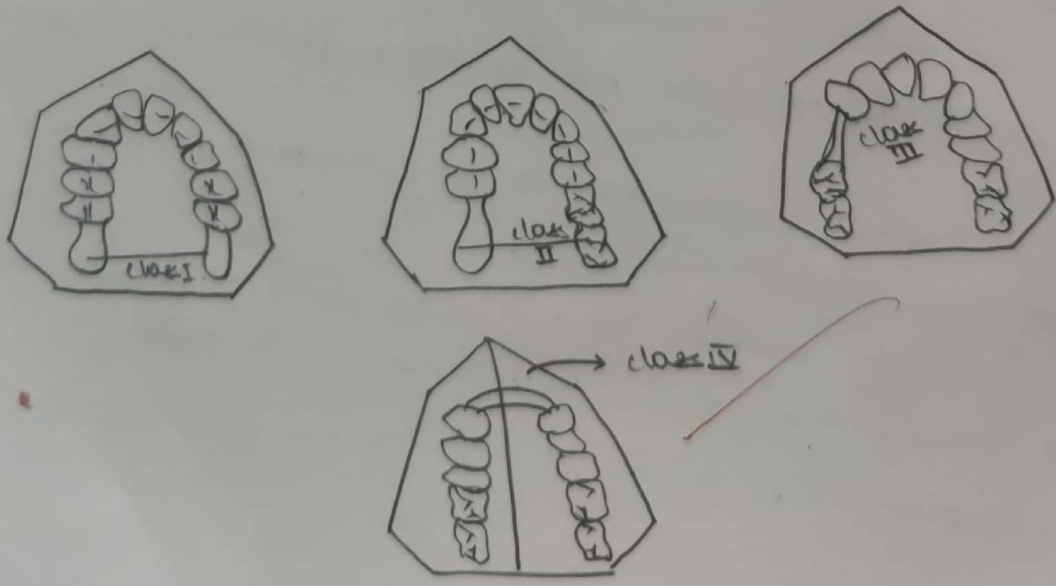
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→ This is the area of soft palate that contacts the posterior surface of the denture base.

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↳ post palatal seal.

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- quality of denture base area.

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- salivary flow.
 - salivary consistency
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 - Mandibular: 14 cm^2 .

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average flow of saliva is 150 ml/min .

muscle, stringiness of saliva which is called spinbarkeit.

3) physical factors:

- Adhesion.
- cohesion
- interfacial surface tension.
- capillary/capillary attraction.
- Atmospheric pressure & peripheral seal.

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Rare earth magnet - small in size, ↑ performance.

Properties: magnetic property.
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- in-house magnet.
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Biocompatibility of magnet.

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Muscle apply supplementary retentive forces on denture.
Balance b/w the force acting from buccal musculature & tongue.
It is neutral zone.

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→ Configuration of hard palate:

- pt where high palatal vaults have narrow & steep posterior seal - compromise retention.

→ Polymerization shrinkage:

- acrylic resin manufactured fluid work technique have less volumetric shrinkage & better retention.

DEPARTMENT OF ORAL PATHOLOGY AND MICROBIOLOGY

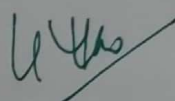
SUBJECT- ORAL PATHOLOGY, III BDS

SLIP TEST

6 x 5 = 30M

DATE: 29/08/2023

1. Developmental Disturbances affecting shape of teeth.
2. Adenoid Cystic Carcinoma.
3. Histopathology of Dentin caries.
4. Sequelae of Pulpitis.
5. Adenomatoid Odontogenic tumor.
6. Cellulitis.


**Dean & Principal
Mamata Dental College
Khammam - 507 002**

1. Developmental disturbance affecting the shape of teeth

Gemination (twinning)

Gemination is a developmental anomaly by a partial cleavage in a single tooth germ resulting in the formation of an anomalous tooth with two partially separated crowns and one root. It is therefore an abortive attempt at division of one tooth into two

The term twinning refers to the complete and equal division of a single tooth germ that result in the formation of one normal and one supernumerary tooth.

- It affects both deciduous as well as the Permanent dentition
- There is no sex predilection
- Geminated tooth often shows doubling of both the crown as well as the root
- Mostly affects the deciduous Mandibular incisors and Permanent Maxillary incisors

Problems in Gemination:-

- Tooth malposition
- Spacing of teeth
- Dental arch asymmetry
- Cosmetic problems
- Periodontal problems
- Increased caries susceptibility
- Disturbance in the eruption of adjacent teeth.

Treatment:-

Gemination produces some cosmetic disturbance, construction of esthetic crown or bridge may be necessary for cosmetic rehabilitation.

Fusion :- Fusion can be defined as the union of two adjacent normally separated tooth germs at the level of dentin during development.

→ Fusion results in one anomalous large tooth formation in place of two normal regular sized teeth and tooth have either a single enlarged root or two roots.

Causes:-

Hereditary cause

Trauma during development of teeth

Physical force or pressure causing contact between two adjacent tooth germs.

C/F:-

Both deciduous as well as permanent teeth can be affected in case of fusion,
More common in deciduous teeth.

→ Fusion can occur b/w two normal teeth or b/w one normal and one supernumerary tooth.

→ Both dentitions, the incisor teeth are more frequently affected.

Complete fusion → before the calcification of tooth has occurred.

Incomplete fusion → later stages of tooth development

→ Spacing / diastema formation, Crowding of teeth in the arch
- Esthetic problems, Periodontal complication

Treatment:-

Depending upon the extent of clinical problems,
fabrication of cosmetic crown or bridges

Concrescence:- Union of the roots of two/more adjoining completely formed teeth along the line of cementum is known as Concrescence.

→ which is limited only to the roots of the teeth, occurs due to deposition of cementum after the root formation of the involved teeth.

→ Traumatic injury
Crowding of teeth

Hypercementosis associated with chronic inflammation.

→ Loose interdental bone. - traumatic injury to the jaw.

C/F:- Concrescence represents → acquired defect and it can occur in both erupted and unerupted teeth.

→ No sex predilection

→ Union never takes place between the enamel, dentin or pulp. Except cementum

→ Permanent Maxillary Molars are more often affected than other teeth.

Dilaceration:-

Dilaceration is a developmental disturbance in the shape of tooth, it refers to a severe angulation or a sharp bend or curve in the root or crown of a formed tooth.

→ In dilacerations the bend in the tooth sometimes can be as stiff as 90° . When the bend is restricted only to the root portion of the tooth, the condition is known as flexion.

- C/F:- Dilaceration may involve any tooth belonging to either the deciduous as well as the permanent dentition
- The tooth typically looks "hook-shaped" due to the bending in the root
 - Since these teeth are more prone to fracture during removal.

Taurodontism:- (bull-like)

Taurodontism or bull like tooth is a peculiar morphoanatomical defect, in which the crown portion of the tooth is enlarged at the expense of its roots. The condition generally affects the multirrooted teeth and the involved teeth have larger crown and extremely pulp chamber

- Occurs due to failure of the epithelial root sheath of Hertwig.

C/F:- Affected tooth in taurodontism exhibits large crown with elongated pulp chamber and short rudimentary root.

- Affected tooth is usually rectangular in shape

Dens in Dente (Dens invaginatus)

Dens in dente refers to a folding or invagination on the surface of the tooth toward the pulp, which begins before the calcification of the tooth and eventually after calcification the defect produces a typical appearance of a "tooth within a root."

Types:- Coronal type → Crown portion of the tooth

Radicular type → root portion of the tooth.

C/F: - Mild form → characterized by deeply invaginated or accentuated lingual pit area.

Intermediate form → small, pear shaped invagination of enamel

Extreme form: - extends beyond the pulp chamber in the root (dilated odontomes)

Treatment: - Restoration of the defect is the best treatment
Extraction of the affected tooth - in severe cases.

Dens Evaginatus: -

Dens Evaginatus is a rare developmental anomaly of tooth, in which a focal area of the crown projects outward and give rise to a "globe shaped or nipple shaped" protuberance on the occlusal surface. The projected portion often appears as an extra cusp or tubercle.

C/F: -

Dens Evaginatus primarily affects the premolars and the affected tooth exhibits a globe shaped extra cusp or bump on the occlusal surface.

→ It may be either Unilaterally or bilaterally.

→ pulp exposure with pain, pulpitis, and other associated symptoms.

Treatment: -

Asymptomatic

Occlusal disharmony, minor reduction should be attempted.

Endodontic treatment of the tooth should be done

Talon cusp:-

Talon cusp is an anomalous projection from the lingual aspect of the Maxillary and Mandibular permanent incisors. A 'talon cusp' is the claw of a bird of prey and the name talon cusp has evolved - resembles "eagle's talon".

C/F:-

Asymptomatic

- Problems like poor esthetics, increased susceptibility to trauma, caries and occlusal disharmony.

→ Grinding of talon cusp - pulp exposure and pain

→ Lingual pits develop on either side of the talon cusp.

→ Rubinstein-Taybi Syndrome.

Treatments:-

lingual pits are present Restorative treatments to be done to prevent caries.

Enamel pearls:-

Enamel pearls are white, dome-shaped calcified projections of enamel, usually located at the junction areas of the molar teeth.

→ Maxillary molars are more frequently affected than any other teeth.

→ Supernumerary tooth

Peg-shaped laterals

~~Environmental Enamel hypoplasia~~

~~Dens invaginatus~~

~~Dens evaginatus~~

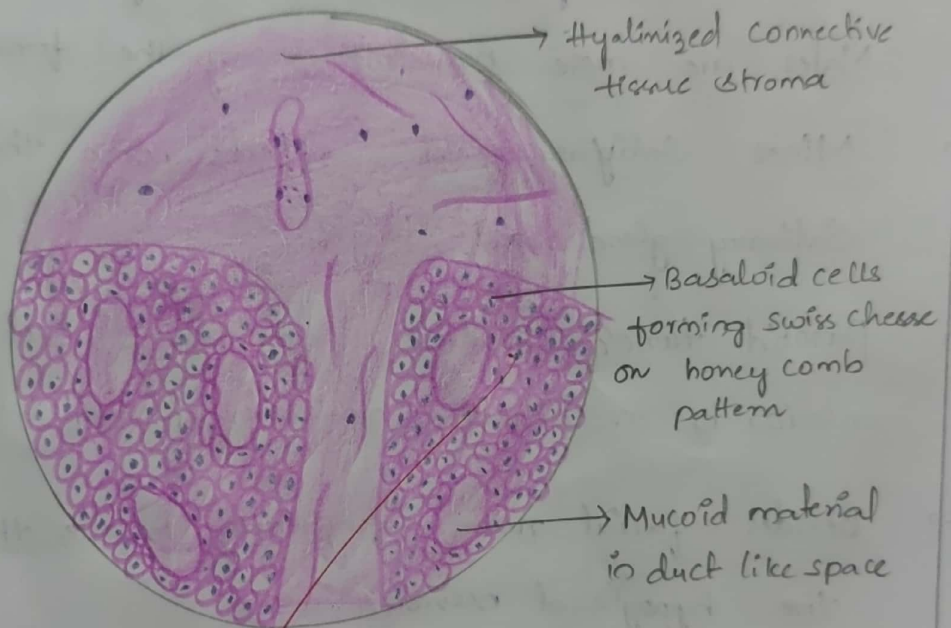
Ghost tooth.

Congenital syphilis

20. Adenoid Cystic Carcinoma (Cylindroma)

- It is a malignant neoplasm arising from the glandular epithelium of either major or minor salivary glands.
- It accounts for about 6% of all parotid tumor and 30% of minor salivary gland tumors.
- Tumor frequently occurs at the age of 50-70ys
- Males are more prevalent among the females.
- Minor salivary gland affects more than the major salivary gland and tongue
- Parotid tumor produce asymptomatic subcutaneous mass anterior to or below the external ear.
- Besides facial nerve frequently invade the lingual and the hypoglossal nerves.
- Pain is very common feature in the tumor and severe neurological signs like anesthesia, parathesia or palsy develops frequently.
- There is a fixation and induration of the tumor to the underlying structures along with local invasion.
- Submandibular gland tumors become quite large before patient notice it

→ palatal lesions accompanied by toothache (loosening of teeth), delayed healing of the socket in case tooth is extracted.



3 Histopathology of Dental Caries

The dental caries, histologically, presents five zones in the tissue

Zone 1:- (Normal Dentin)

This zone represents the innermost layer of the carious dentin and here the dentinal tubules appear normal.

- There is evidence of fatty degeneration of the Tomes process
- No crystals in the lumen of the tubules
- No bacteria in the tubules

Zone 2: (Subtransparent Dentin)

→ This is the zone of dentinal sclerosis and it is characterized by the deposition of very fine crystal structures within the dentinal tubules at the advancing front

→ Superficial layer shows areas of demineralization and damage of the odontoblastic processes.

- No bacteria in the tubules
- Capable of Remineralization

Zone 3 (Transparent Dentin)

→ zone appears transparent and this is because of the demineralization of dentin due to caries.

- It is softer than normal dentin
- Further loss of mineral ions from intertubular dentin
- Large crystals within the lumen

→ No bacteria in tubules

→ zone is capable of self-repair and remineralization

Zone 4: (Turbid dentin)

→ zone is called the "turbid dentin" and is marked by widening and distortion of the dentinal tubules

→ This zone cannot undergo self-repair or remineralization

→ Denaturation of collagen fibers also takes place

→ Must be removed before restorative treatment

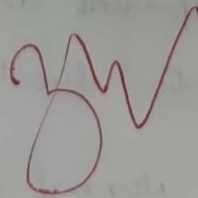
Zone 5: (infected dentin)

→ This is the outermost zone of the carious dentin and is characterized by complete destruction of the dentinal tubules.

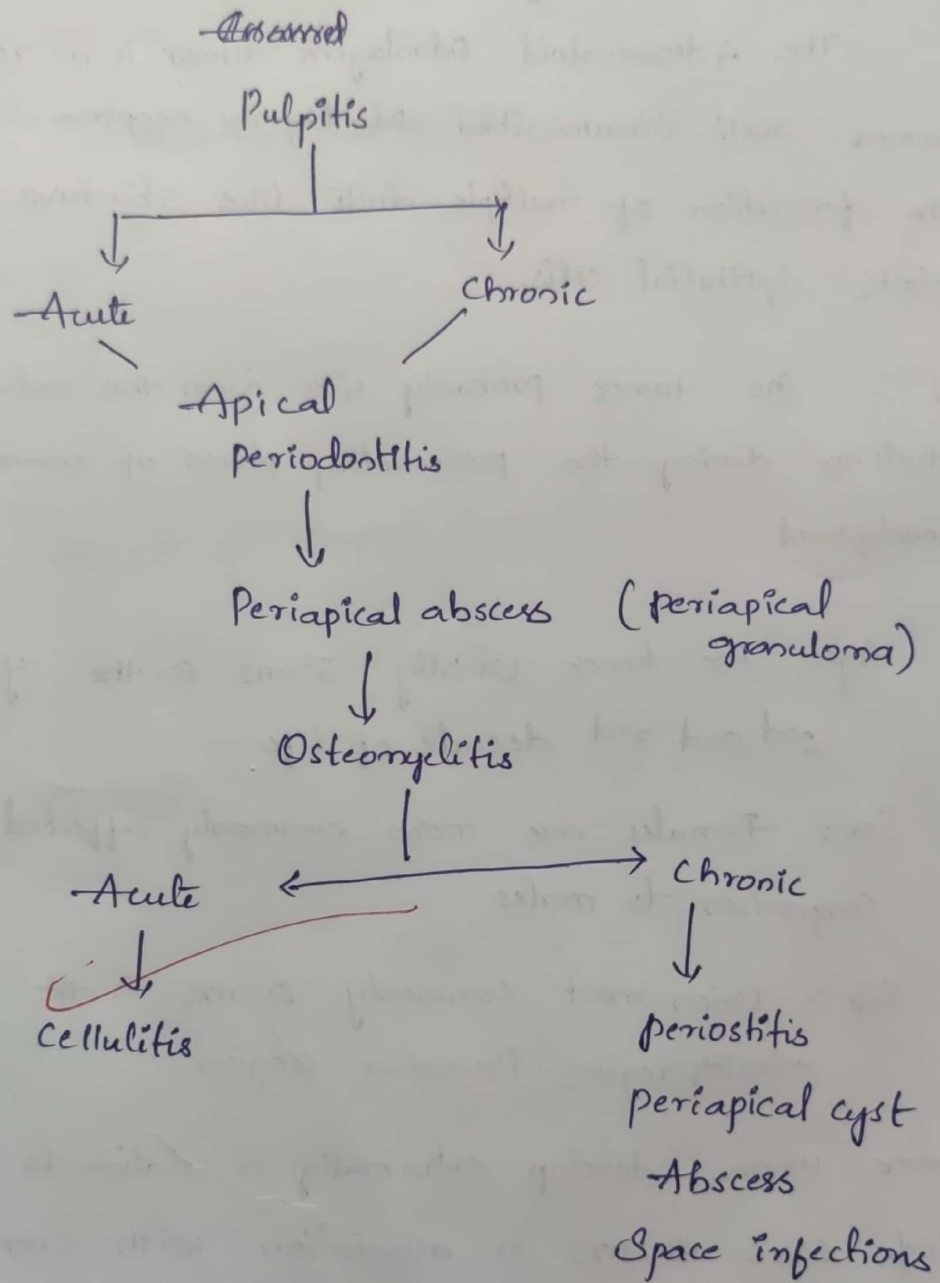
→ The expanded tubules also cause compression and bending of the adjacent tubules and eventually destroy them

→ Areas of decomposition of dentin, occur along the direction of the dentinal tubules called the "liquefaction foci of Miller"

→ Bacteria may no longer remain confined within the dentinal tubules and they invade and destroy the per- and intertubular dentin.



