

Subject: Dental Material II

instructor: Mr. Usman

Final term Assignment

50 Marks

Department AHS

DT 4th Semester

Name: Muhammad Tahir

ID NO : 15083

Answer the following questions.

Q1. Explain uses of calcium hydroxide cement

Answer.,, USES OF CALCIUM HYDROXIDE

1] INTRACANAL MEDICAMENT

It is used dressing for treatment of vital pulp. It play a great role as an inter visit dressing in the disinfection of root canal system. It denture bacteria in root canal. It act as a antiseptic. It is not only kill bacteria but also reduce the effect of remaining cell wall material lipopolysaccharide.

2] ENDODONTIC SEALER

Therapeutically effective calcium hydroxide should be dissociated in to calcium and hydroxide. Therefore to be effective, an endodontic sealer based on calcium hydroxide must dissolve and the solid consequently lose content.

3] PULP CAPPING AGENT

It is selected as a material for pulp capping . Histologically there is a complete sentinel bridging with healthy articular pulps under calcium hydroxide dressing. When it is applied to pulp tissue that causes necrosis of adjacent pulp tissue and inflammation of tissue.

4] APEXIFICATION

It is a techniques in which canal is cleaned and disinfected when tooth is free from symptoms of infection .Then we make canal dried and filled with stiff mix of calcium hydroxide and

MTA. There is formation of the osteodentin after placement of calcium hydroxide paste. There appears to be a differentiation of adjacent connective tissue cells; there is deposition of calcified tissue adjacent to the filling material.

[5] PULPOTOMY

It is a most recommended pulpotomy medicament for pulpally involved vital young permanent teeth with incomplete apices. Pulpotomy is a process in which pulps portion is removed, including disease aspects.

[6] WEEPING CANALS

For such teeth dry the canal with sterile absorbent paper points and place calcium hydroxide in canal. It convert acidic pH of periapical tissue in weeping canal to basic pH.

.....
.Q2,, Write a detail note on properties of minerals trioxide aggregate and explain manipulation and setting reactions of MTA ?

Answer,..PROPERTIES OF MINERALS TRIOXIDE AGGREGATE

It has initial PH 10.2 which rises to 12.5 similar to calcium hydroxide following setting. The pH is theorized to be responsible for the antimicrobial action and biological activities of mineral. Its working time is five minutes and setting time three to four hours. Its solubility display low or nearly no solubility which is attributable to the additional of bismuth oxide. The compressive strength of these material are about 70 mpa. Usually a thickness of 3mm to 5 mms is sufficient to provide a good seal. MTA is not suitable as lusting agent. Margination adaptation is better than intermediate restorative material.

MANIPULATION AND SETTING REACTIONS OF MTA

The minerals trioxide aggregate paste is obtained by the mixing 3 part of powder with one part of water to obtained putty like consistency (distilled water, local anesthesia, normal saline). Maxing can do by using paper or glass slab with metal spatula. The max material is place in desire location and condensed lightly with moistened cotton pellet. Minerals trioxide aggregate has pH of 10.2 immediately after mixing and increase to 12.5 after 3 hours of setting. It must be stored carefully in close sealed container away from moisture. The maxing time of MTA is crucial. Prolonged mixing may leads to dehydration of mix. It take more time to set as compared to other material. According to Torabinejad and colleagues in 1995 the setting time of grey MTA is about 2 hours and 45 minutes, where as reported in 2006 that setting time for grey MTA is 2 hours and 55 minutes and 2 hours 20 minutes for white MTA. Extension of MTA setting time is a drawback of it. Sodium phosphate dibasic, and calcium chloride may reduce the setting time. Minerals trioxide aggregate hydrophilic required moisture to set, making absolute dryness contraindicated. Moisture may increase flexibility strength of set cement.

Q,3,, Discuss manipulation of amalgam, write indication and contraindications of amalgam ?

Answer,.. MANIPULATION OF AMALGAM

1] TRITURATION,.. It is a process in which mercury react with alloy powder. The method brought the rubbing of surface oxide on amalgam particles, exposing an active surface to react with mercury. It has two major type.

1] HAND TRITURATION,,,,. A glass mortar and pestle is used. The mortar has its inner surface toughened to increase the friction between amalgam and glass surface with carborundum paste. A pestle is glass rod with round end.

2] MECHANICAL TRITURATION,,,,. The disposable capsule serves as a mortar. Some capsules have a cylindrical metal or plastic piece in capsule which serves as the pestle. Reusable capsule are available with friction fit or screw. Amalgamators have automatic timer and speed control device. The speed range from 3200 to 4400 cycles per minute. High copper alloy required higher mixing speed. Mechanical amalgamator for proportioned capsules (left) close up the mechanical arm that grips and vibrate capsules.

INDICATIONS

Restoration of posterior teeth (class I and II) (moderate to large preparation). In some cases restoration of distal surface of canine take place. Class five preparation in some cases occurs as well as class six. Core build up for badly broken teeth in posterior teeth.

CONTRAINDICATIONS

This occurs when esthetic is important of anterior teeth. Patients have allergies to mercury or other amalgam components. Remaining tooth structure required support. Treatment of incipient or early, primary fissure caries.

Q,,4,, Discuss composition of calcium hydroxide with advantage and disadvantages?

Answer..., COMPOSITION OF CALCIUM HYDROXIDE

1] ACCELERATOR PASTE,,.

- A) Alkyl salicylate 36 to 42%
- B) Inert filler titanium oxide 12 to 14 %
- C) Barium sulphate 32 to 35%
- C) Calcium sulphate 14 to 15 %

2] BASE PASTE

- A) Calcium hydroxide 50 to 60 %
- B) Zinc stearate 0.5%

C) Ethylene toluene sulphonamides and paraffin oil 39.5%.

ADVANTAGES

They are initial bacteriocidal then bacteriostatic. These material promotes healing and repair. These material have high PH to stimulate fibroblasts and neutralize low PH of acid. They stopped internal resorption. These material are inexpensive and easy to use.

DISADVANTAGES

Doesn't exclusively stimulate dentinogenesis. Does exclusively stimulate reparative dentin and associated with primary tooth resorption. Maybe degrade during acid etching. Degrade upon tooth flexure. Marginal failure with amalgam condensation. Doesn't adhere to dentin, or resin restoration.

Q,,5.. Write component of composite resin and also discuss use of composite resin?

Answer.,, COMPONENTS OF RESIN

A) MATRIX

B) FILLER

C) COUPLING AGENT

D) INITIATION AND ACCELERATORS

E) PIGMENTS

1] Resin Matrix

A) Bis GMA (Bisphenol A glyceril methacrylate)

B) UDMA (Urethane dimethacrylate)

C) TEGDDMA (Triethylene glycol dimethacrylate)

CLASSIFICATION OF THE RESIN BASED COMPONENTS

1] Conventional macrofilled have particles size 8 to 12 um.

2] Microfilled material have particles size 0.04 to 0.4um.

3] Hybrid have particles size 1um.

USES OF COMPOSITE RESIN

1) FLOWABLE COMPOSITES

Has a reduce filler content to make the material FLOWABLE. Indicate for class I restoration in gingival areas. they used as cavity base liner especially for class 'II preparation where in access is difficult to achieve. These material used as pit and fissure sealant.

2] CONDENSATION COMPOSITE

These material have a filler particles that inhibits the filler particles by sliding to one another. Hybrid material have large particles used for iligli stress area requiring improved polishability, .