4. Sequale of pulpitis



3

5. Adenomatoid Odontogenic tumor

The Adenomatoid Odontogenic tumor is a relatively uncommon well circumscribed odontogenic neoplasm characterized by the formation of multiple ducts like structures by the neoplastic epithelial cells.

Origin:- The tumor probably arises from the reduced enamel epithelium during the presecretory phase of enamel organ development

C/F:-

Age: The tumor usually occurs in the younger aged 2nd and 3rd decade of life

Sex: Females are more commonly affected in comparison to males.

Site:- lesion most commonly occurs in the maxillary anterior region, Premolar region

Some lesions develop extraorally in relation to the gingiva

70% cases occurs in association with unerupted tooth.

→ The tumor usually presents as a slow enlarging small bony hard swelling in the maxillary anterior region

→ The lesion often causes elevation of the upper lip on the involved side.

→ Displacement of the regional teeth midline and expansion of the cortical bones are usually present.

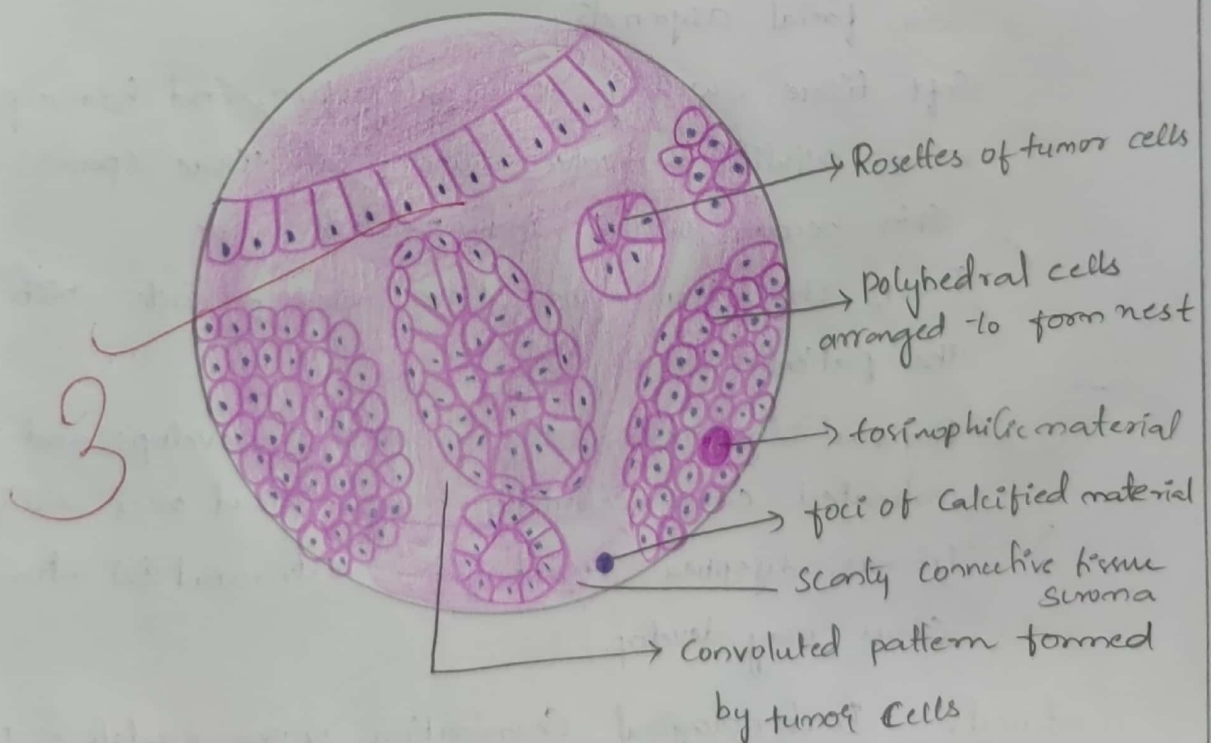
→ Snow-flake calcifications are seen.

Differential diagnosis:-

- Odontogenic cyst
- Globulomaxillary cyst
- lateral periodontal cyst
- Odontome
- Unicyclic ameloblastoma.
- Calcifying epithelial odontogenic tumor (CEOT)

Treatment:-

By Surgical enucleation



6. Cellulitis

Cellulitis is an acute edematous, purulent inflammatory process, which spreads diffusely through different tissue spaces of fascial planes.

→ Acute cellulitis - caused by some unusually virulent bacteria
- released by Group A streptococci

infection from the lower anterior teeth perforates

the lingual cortical plate of bone and moves into the superficial sublingual space and from there tracks backward.

→ Infection from lower molar teeth, after penetrating the lingual cortical plate spread either to the sublingual and submandibular space or into the parapharyngeal spaces.

CF:-

large, diffuse, painful swelling over the face or neck with facial asymmetry.

Soft tissue swelling is usually firm and brawny when cellulitis - involves superficial tissue spaces,

Skin becomes warm and purplish-red.

Fever, chill, leukocytosis, are often present, which make the patient slightly ill.

Regional lymphadenopathy frequently develops and in untreated cases cellulitis may spread over a wider area

Trismus, dyspnea, dysphagia, extraoral (or) intraoral sinus may develop.

Treatment:- Bacteriological Examination of the exudate or pus
Surgical drainage, antibiotics and elimination of the primary source of infection

Slip Test - Oral Pathology

1. Developmental disturbances affecting shape of teeth.

U. Sanyukta

The developmental disturbances affecting shape of teeth

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follows:

- i. Gemination, fusion and Concrescence
- ii. Accessory Cusps:
 - Cusp of Gubelli
 - Talon Cusp
 - Dens invaginatus
 - Dens evaginatus
- iii - Ectopic Enamel:
 - Enamel pearls
 - Cervical Enamel Extensions
- iv. Taurodontism
- v. Dilaceration.
- vi. Supernumerary Roots:
 - i. Gemination, fusion and Concrescence
 - a. Gemination
 - Gemination is a developmental anomaly which refers to division of single of tooth germ into incomplete or complete formation of two teeth.
 - Crowns may be partially or totally separated from each other.
 - Roots are fused and single Root Canal is present within the Root.
 - The Structure is usually one with two completely or incompletely separated Crowns that have a single root and a Root Canal.

21
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(C)

(D)

- The Condition is seen in both deciduous and permanent dentitions, with a higher frequency in the anterior and Maxillary Region.

b. Fusion :

- Fusion is defined as single enlarged tooth or joined teeth in which the tooth count reveals a missing tooth when the anomalous tooth is counted as one.
- One of the most important Criteria for fusion is that the fused teeth must exhibit confluent dentine.
- Both permanent and deciduous dentitions are affected in case of fusion, although it is more common in deciduous teeth.
- Fusion can be complete or incomplete and its extent will depend on stage of Odontogenesis at which fusion takes place.
- The incisor teeth are more frequently affected in both the dentitions.

c. Concrescence :

- Concrescence is defined as union of two adjacent teeth by cementum only without confluence of the underlying dentine.
- It is the type of fusion which is limited only to the roots of teeth and it occurs after the root formation of involved teeth is completed.
- **Aetiology :** Concrescence may be developmental or postinflammatory or due to traumatic injury.
- Common between maxillary second molar and unerupted third molar.

ii. Accessory Cusp

a. Cusp of Carabelli

b. Talon Cusp

c. Dens invaginatus (dens in dente)

d. Dens evaginatus

a. Cusp of Carabelli

- present on mesio-palatal Cusp of maxillary first molars.
- An analogous accessory Cusp is seen occasionally on the mesio-buccal Cusp of a mandibular permanent or deciduous molar known as protostylid.

b. Talon Cusp

- Talon Cusp is an anomalous projection resembling eagle's talon, and projects lingually from Cingulum area of permanent incisors.
 - A developmental groove is present at the site where this projection meets with the lingual surface of tooth.
 - This groove is prone to Caries, so it should be removed. If pulp exposure is present, then endodontic therapy is done.
 - Found in association with 'Rubinstein-Taybi Syndrome'.
- c. Dens in dente or dens invaginatus
- Dens in dente is a developmental variation which arises as a result of enamel epithelial invagination of the crown surface before calcification.
 - Several Causes of this condition: It is because of focal growth proliferation and focal growth retardation that takes place in certain areas

of tooth bud, increased localized external pressure.

- After calcification, it appears as accentuation of lingual pit.
- Teeth most frequently involved are maxillary lateral and maxillary central incisors.
- Radiographic features: Appearance of tooth within tooth due to deep pear-shaped invagination from lingual pits, approximating to pulp.
- Treatment: This anomaly makes teeth prone to caries so endodontic therapy should be done. Restoratory procedures are unsuccessful because of this deep invagination that generally approximates pulp.

d. Dens evaginatus (adrenal tuberculated premolar, Keong's premolar, evaginated Odontome)

- Dens evaginatus is a developmental condition that appears as an accessory cusp or globule of enamel on occlusal surface between buccal and lingual cusps of premolars unilaterally or bilaterally.

- This is opposite of invagination. This means that there occurs extrusion of the dental papilla outwards into the enamel organ.

- Clinical findings:

- This condition is more common in people of Chinese race.

- More common in maxillary first premolars but also occurs rarely on molars, cuspids and incisors.

- presents a tubercle of enamel with a core of dentine with a narrow pulp chamber.

- When the tooth erupts, this bit of enamel is higher than the cusps, and covers the underlying mass of dentine.

(H)

- If present in deciduous teeth, it causes difficulty in feeding.
- When the thin Surface Enamel of the tubercle breaks down, infection of the tooth takes place resulting in death of the pulp and Abscess formation.

• Treatment consists of Extraction of the tooth.

iii. Ectopic Enamel

- Enamel pearls
- Cervical Enamel Extensions
- Ectopic Enamel or Enamel pearls or Enameloma or Enamel drop usually occurs in furcation area below the Crest of Gingiva.
- Cervical Enamel Extension also occurs along the Surface of dental Roots.
- Maxillary & mandibular molars are most commonly affected.
- predisposes to development of buccal bifurcation Cysts.

iv. ~~Triloculostom~~ (Bull-like teeth)

- It is a dental Anomaly in which the body of the tooth is enlarged at the expense of Roots.

Aetiology:

- A Specialized or retrograde Character.
- A primitive pattern.
- An atavistic feature.
- Mendelian Recessive trait.
- A mutation.
- Associated with Klinefelter Syndrome.
- It is due to failure of Hertwig's epithelial Root Sheath to invaginate

at proper horizontal level. It is about 2 weeks or 1 month before eruption.

- Clinical findings: It may affect both deciduous and permanent dentitions, but more common in permanent dentition.
- Molars are commonly affected.
- Tooth morphology is normal.
- Radiographic features:
 - Enlarged and rectangular pulp chamber is present.
 - No constriction of pulp at cervical area.
 - Roots are very short.
- Fucation is present just above root apex.
 - Treatment: No treatment is required.
- v. Dilaceration
 - Dilaceration refers to angulation or curve in root or crown of tooth.
 - Angulation is caused due to trauma to the tooth during formative stage of tooth.
 - Curve is present at apical, middle or cervical portion, depending on the portion which is forming at the time of trauma.
 - Occlusal trauma in deciduous tooth may also cause dilaceration of permanent tooth.
 - More common in the maxillary anterior region.
 - Significance - tooth with bent root is difficult to extract.

vi. Supernumerary Roots

- One or more extra roots may be present in tooth.
- Usually single-rooted teeth such as mandibular cuspids and bicuspids are involved.

2. Adenoid Cystic Carcinoma.

- It is also called as Cylindroma.
- It is a malignant neoplasm arising from the gland epithelium of either major or minor Salivary Gland.

Incidence: It accounts for about 6% of all parotid tumors and 30% of minor salivary gland tumors.

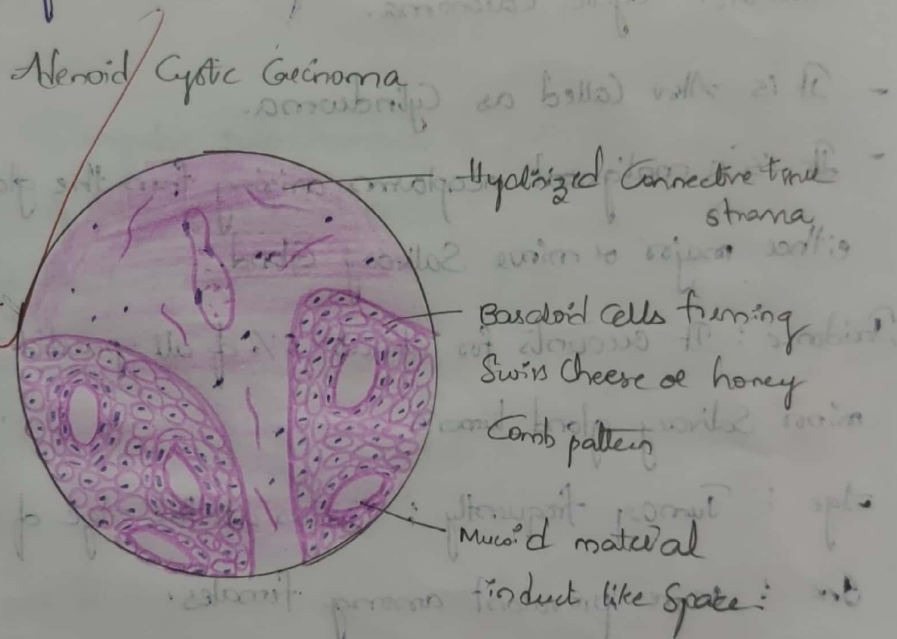
Age: Tumor frequently occurs at the age of 50-70 yrs.

Sex: More prevalent among females.

Site: Minor gland affect more than the major glands, palate & tongue.

- * The lesion often produces relatively slow enlarging growths with frequent surface ulcerations.
- * parotid tumors produce asymptomatic subcutaneous mass anterior to or below the external ear.
- * parotid lesions often surround and invade the facial nerve sheath.
- * Besides facial nerve frequently invade the lingual and the hypoglossal nerves.
- * Pain is very common feature in this tumor and severe neurological signs like anaesthesia, paraesthesia or palsy frequently develop.

- There is a fixation and Induration of the tumour to the underlying structures along with local invasion.
- Submandibular gland tumours become quite large before patient notice it.
- Palatal lesions accompanied by toothache loosening of teeth, delayed healing of the socket in case tooth is extracted.



3. Histopathology of Dentin Caries.

Histologically, presents five zones in the tissue.

Zone 1 (Normal Dentin)

- This zone represents the innermost layer of the Carious dentin and here the dentinal tubules appear normal.
- There is evidence of fatty degeneration of the Tomes processes.
 - No Crystals in the lumens of the tubules.
 - No Bacteria in the tubules.
 - Intertubular dentin has normal cross bonded collagen and normal dense

apatite Crystals.

Zone II (Subtransparent Dentin)

- This is the zone of dentinal Sclerosis and it is characterized by the deposition of very fine crystal structures within the dentinal tubules at the advancing front.
- Superficial layer shows areas of demineralization and damage of the odontoblastic processes.
- No bacteria in the tubules.
- This dentin is capable of remineralization.

Zone III (Transparent Dentin)

- This zone appears transparent and this is because of the demineralization of dentin due to cavities.
- It is softer than normal dentin.
- Further loss of mineral ions from intertubular dentin.
- Large crystals within the lumen of the dentinal tubules.
- No bacteria in tubules.
- Cross-banded intertubular collagen still intact.
- This zone is capable of self-repair and remineralization.

Zone IV (Turbid dentin)

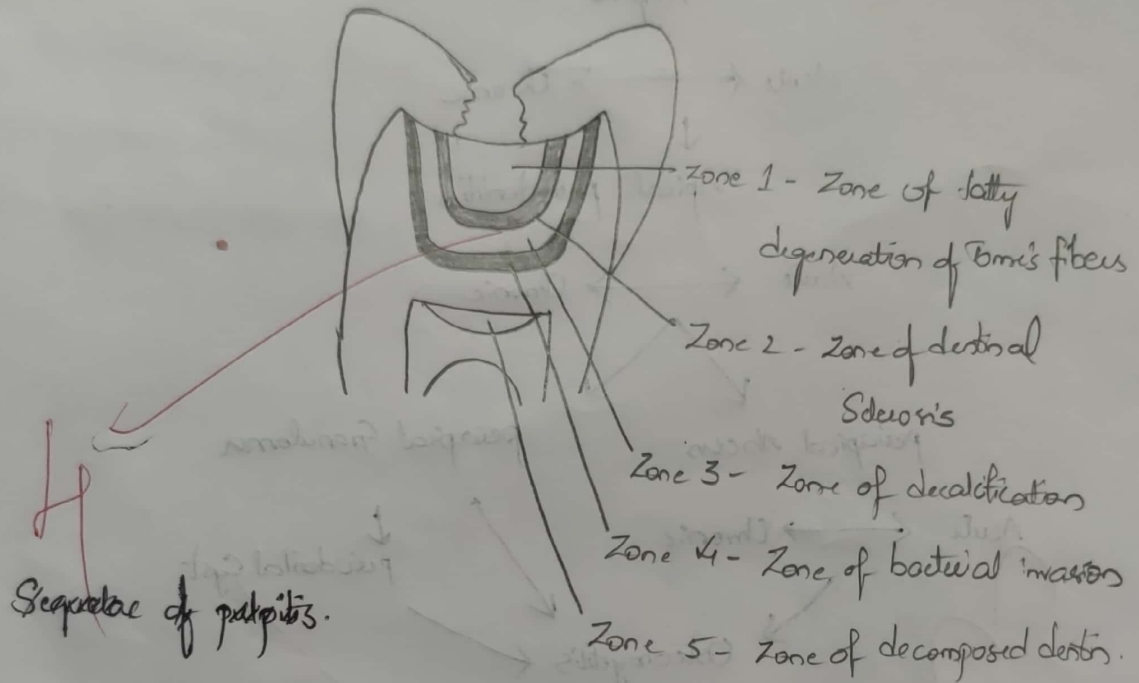
- This zone is called the 'turbid dentin' and is marked by the widening and distortion of the dentinal tubules, which are packed with microorganisms. There is very little amount of mineral present in the dentin and moreover, denaturation of collagen fibres also takes place.

- This zone cannot undergo self-repair or remineralization.
- Must be removed before restorative treatment.

Zone V (Infected dentin)

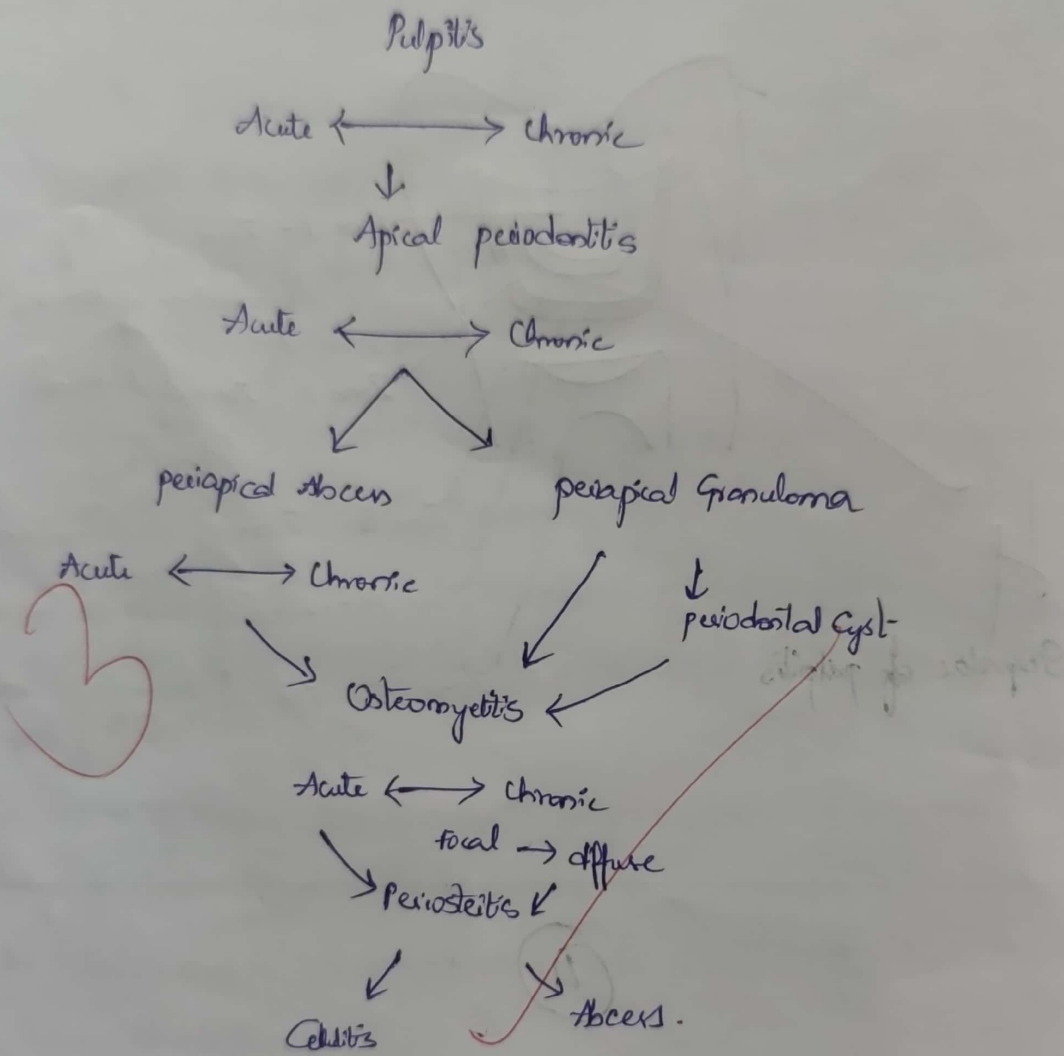
- This is the outermost zone of the carious dentin and is characterized by complete destruction of the dentinal tubules (it happens due to severe expansion of dentinal tubules due to accumulation of a large number of microorganisms and their by-products).
- The expanded tubules also cause compression and bending of the adjacent tubules and eventually destroy them.
- In this zone, the areas of decomposition of dentin, which occur along the direction of the dentinal tubules, are called the "liquefaction foci of Miller".
- In some of these areas, the cariogenic microorganisms spread laterally & large bacteria-filled clefts develop at right angles to the direction of the tubules due to decomposition of dentin. These clefts are called the "transverse clefts".
- The mechanism of formation of transverse clefts is not clearly known, they may follow the course of incremental lines, or result from the coalescence of liquefaction of adjacent tubules.
- Transverse clefts may also arise by extensive proteolytic activity along the interconnecting lateral branches of odontoblastic processes.
- In Zone V, bacteria may no longer remain confined within the dentinal tubules and they invade and destroy the peri and inter-

tubulae dentin. In the process, the entire dentinal structure becomes destroyed.



(11)

4. Sequelae of pulpitis.



5. Adenomatoid Odontogenic tumor.

Definition:

The adenomatoid odontogenic tumor is a relatively uncommon well-circumscribed odontogenic neoplasm characterized by the formation of multiple duct-like structures by the neoplastic epithelial cells.

Origin:-

The tumor probably arises from the reduced enamel epithelium during the presecretory phase of enamel organ development.

Clinical features:

Age: The tumor usually occurs in the younger aged 2nd and 3rd decade of life.

Sex: females are more commonly affected in comparison to males.

Site: lesion most commonly occurs in the maxillary anterior region, Premolar region.

* Some lesions develop extraorally in relation to the gingiva.

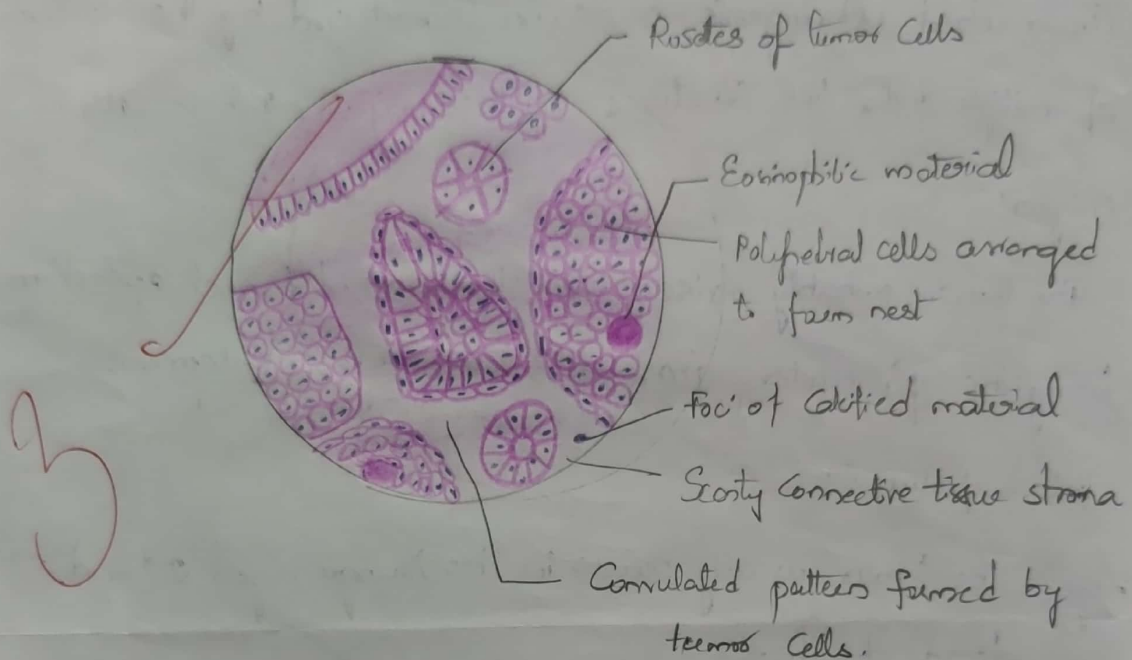
* 70% cases occur in association with unerupted teeth.

* The tumor usually presents as a slow enlarging small bony hard swelling in the maxillary anterior region.

* The lesion often causes elevation of the upper lip on the involved side.

* Displacement of the Regional teeth mid pain and Expansion of the Cortical bones are Usually present.

* Snow - flake Calcifications are Seen.



6. Cellulitis :

- Cellulitis is an inflammation and infection of cellular tissue, especially of loose subcutaneous tissue.
- It occurs in the facial spaces or muscular spaces or takes the form of deep-seated phlegmons.
- It occurs due to spread of dental infection i.e. from apical abscess, osteomyelitis, pericoronar infection, periodontal infection; after extraction of tooth. fracture of the jaw followed by secondary infection.
- The soft tissue filling the facial planes and spaces is the common site.

- The Condition may progress Rapidly leading to Serious Complications which are Surgical emergencies, requiring incision and drainage.
- Infection may be localized to one space or may spread along the various facial planes at the same time.

2

Slip Test

G. Sankethana

III BDS (68 batch)

Roll NO - 25

[Signature]

Dean & Principal
Mamata Dental College
Khammam - 507 002

① Developmental disturbances affecting shape of teeth
- The developmental disturbances affecting shape of teeth as follows:

i) Gemination, fusion and concrescence.

ii) accessory cusps

- cusp of Carabelli
- Talon cusp
- Dens invaginatus
- Dens evaginatus

iii) Ectopic Enamel

- Enamel pearls
- cervical Enamel Extensions

iv) Taurodontism

v) Dilaceration

vi) supernumerary roots.

i) @ Gemination:-

- Gemination is a developmental anomaly which refers to division of single tooth gem into complete (a) incomplete formation of two teeth.
- crowns may be partially (a) totally separated from each other
- Roots are fused and single root canal is present within root.
- The condition is seen in both deciduous and permanent dentitions.

20

30

i) Fusion.

- Fusion is defined as single enlarged tooth or joined tooth in which the tooth count reveals a missing tooth when the anomalous tooth is counted as one.
- One of the most important criteria for fusion is the fused tooth must exhibit confluent dentin.
- Both permanent and deciduous are affected.

ii) Concurrence:-

- Concurrence is defined as union of two adjacent teeth by cementum only without confluence of the underlying dentin.
- It may be developmental (a) post-inflammatory or due to traumatic injury.

ii) Accessory cusps.

a) cusp of Carabelli:-

- present on mesio-palatal cusp of maxillary 1st molars.
- An analogous accessory cusp is seen occasionally on the mesio-buccal cusp of mandibular permanent or deciduous molars known as protostylid.

b) Talon's cusp.

- Talon's cusp is an anomalous projection resembling eagle's talon projects lingually from cingulum area of permanent incisors.
- found in association with "Rubinstein - Taybi Syndrome".

c) Dens in dente.

- Dens in dente is a developmental variation which arises as a result of enamel epithelium invagination of crown surface before calcification.
- Teeth most frequently involved are maxillary lateral and maxillary central incisors.

d) Dens Evaginatius.

- Dens Evaginatius is a developmental condition appears as an accessory cusp or globule of enamel on occlusal surface between buccal and lingual cusps of premolars unilaterally (or) bilaterally.

iii) Ectopic Enamel.

a) Enamel pearls:-

- Enamel pearl (or) Enameloma (or) Enamel drop usually occurs in furcation area below the crest of gingiva.

b) Cervical Enamel Extension

- also occurs along the surface of dental roots.

iv) Taurodontism (Bull-like teeth)

- Taurodontism is a dental anomaly in which the body of tooth is enlarged at the expense of roots.
- associated with Klinefelter's syndrome.

v) Dilaceration

- Dilaceration refers to angulation (or) curve in root (or) crown of tooth
- angulation is caused due to trauma to the root during formative stage of tooth

vi) Supernumerary Roots.

- one (or) more extra roots may be present in tooth
- usually single rooted teeth such as mandibular cuspids and bicuspids are involved.

② Adenoid cystic carcinoma.

- It is a malignant neoplasm arising from the gland epithelium is either major (or) minor salivary gland.

Incidence:- It accounts for about 6% of all parotid tumour and 30% of minor salivary gland tumour.

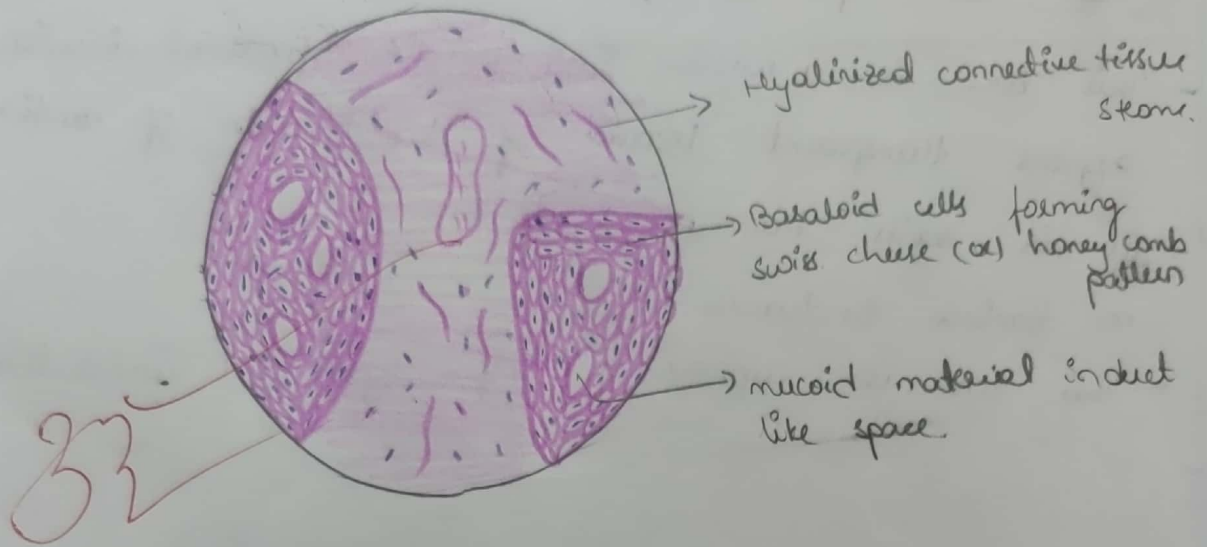
Age:- tumour frequently occurs at age of 50-70 yrs.

Sex:- more prevalent among females

Site:- minor gland affect more than the minor glands of palate and tongue.

- The lesion often produces relatively slow enlarging growth with frequent surface ulcerations
- parotid tumours produce asymptomatic subcutaneous mass anterior to (or) below the External Ear.
- parotid lesions often surround and invade the facial nerve sheath.
- Besides facial nerve frequently invade the lingual and hypoglossal nerve.
- pain is very common feature in this tumour and some neurological signs like anesthesia, paraesthesia (or) palsy frequently develop
- There is a fixation and induration of the tumour to the underlying structures along with local invasion.
- submandibular gland tumours become quite large before patient notice it.

- parital lesions accompanied by toothache loosening of teeth, delayed healing of the socket in case tooth is extracted.



③ Histopathology of dentinal caries?

The dentinal caries histologically presents 5 zones as follows.

Zone 1:- Zone of fatty degeneration of Tomes fibers.

- This zone represents the inner most layer of the carious dentin, here the dentinal tubules appear normal.
- There is evidence of fatty degeneration of the Tomes fibers
- No bacteria in the tubules.

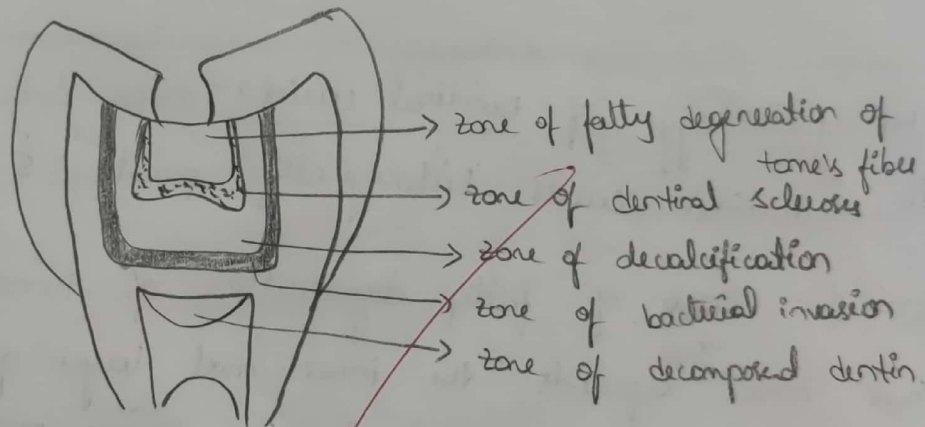
Zone 2:- Zone of dentinal sclerosis:-

- This is the zone of dentinal sclerosis and is characterised by the deposition of very fine crystal structure calcium salts within the dentinal tubules
- superficial layer shows area of demineralization and damage of the odontoblastic processes.

- No bacteria in the tubules and the dentin are capable of remineralization.

Zone 3 :- zone of decalcification of dentin.

- This zone is a narrow size, preceding bacterial invasion and appears transparent because of decalcification of dentin.
- It is softer than normal dentin.
- no bacteria in tubules.
- This zone is capable of self-repair and remineralization.



Zone 4 :- Zone of bacterial invasion of decalcified but intact dentin

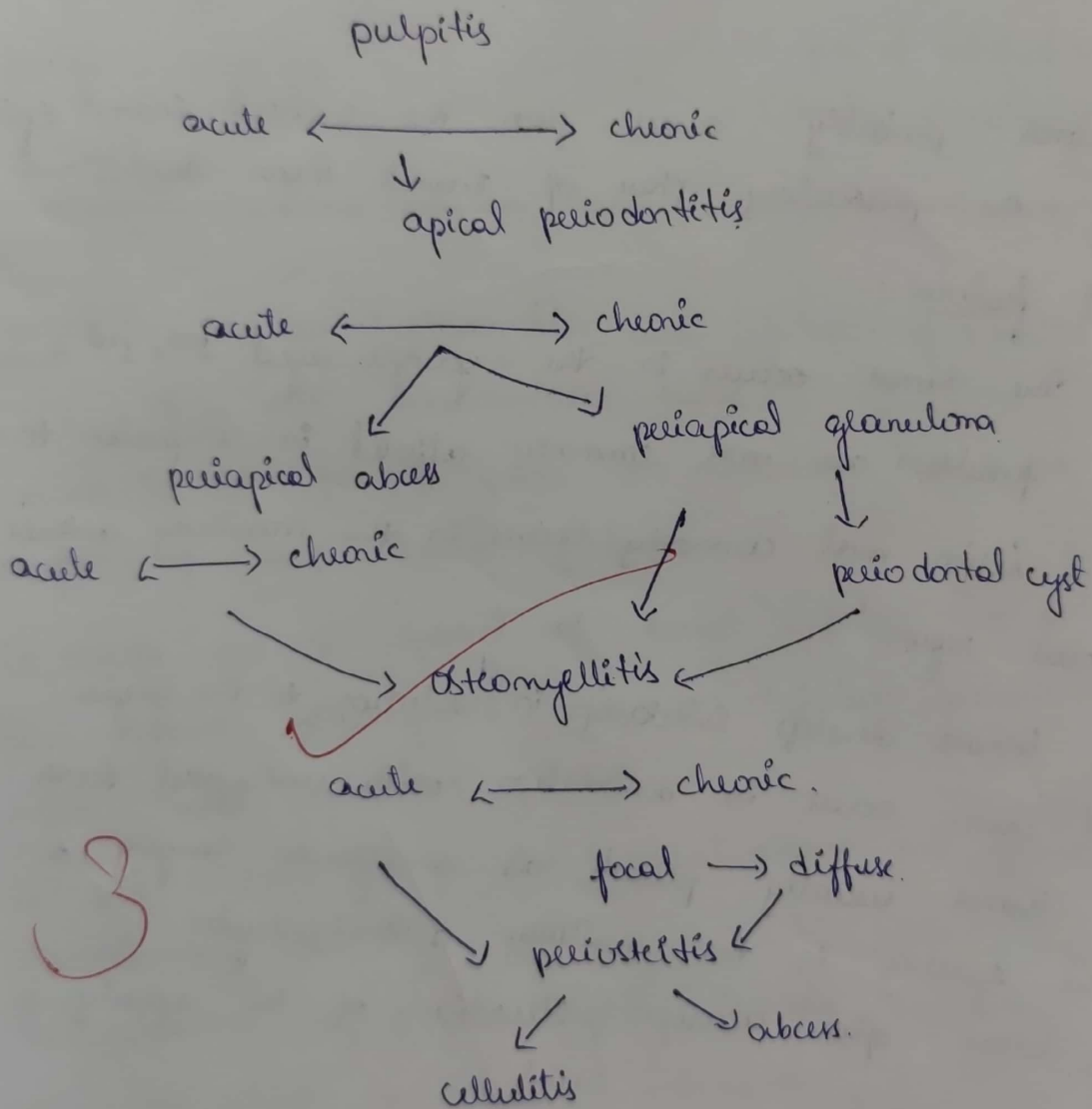
- This zone is marked by widening and dissection of dentinal tubules, which are packed with microorganisms
- This is very little amount of minerals in dentin
- Denaturation of collagen fibres also takes place.

Zone 5 :- Zone of decomposed dentin

- This is the outermost zone of carious dentin
- It is characterized by complete destruction of dentinal tubules.
- In this zone, the area of decomposition of dentin which

occur along the direction of dentinal tubules is called "liquefaction foci of miller". and which occur perpendicular to dentinal tubules is called "transverse clefts".

④ sequelae of pulpitis?



3

⑤ Adenomatoid odontogenic tumour

Definition :- The adenomatoid odontogenic tumour is a relatively uncommon, well circumscribed odontogenic neoplasm characterised by the formation of multiple ducts like structures by the neoplastic epithelial cells.

Origin :-

The tumour probably arises from the reduced Enamel Epithelium during the presecretory phase of Enamel organ development.

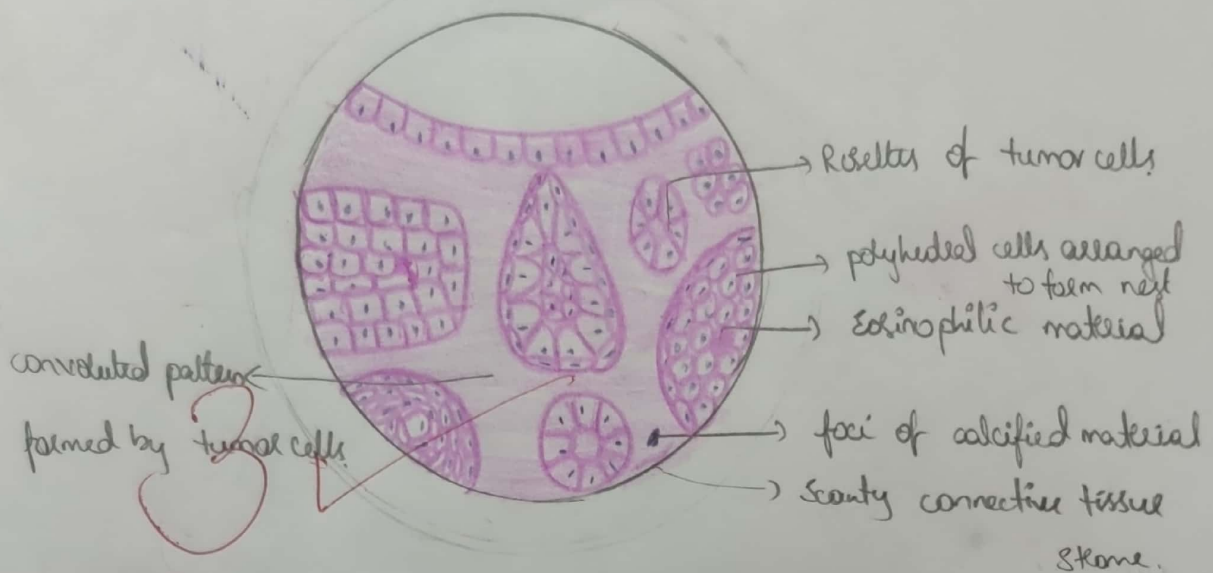
Clinical features :-

age :- The tumour occurs in the younger aged 2nd, 3rd decade life.

sex :- females are more commonly affected in comparison to males

site :- lesion most commonly occurs in the maxillary anterior region, premaxillary region

- Some lesions develop externally in relation to the gingiva.
- 70% cases occur in association with unerupted tooth.
- The tumour usually presents as a slowen enlarging, small boggy hard swelling in the maxillary anterior region.
- The lesion often causes Elevation of the upper lip on the involved side.
- Displacement of the regional teeth mid pain and Expansion of the cortical bones are usually present
- snow-flake calcifications are seen.



⑥ cellulitis

A:- cellulitis is an inflammation and infection of cellular tissue, especially of loose subcutaneous tissue

- It occurs in the facial spaces (or) muscular spaces (or) takes the form of deep seated phlegmons

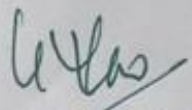
- It occurs due to spread of dental infection i.e from apical abscess, osteomyelitis, pericoronal infection, periodontal infection, after extraction of tooth.

- The soft tissue filling the facial planes and spaces is the common site.

- The condition may progress rapidly leading to serious complications which are surgical emergencies, requiring incision and drainage.

- Infection may be localised to one space or may spread along the various facial planes at the same time.

DENTAL MATERIALS – II BDS
RE-EXAM


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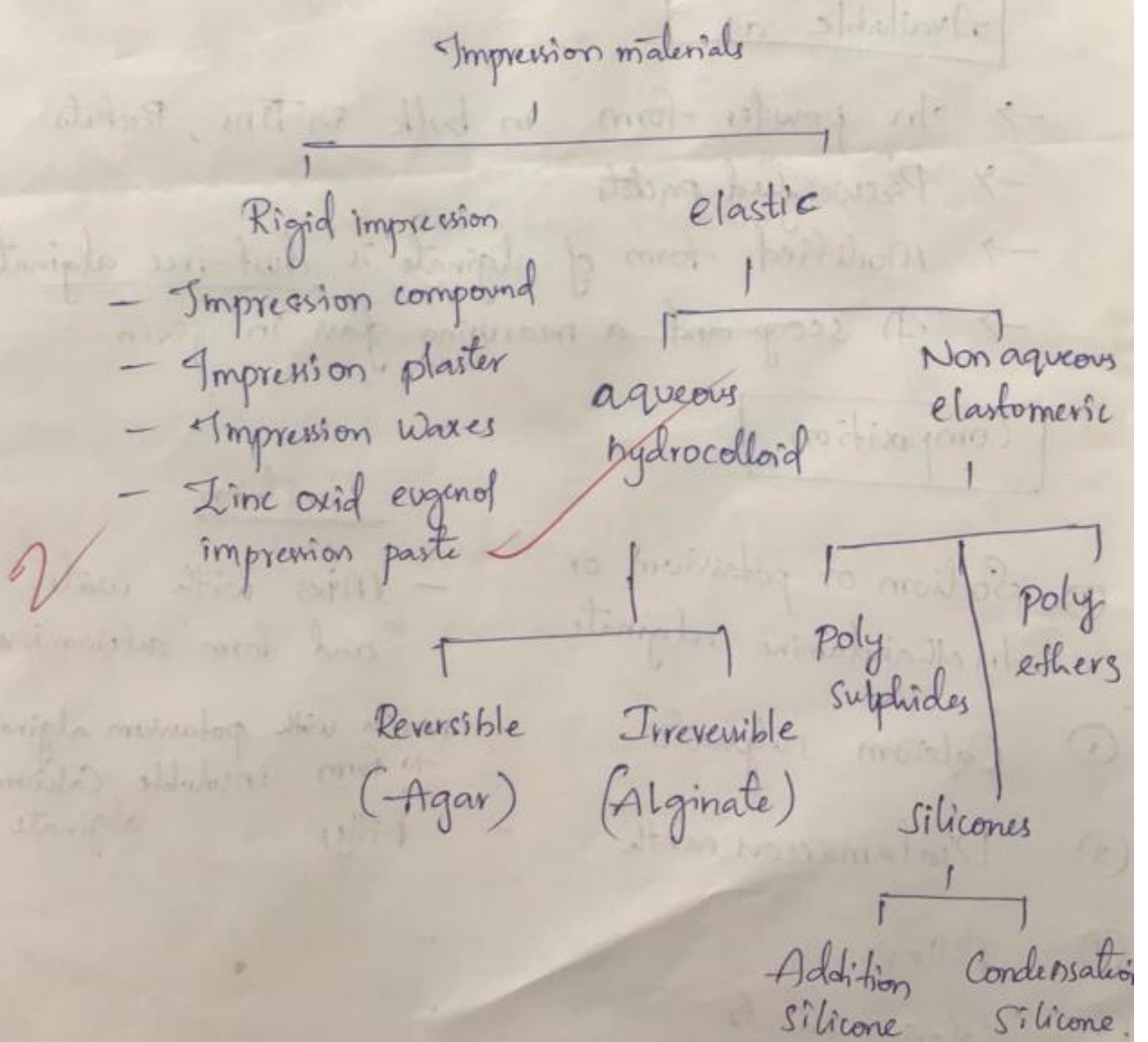
Answer the following questions: 20M

1. Classify impression materials. Write in detail about the composition and setting reaction of Irreversible hydrocolloids. 10M
2. Hygroscopic setting expansion. 4M
3. Modulus of elasticity. 2M
4. Tests for Biocompatibility. 2M
5. Metamerism. 2M

- ① Classify dental impression materials write in detail about of irreversible hydrocolloids.
- ② Hygroscopic setting expansion
- ③ Modulus of elasticity
- ④ Tests of biocompatibility
- ⑤ Metamerism

15
 20
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① Dental Impression - A dental impression is a negative replica of the mouth and the surrounding tissue.
 Impression materials are classified into the following.



Irreversible hydrocolloids - Alginate

The word Alginate comes from the alginic acid

It is extracted from the brown sea weed

It is hydrophobic polysaccharide

Alginate is widely used Impression material in the dentistry.

Classification

→ Fast setting

→ Normal setting

Available as

→ In powder form in bulk in Tins, Packets

→ Preweighed packets

→ Modified form of alginate is dust free alginate

→ A scoop and a measuring glass is given

Composition

Function

- ① Sodium or potassium or triethanolamine alginate - Mixes with water and form calcium ions
- ② Calcium sulphate - reacts with potassium alginate to form insoluble Calcium alginate
- ③ Diatomaceous earth - Filler
- ④ Fillers -
- ⑤ Coloring agents -
- ⑥ Potassium titanium fluoride - Gypsum hardener

potassium sulphate

⑦ Sodium phosphate

⑧ Zinc oxide

Setting reaction

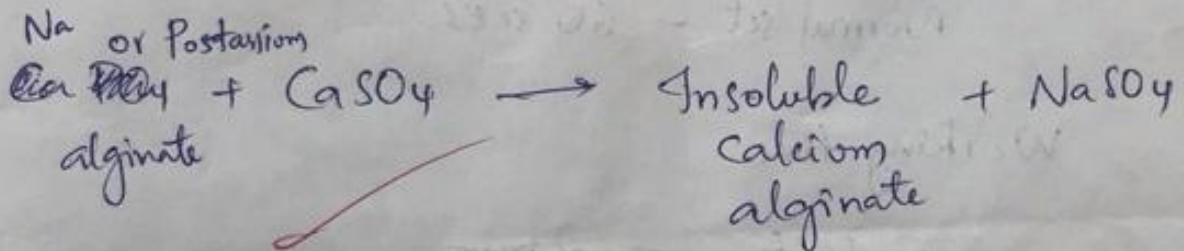
It sets by chemical reaction

There are 2 reactions

①



②



Cross linked brush heap structure alginate is formed.

Applications

→ Alginate is used in duplicating models

→ It used for making impressions for mouths
with undercuts
mouth having clasps
mouth with more salivation

→ To make study models and casts.

Manipulation

- required materials are flexible bowl and curved spatula
- Water is taken into bowl
 - The powder is added to the water
 - Vigorous mixing with sweeping or stroking motion
a 8 figure motion can be used.

⇒ Mixing time

Fast set - 45 sec

Normal set - 60 sec

Working time

Fast set - 2 mins

Normal set - 1 1/4 mins

Gelation time

Fast set - 1-3 mins

Normal set - 5 mins

Properties

① Dimensional stability ⇒

Alginate has poor dimensional stability due to imbibition and syneresis.

So cast should be poured immediately.

② Poor tear strength

③ Elasticity

It has a good elastic property.

④ Syneresis and Imbibition

Alginate undergoes Syneresis and Imbibition

⑤ Tissue detail

Record good Tissue detail but not well as compared to agar.

⑥ Taste and Odour

has a pleasant Taste and Odour.

⑦ Good compressive strength

Advantages

→ It is easy to mix and manipulate

→ Requires less no. of equipment

→ Low cost

→ Economical

→ Good surface detail

Disadvantages

→ Poor dimensional stability

→ Poor tear strength

→ Cannot be electroplated

→ It is irreversible

② Hydroscopic setting expansion.

Gypsum products have the two types of setting expansion

→ Normal setting expansion

→ Hydroscopic setting expansion

Hydroscopic setting expansion.

When a gypsum product is immersed in water before the initial set stage it

absorbs water and undergoes expansion called hydroscopic setting expansion.

In normal atmosphere in the absence of external source of water the gypsum product swells by absorbing moisture

⑤ Metamerism :-

Objects appear to be colour matched in one type of light and different in other type of light. This phenomenon is called metamerism.

Metamerism is process of appearance of the object in which type of light it is viewed.

(Day light) (Flourescent light)

④ Biocompatibility test :-

Level I Screening test

Level II Usage test

Level III Human trial

Any gypsum product before being introduced or used it has to undergo some trial tests these are biocompatibility tests.

③ Modulus of elasticity or Young's modulus

$$\gamma = \frac{\text{stress}}{\text{strain}} = \frac{F/A}{E/L} = \frac{FL}{EA}$$

Modulus of elasticity is the measure of relative stiffness or relative rigidity.

It is an important property

ex- The metal frame of metal ceramic bridge has high stiffness

1) Classify impression materials and write composition and setting mechanism irreversible hydrocolloid.

2) Hygroscopic setting expansion

3) Modulus of elasticity

4) Tests of Biocompatibility

5) Metamerism.

10/12
20
10/12

3A:- Modulus of elasticity:-

→ It is also known as young's modulus or elastic modulus.

→ It represents the stiffness or rigidity of the material within its elastic limit.

→ It is the ratio of stress to the strain.

$$\text{Modulus of elasticity} = \frac{\text{stress}}{\text{strain}}$$

Young's modulus.

4A:- Tests of Biocompatibility:-

It has three levels.

1) Level I (screening tests)

2) Level II (usage tests)

3) Level III (-Human trials)

5A:- Metamerism:-

When the object appear to be colour matched under one light and may appears to be different under another light is known as metamerism.

2A:- Hygroscopic setting expansion:-

→ When a gypsum product placed in a water before its final set stage, it shows high expansion due to the hygroscopic setting expansion.

→ When the external available water drawn into pores forming of set mass. It shows high crystal growth in the material. freely takes place.

→ Under ^{dry} conditions external available water is absent but expansion occurs. available water is reduced.

→ It has the more magnitude than the normal setting expansion.

→ Used for the expansion of gypsum bonded investments.

1A:-

Impression materials.

Reversible
Impression materials

Irreversible Impression
materials

- Impression plaster
- Impression compound
- ZOE impression paste
- Impression waxes.

Aqueous

Non-aqueous-
Elastomers.

Agar

Alginate.

Polysulfides

Polyethers

Silicones

Condensation
silicones

Addition
silicones.

* Based on tissue displacement, I materials are classified into

- Mucostatic
- Mucocompressive.

* Based on uses Impression materials are classified into

- * Dentulous
- * Edentulous.

* Alginate - irreversible hydrocolloid

→ It accurately recorded the tissue surfaces.

→ Used for the preliminary impression making of dentulous surface.

composition:-

• sodium (or) potassium (or) triethanolamine alginate

- dissolves in water and reacts with calcium ions.

• calcium sulfate

- reacts with potassium alginate to form insoluble calcium alginate.

• zinc oxide

- acts as filler. Gypsum hardener.

• potassium titanium fluoride

- Gypsum hardener.

• Diatomaceous earth

- acts as filler.

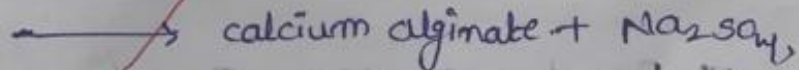
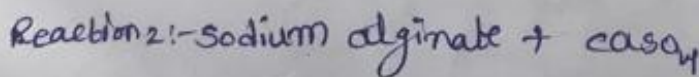
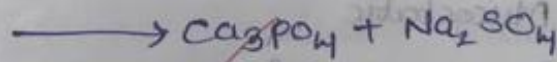
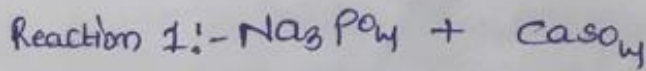
• potassium sodium phosphate

- reacts with calcium sulfate

• coloring & flavoring agents.

- wintergreen, peppermint, anise.

setting reactions:-



Q) classify dental impression material write composition and setting mechanism of irreversible hydrocolloids.

- Q) Hygroscopic setting expansion:
- Q) modulus of elasticity:
- Q) Testes of Biocompatibility
- Q) metamorphism

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4/11/20

essay

1) Ansr classification of dental impression:-

Based on the elasticity:- The impression material classified as thermosetting and thermoplastic material.

Based on the tissue displacement:- Impression material classified to mucostatic and mucocompressive.

Based on the use in the dentistry:- Impression material classified to the edentulous and edentulous materials.

Irreversible Thermoset	Rigid Impression material/ Zno. Compound.	elastic. Alginate hydrocolloid elastomeric
reversible. Thermoplastic	Compound waxes,	Agar.

Irreversible hydrocolloid Alginate

- Alginate is derived from the Brown seaweeds.
- Alginate is available in forms of the powder and liquid and mixed in the '8' mottom 1:3 ratios of water and powder.

Type I - fast setting

Type II - normal setting

Composition:

Sodium (or) potassium alginate

- reacts with the water

~~Calc~~ Calcium sulphate

- reactor.

Zinc oxide

- filler.

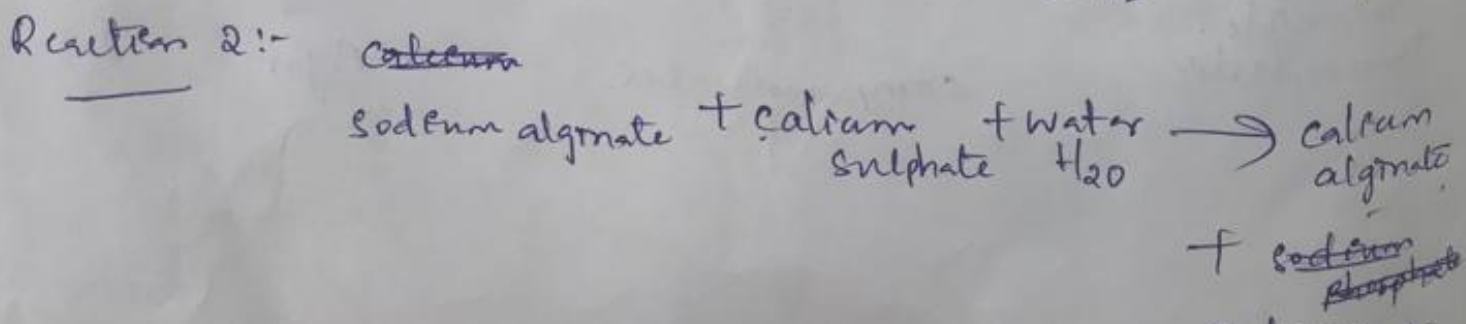
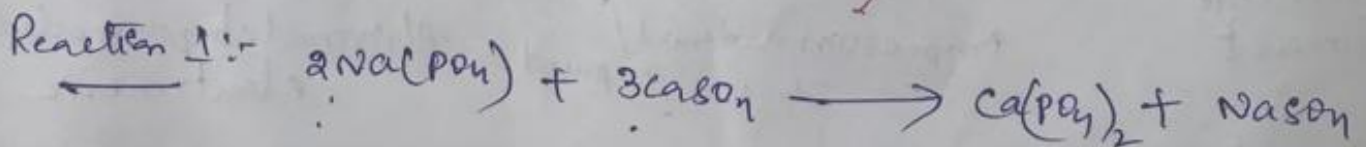
Trisodium phosphate

- retarder.

colouring agent

- flavoring material

Reaction:



The sodium phosphate reacts with the calcium sulphate give rise to the sodium sulphate and calcium phosphate, and sodium alginate as this reaction proceeds faster it requires the retarder the trisodium phosphate. initial gel and the sodium alginate calcium sulphate with water give rise to the insoluble calcium alginate forming the final gel Bouchee structure.

Mixing time : 45s - fast setting
60s - normal setting

working : 1 Yes fast
2s normal

5) Hydroscopic setting expansion :-

→ ① Hydroscopic setting expansion occurs which when the material is placed in the water before the initial expansion / initial set stage

✓ ② - The impure material inside the water due to the porosity and water crystallisation water enters inside the material and it expanded. crystal growth takes place locally

③ crystals are formed and glossy appearance is seen. Normal setting expansion leading to the ~~outward~~ outward growth.

39) modulus of elasticity :- The tensile stress below the proportional limit is divided by the its corresponding strain

modulus of elasticity = $\frac{\text{stress}}{\text{strain}}$

40) Tests of Biocompatibility :-

- ① screening test
- ② usage test
- ③ human test

41) metamerism :- The object appears to be colour matched under one type of light may appear different under other type light.

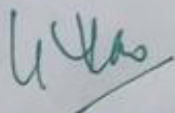
DEPARTMENT OF ORAL PATHOLOGY AND MICROBIOLOGY
SUBJECT- DENTAL ANATOMY AND ORAL HISTOLOGY , I BDS

SLIP TEST

6×5 = 30M

DATE: 24/08/2023

- 1. Circumvallate Papillae.**
- 2. Theories of Dentin Hypersensitivity.**
- 3. Sharpey's Fibers.**
- 4. Histology of Pulp.**
- 5. Differences between Maxillary canine and Mandibular canine.**
- 6. Cementocyte.**


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① Theories of Dentin hypersensitivity

Three theories of dentin sensitivity have been evolved.

① Direct nerve stimulation:-

* According to this theory the nerves present in dentinal tubules are responsible for dentine sensitivity. Although there is a clear evidence that some nerve fibers enter into dentinal tubules, the nerve fibers are observed in only few dentinal tubules, and they travel to a short distance into dentin.

- Extreme sensitivity which is not in proportion to the nerve supply.
- Marked sensitivity in the peripheral dentin.
- Sensitivity in newly erupted teeth because the intratubular nerves are established only after some time after eruption.

② Transduction theory:-

* This theory suggests that odontoblasts themselves can act as a receptor cell that can be stimulated by various stimuli and can be transmit the impulse through the pulpal nerves which are functionally connected to them.

* The receptor function is suggested because of the origin of odontoblast from neural crest cells, and therefore would be retaining some properties of nerve cells.

③ Hydrodynamic theory:-

* According to this theory the receptors in the nerves distributed in the peripheral portion of pulp react to local changes brought about by mechanical factors such as fluid movement, in dentin.

* It is understood that the dentinal tubules contain the tissue fluid. Dental lymph which is in continuation with extracellular compartment of pulp. Dentinal tubules are channels which can act as capillary tube.

* The pressure changes in this area stimulate the nerve endings in the vicinity of odontoblasts and initiate pain impulse.

* This theory is able to explain the extreme sensitivity of peripheral dentin near dentino-enamel junction. Near DEJ the dentinal tubules branch extensively and any irritation of this area may result in sudden tubular fluid.

Circumvallate papillae:-

* The circumvallate (walled) papillae are seen in the anterior two-thirds of tongue just anterior to sulcus terminalis. There are 10-12 in number. The superficial surface of these papillae is at the level of surface of tongue and a V-shaped sulcus is present all around the papillae separating them from the adjacent portion of tongue. The lining epithelium is keratinised stratified squamous epithelium at the superficial surface and nonkeratinised on the lateral surface of circumvallate papillae. Taste buds are seen only on the lateral surface. Central portion is occupied by the connective tissue. The characteristic feature of this papilla is presence of serous minor salivary glands (von Ebner's gland) in the connective tissue beneath it. These glands secrete watery saliva into the V-shaped trough around the papillae to flush out the food debris.

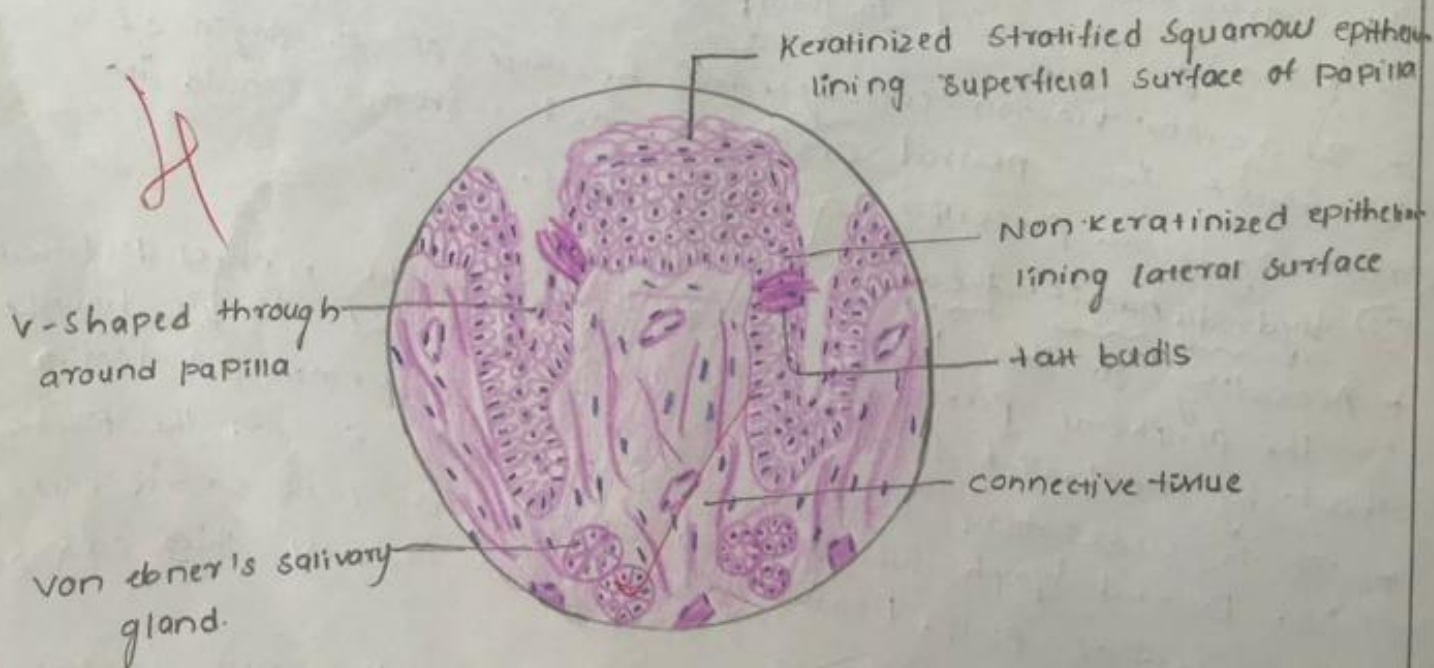


Fig :- Circumvallate papilla.

- ③ Sharpey's fibers:-
- * The portion of the principal fibers that is embedded into either cementum or bone is called Sharpey's fibers.
 - * Sharpey's fibers are associated with high levels of non-collagenous proteins (osteopontin and bone sialoprotein) mainly found in bone and cementum.

- ④ Histology of Pulp :-
- * The structure of pulp can be studied by microscope examination of decalcified sections of tooth. Histologically four distinct zones can be distinguished which include odontoblastic zone, cell free zone, cell rich zone and pulp core.

1) Odontoblastic zone :-

- * This zone is found at the periphery of the pulp and consists of the cell bodies of odontoblasts which lie in a continuous row near the dentinal end of the pulp. Many nerve fibers enter this zone and terminate between the odontoblasts. The odontoblastic layer and subodontoblastic network combine to form a sensory complex.

2) Cell free zone :-

- * Beneath the odontoblastic zone a layer of approximately 100 micrometers width is seen which is relatively devoid of cells. This layer is called zone of Weil or subodontoblastic layer.
- * The cell free zone is more prominent in the coronal pulp. This zone contains network of nerve fibers that have lost their myelin sheath and are known as subodontoblastic plexus or plexus of Raschkow.

- * These terminal, naked, free fibers are density of sensory nerves and are specific receptors of pain.

3) Cell Rich zone :-

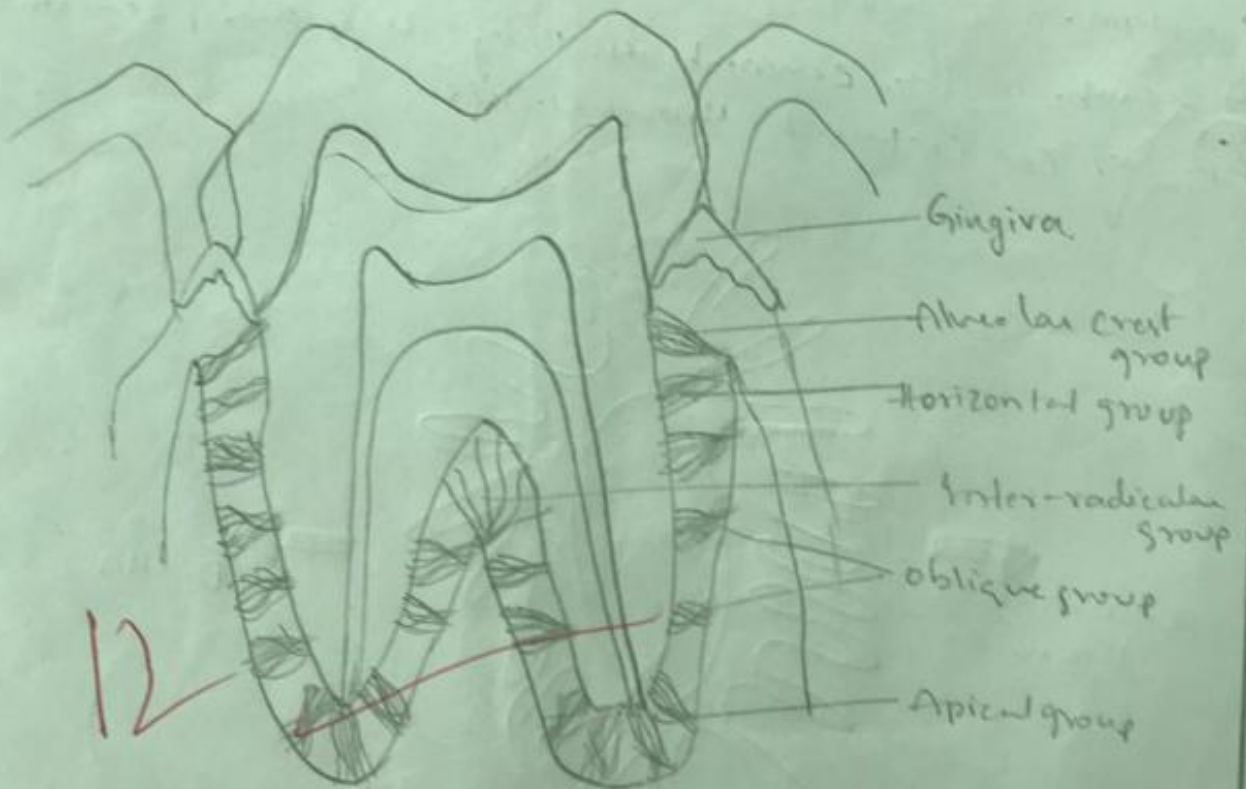
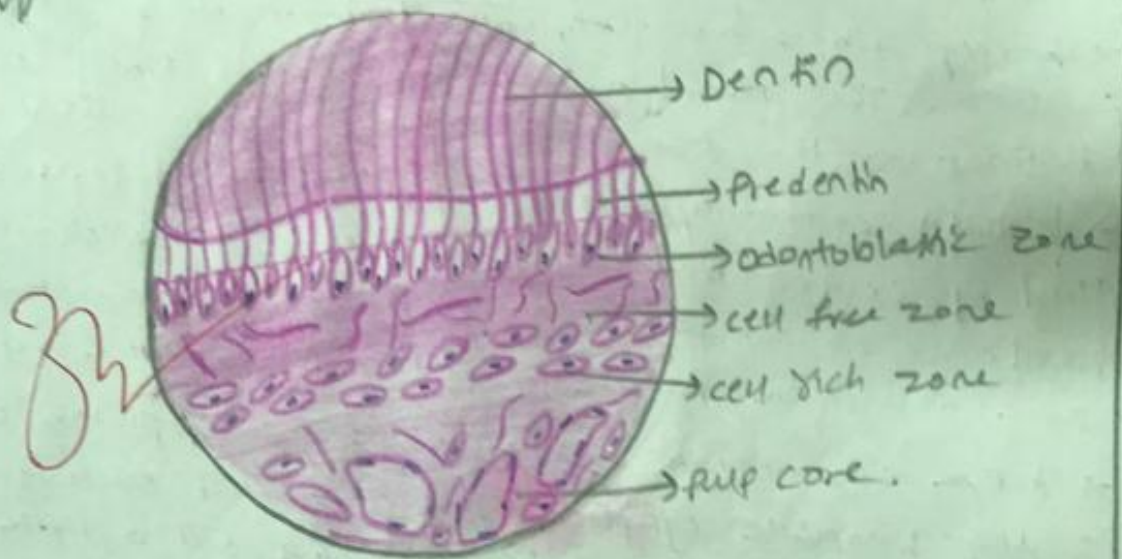
- * Cell rich zone is situated just below the cell free zone. It is a narrow zone with increased density of cells and rich capillary network. Although the cell rich zone is present both in coronal and radicular pulp, it is more prominent in coronal pulp. It consists of fibroblasts undifferentiated

mesenchymal cells, macrophages, immunocompetent cells and young collagen fibers.

⑤ 5.00 Maxillary canine	Mandibular canine.
1. Crown is wider with convex mesial and distal outlines. 2. Cusp is sharp 3. Contact areas are at different levels and is more cervically located. 4. Mesial slope is shorter than distal slope. 5. Labial ridge is prominent 6. Cingulum is centered. 7. Cusp tip is located labial to midline. 8. Both the cusp slopes are in straight line.	Crown is long and narrow with relatively straight mesial outlines. Less sharp. Neatly at same level and is more incisally placed. mesial slope is much shorter than distal slope. Labial ridge is less prominent. Distally placed. lingual to midline. distal cusp slope is lingually placed

- ⑥ Cementocytes :-
→ cementocytes are the entrapped cells found in cellular cementum and are located in lacunae. They are spider shaped with an ovoid cell body of 8 to 15 microns diameter and up to 30 processes or canaliculi branch and anastomose with those of adjacent cells.
→ Their canaliculi branch and anastomose processes directed towards the periodontal ligament from the cells derive nutrition, while some are directed inwardly and laterally.
→ The cytoplasm of these cells contains only a few organelles and the cells in deeper portions, more organelles of 60 microns from the source of nutrition shows degenerative changes.
→ cellular cementum also shows incremental lines of salts which are parallel to root surface and slightly apart from each other.

Histology of pulp:-



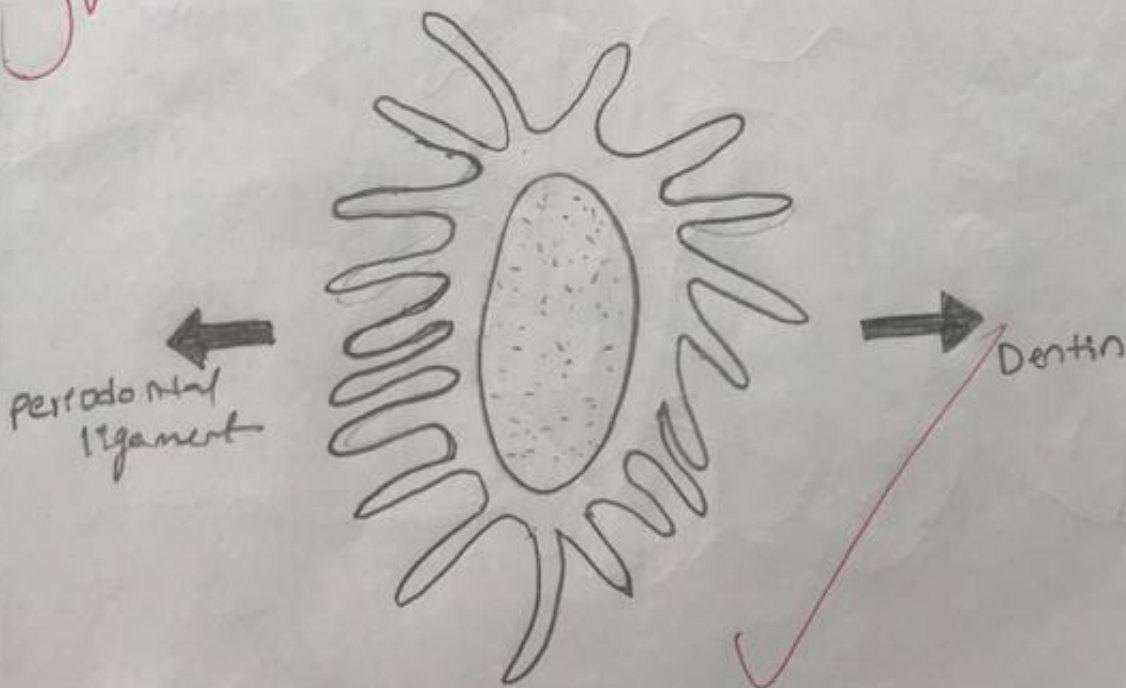
of increased thickness of each increment resulting from further deposition.

→ Sharpey's fibers are seen as striations at an angle to the root surface. The actual number of Sharpey's fibers is lesser than distinct as the fibers are not fully mineralized.

→ Cellular cementum always has a peripheral layer of cementoid lined by cementoblasts. The cementoid or pericementum layer provide a compatible environment for the cementoblasts and serve a protective function preventing odontoclastic resorption.

→ Active cementoblasts are found as ovoid plump cells with slightly basophilic cytoplasm and open faced nucleus, while the resting cells have closed faced nucleus and a little eosinophilic cytoplasm.

→ Because of the cementoblasts lining the surface, cementum formation can continued throughout life.



① Theories of dentin hypersensitivity?

①

There are three theories of dentin sensitivity.

- 1) Direct nerve stimulation
- 2) Transduction theory
- 3) Hydrodynamic theory.

Oral histology and
Dental anatomy

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Direct nerve stimulation :- According to this theory the nerves present in the dentinal tubule are responsible for dentin sensitivity.

Although there is a clear evidence that some nerve fibres enter into dentinal tubules, they travel to a short distance. This theory is insufficient to explain certain factors.

* Extreme sensitivity which is not in proportion to nerve supply.

* Marked sensitivity in the peripheral dentin.

* Sensitivity in newly erupted teeth because the intratubular nerves are established only after sometime after eruption.

Transduction theory :- This theory suggests that odontoblasts themselves can act as a receptor cell that can be stimulated

by various stimuli and can transmit the impulse through pulpal nerves.

→ The receptor function is suggested because of origin of odontoblasts from neural crest.

→ But experimental studies have shown that membrane potential of odontoblast & their processes is too low to permit nerve impulse.

Hydrodynamic theory :- According to this theory the receptor in nerves distributed in peripheral portion of pulp react to local changes.

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→ Dental lymph which is in continuation with extracellular compartment of pulp. (2)

→ When dentin is exposed the dentinal fluid is lost from exposed surface, resulting in rapid movements of tubule due to capillary action.

→ The fluid movement in dentinal tubules disturbs peripheral pulp environment by disturbing hydrostatic equilibrium of pulp.

→ This is the most accepted theory which is able to explain dentin hypersensitivity.

(2) Circumvallate papillae;

The circumvallate papillae are seen in the anterior two thirds of tongue just anterior to sulcus terminalis. There are 10-12 in number, the superficial surface of tongue and a V-shaped sulcus present all around the papillae separating them from adjacent portion of tongue. The lining epithelium is keratinised stratified squamous epithelium at the superficial surface and non-keratinised on the lateral surface of circumvallate papillae.

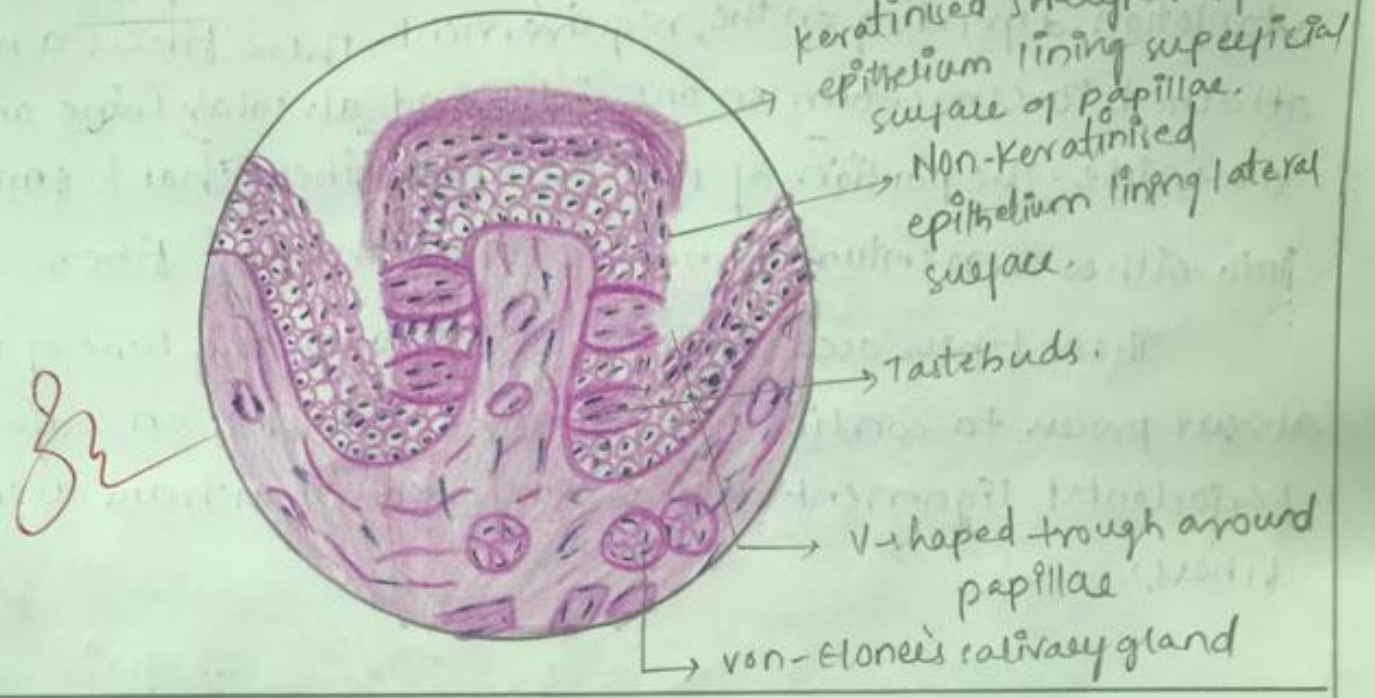
→ Taste buds are seen only on the lateral surface.

→ Central portion is occupied by the connective tissue.

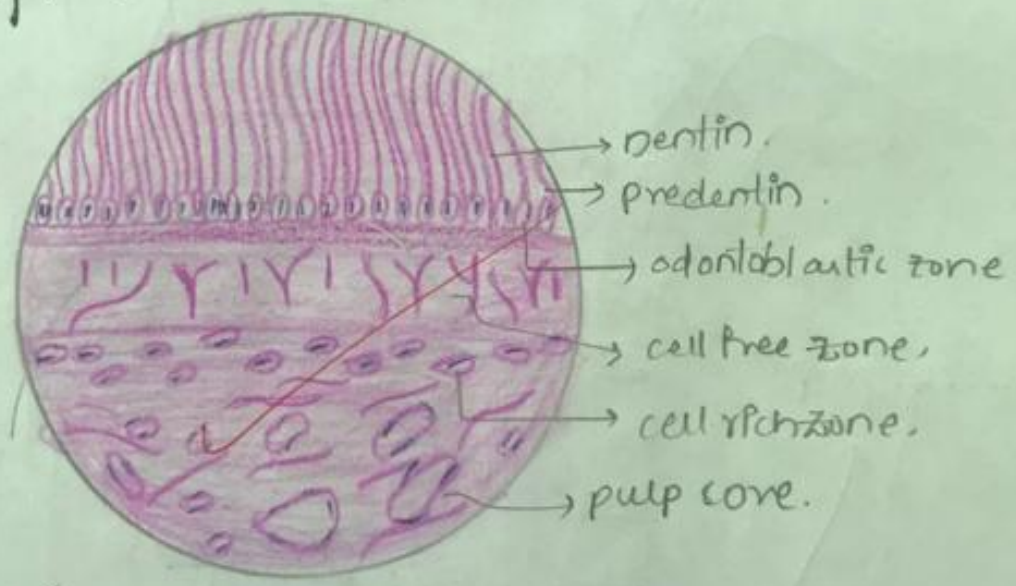
→ The papilla is present of several minor salivary glands (von Ebner's gland) in connective tissue beneath it.

→ These glands secrete watery saliva into V-shaped trough around the papillae to flush out the food debris.

circumvallate papillae.



Histology of pulp:-

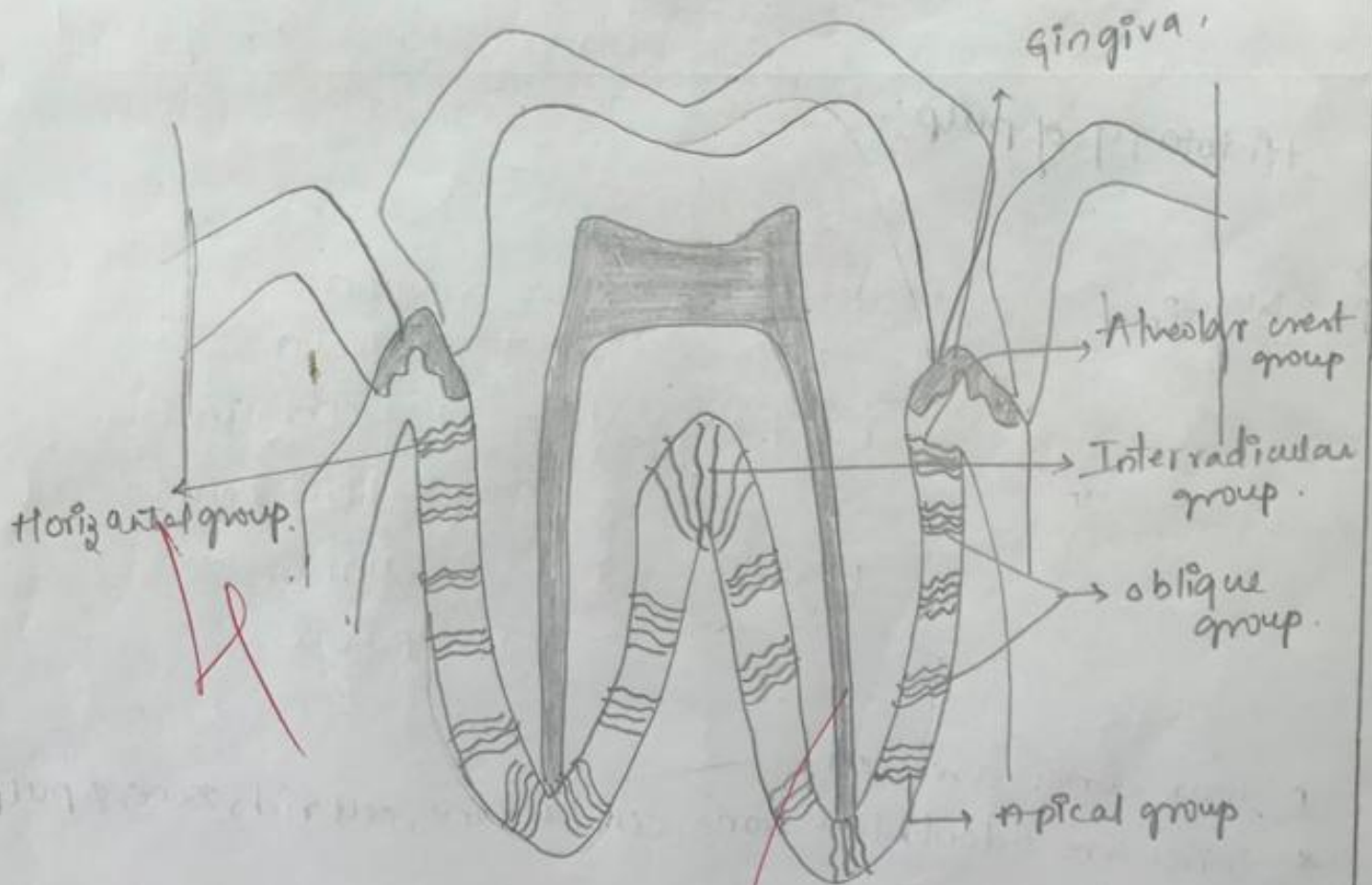


- * Four zones are seen
- * Zones are odontoblast zone, cell free zone, cell rich zone, & pulp core
- * pulp core contains large vessels & nerves.
- * The structure of pulp can be studied by microscopic examination of decalcified sections of tooth.

④ Sharpey's fibers:-

The periodontal ligament fibers are capable of functional adaptation, depending on the requirement. These fibers are attached to cementum on one side and alveolar bone on the other side. The portion of the principal fibers that is embedded into either cementum or bone is called Sharpey's fibers.

These fibers occasionally pass through the bone of the alveolar process to continue as principal fibers of an adjacent periodontal ligament and are referred to as trans alveolar fibers.



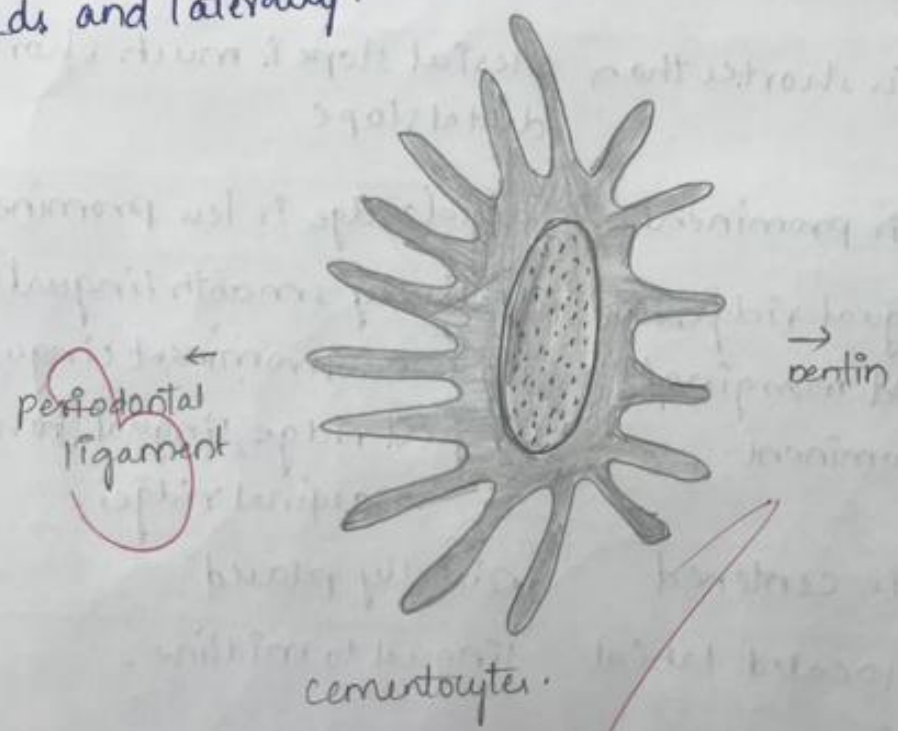
principle fibers of periodontal ligament

5 Differences between maxillary and mandibular canines:-

Maxillary canine	Mandibular canine.
1. Crown is wider with convex mesial and distal outlines.	Crown is long and narrow with relatively straight mesial and distal outlines.
2. Cusp is sharp	Less sharp.
3. Contact areas are at different levels and is more eccentrically located.	Nearly at same level and is more incisally placed.
4. Mesial slope is shorter than distal slope.	Mesial slope is much shorter than distal slope
5. Labial ridge is prominent	Labial ridge is less prominent.
6. Cingulum, lingual ridge, lingual fossae, and marginal ridges are prominent.	Relatively smooth lingual surface with less prominent cingulum, lingual ridge, lingual fossae & marginal ridges.
7. Cingulum is centered	Distally placed
8. Cusp tip is located labial to midline	Lingual to midline.
9. Both the cusp slopes are in straight line	Distal cusp slope is lingually placed.
10. Crown appears less symmetrical when viewed from incisal aspect.	More symmetrical.

⑥ Cementocytes:-

cementocytes are the entrapped cells found in cellular cementum and are located in lacunae. They are spider shaped with an ovoid cell body of 8 to 15 microns diameter & upto 30 processes or canaliculi projecting from the cell body. These canaliculi branch and anastomose with those of adjacent cells. Most of these processes are directed towards the periodontal ligament from where the cells derive nutrition, while some are directed inwards and laterally.



Slip Test / Oral Histology & Dental Anatomy

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There are 3 theories of sensitivity

- Direct nerve stimulation
- Transduction theory
- Hydrodynamic theory

1. Direct nerve stimulation

- * According to this theory the nerves present in dentinal tubules are responsible for dentin sensitivity.
- * Although there is a clear evidence that some nerve fibres enter into dentinal tubules, the nerve fibres this theory is insufficient to explain certain facts.
- * Extreme sensitivity which is not seen in proportion to nerve supply.
- * Masked sensitivity in peripheral dentin
- * Sensitivity in newly erupted teeth.

2. Transduction theory

- * This theory suggests that odontoblasts themselves can act as a receptor cell that can be stimulated by various stimuli and can transmit impulse through pulpal nerves.
- * The receptor function is suggested because of origin of odontoblasts from neural crest cells.
- * Theoretical studies have suggested that odontoblast process extends into dentinal tubules & have gap junction b/w odontoblast & pulpal nerves.

* But experimental studies have shown that the membrane potential of odontoblasts their processes is too low to conduct permit nerve impulse.

3. Hydrodynamic theory:

* Receptors in nerve in peripheral portion of pulp react to local changes brought about by mechanical factors such as fluid movement in dentin.

* Dental lymph which is in continuation with extracellular compartment of pulp.

* When dentin is exposed, the dentinal fluid is lost from exposed surface, resulting in rapid movement of tubule due to capillary action.

* The fluid movement in dentinal tubules disturbs peripheral pulpal environment by disturbing hydrostatic equilibrium of pulp.

* This is the most accepted theory which is able to explain dentin hypersensitivity.

2. Circumvallate Papillae

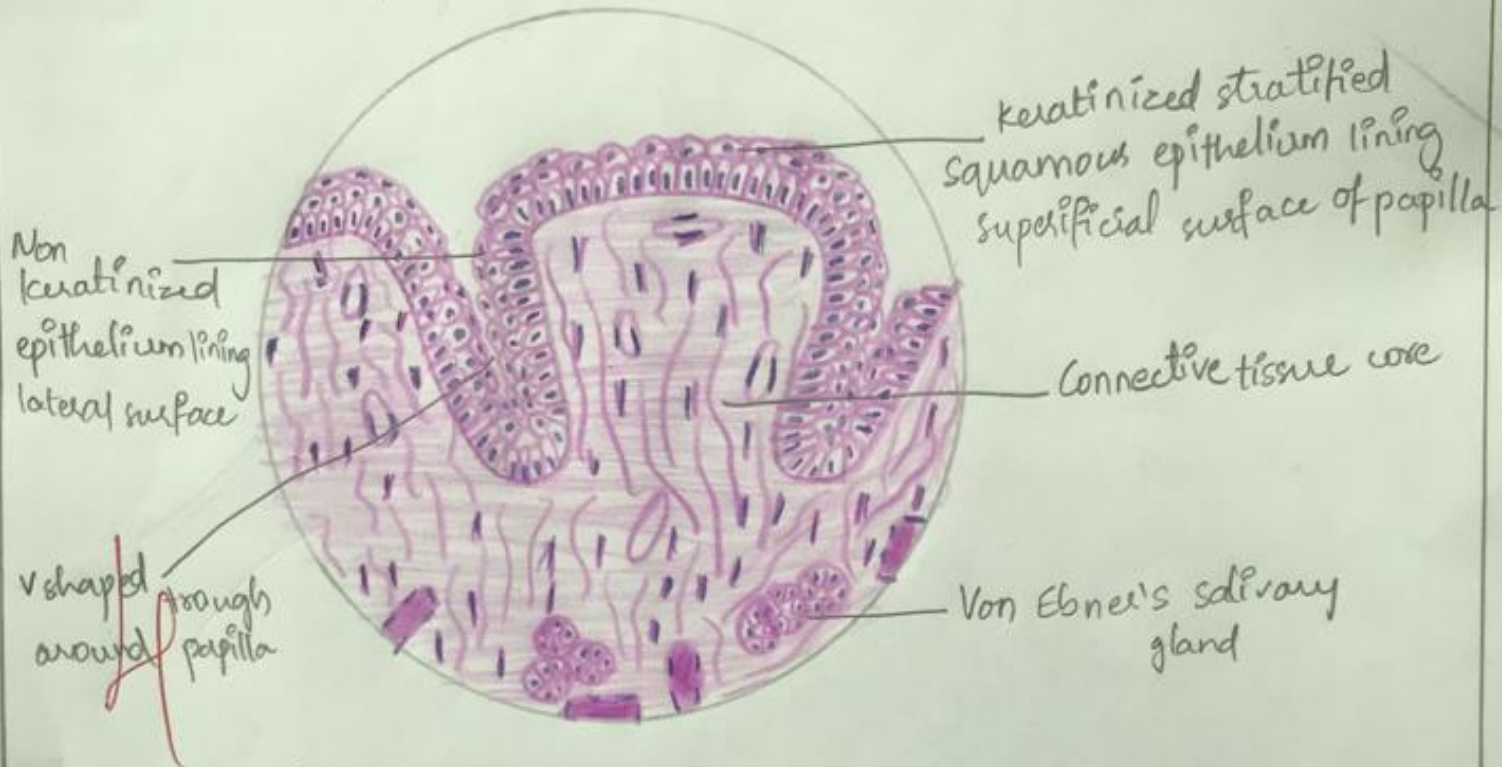
Ans: These are seen in anterior two third of tongue just beneath sulcus terminalis.

* Lined by keratinized stratified squamous on superficial surface and non-keratinized stratified squamous on lateral surface.

* Presence of minor serous salivary glands (von-ebner) characteristic feature of the papilla.

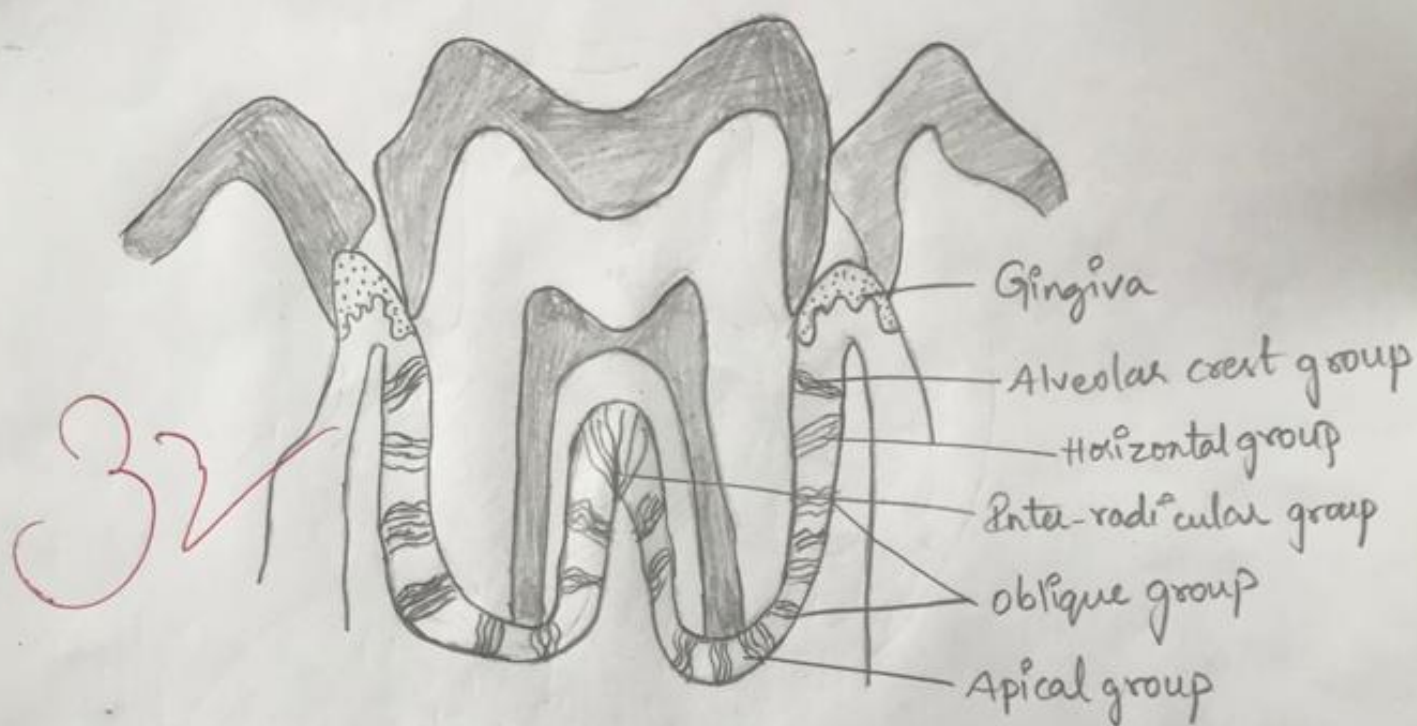
* These glands secrete watery saliva into the V-shaped trough around the papillae to flush out the food debris.

Circumvallate papilla



3. Sharpey's fibres.

- Ans: *
- * The portion of the fibres that is embedded into cementum or bone is called Sharpey's fibres.
 - * These fibres occasionally pass through the bone of alveolar process.
 - * It continues as principal fibres of an adjacent periodontal ligament. to transalveolar fibres.
 - * Sharpey's fibres are with high level of non collagenous proteins
 - i) Osteopontin
 - ii) Bone sialoprotein
 - * Mainly found in bone and cementum.



4. Histology of pulp.

Ans: The pulp have 4 distinct zones

- Odontoblastic zone
- Cell free zone
- cell rich zone
- Pulp core

1. Odontoblastic zone

- * It is found at periphery of the pulp.
- * It consists of the cell bodies of odontoblasts
- * It lies on continuous row near the dentinal end of the pulp.
- * Many Nerve fibres enter this zone and terminate between the odontoblasts.
- * The odontoblastic layer and subodontoblastic nerve network combine to form a sensory complex peripheral sensory unit.

* Completely envelop or encapsulate the central pulp core.

2. Cell Free Zone

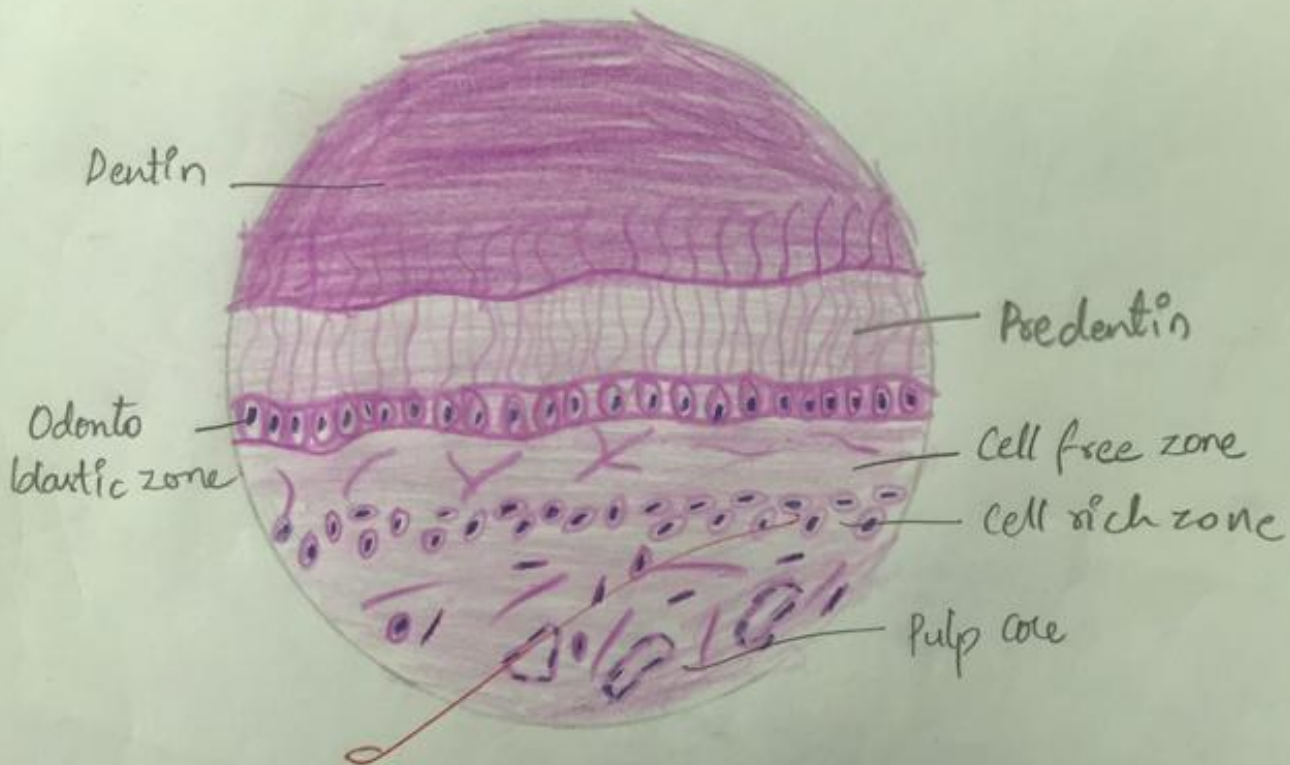
- * Beneath odontoblastic zone a layer is seen which is devoid of cells.
- * This layer is called zone of Weil or subodontoblastic layer.
- * Cell free zone is more prominent in coronal pulp.
- * Major components of this zone are ground substance with reticular fibres and it appears to be relatively free of cells.
- * The cell free zone less in size or temporarily disappears when the dentin formation occur at rapid rate.
- * This zone contains network of nerve fibres that have lost their myelin sheath known as subodontoblastic plexus or plexus of Rashkow.
- * Terminal, naked, free fibres are dendrites of sensory nerves and specific receptors of pain.

3. Cell Rich Zone

- * Situated just below the cell free zone.
- * It is a narrow zone with increased density of cells and rich capillary network.
- * Present in both coronal and radicular pulp.
- * Consists of fibroblasts, undifferentiated mesenchymal cells, macrophages, immunocompetent cells, young collagen fibres.
- * Serves as a reservoir for replacing the destroyed odontoblasts.

4. Pulp Core and Pulp proper

- * The connective tissue located in the center of the coronal and radicular pulp is pulp core.
- * It is a core of loose connective tissue with abundant cellular elements which also contains the large nerves and blood vessels that branch out towards the peripheral pulp area.
- * In young pulp, the core contains more cells while in older pulp, it contains more of fibrous component.



Difference between maxillary and mandibular canines

Maxillary	Mandibular
1. Crown is wider with convex mesial and distal outlines.	Crown is long and narrow with relatively straight mesial and distal outlines.
2. Cusp is sharp	less sharp
3. Contact areas are at different levels and its more cervically located.	Nearly at same level and is more incisally placed.
4. Mesial slope is shorter than distal slope	Mesial slope is much shorter than distal slope.
5. Labial ridge is prominent	Labial ridge is less prominent
6. Cingulum, lingual ridge, lingual fossae, marginal ridges are prominent.	Smooth lingual surface with less prominent cingulum, lingual ridges, lingual fossae & marginal ridges.
7. Cingulum is centered	Distally placed
8. Cusp tip is located labial to midline	lingual to midline
9. Both the cusp slopes are in straight line.	Distal cusp slope is lingually placed.
10. less symmetrical from incisal aspect	More symmetrical