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***Acrylic resins notes,lect#10***

***Slide#2:***

-Acrylic resin is used mainly as a Base for complete dentures.

-The end result of this treatment is to provide patients with upper and lower dentures made of acrylic teeth and acrylic base.

***Slide#3:***

A picture of upper and lower complete denture.

***Slide#4:***

1-we take impressions and then we pour them, then we do a special tray.

2 -a 2nd impressions is taken and poured for a more precise job.

3- a bite registration is taken in wax. And thus this denture is all done using wax.

4- Then wax is placed in the flask and a substance is added to it

5- When it becomes rigid we separate the wax from the flask by wax melting and the shape inside the flask is the same shape of the removed wax model.

6-then we replace the wax with acrylic by packing it (the same way we inserted the metal inside the instrument) in the place where the wax was AND NOW WE HAVE A BASE.

***Slide#9:***

-One of the dental uses of acrylic resins is to repair broken dentures that were made by the same material (acrylic resins).

-Denture liners: how the denture fits changes with age because of bone resorption so we add another layer (relining) of acrylic to the denture from inside to improve fitting without changing anything in the denture.

***Slide#12:***

-The acrylic resin is formed by addition polymerization reaction and as the name indicates poly "multiple unites" are joined as a chain.

-the reaction is considered as an addition polymerization reaction because MMA is added until it's all used up and then the reaction ends ,this reaction is similar to the condensation but with no bi-products .

***Slide#15:***

-Activator depends on the product.

-Initiator is already in the product.

-The reaction begins when it faces its own activator, i.e.: if it was heat cured and it faced heat it will be activated and the reaction will begin.

-As a result of activation the bonds in benzoyl peroxide are broken and free radicals are produced

-Free radicals are very active they begin the reaction by breaking the double bond and then adding to the chain until all monomers are used up.

-Propagation is the continuity of the reaction

Termination: the end of the reaction when all monomers are used up. -

 ***Slide#16:***

-Addition reaction doesn’t contain bi-products that’s why it's better than condensation with better mechanical properties).)

***Slide#17:***

-Heat cured resins is the most important resin product that’s used for denture base.

-One of the powder components are PMMA which are already reacted and made as granules to be added to the "still" not-reacted components.

-Pigments are the main components of any material in general.

**Important note (This will be a question in the exam :P )**

-The plasticizer (dibutyl phthalate) gives plasticity (moldability) to the material.

-Synthetic fibers give the mechanical properties.

***Slide#19:***

-The initiator is already activated, it has an active bond.

-MMA monomer has a double bond, its weak thats why its broken first, becomes active and binds other monomers to make the chain.

- We end up with a proper rigid material.

***Slide#20:***

-this reaction is very fast , so there will be entrapment of some non-reacted particles of monomers in the chain these are called residual monomers and can't be used in bases because the base needs materials with the best quality.

- That’s why cold cured resin is used in minor procedures like Repair.

-cold cured resin leaches with time and might be toxic to the patient, so its not a good biocompatible resin and some people have allergy against its taste.

- The material flows at first then it becomes rigid with time.

-the base is done with specific measurements and any increase in the viscosity will damage the base and damage the vertical dimension.

-Amine increases the chance of discoloration" into yellow" and it’s the cause of inferior color stability.

***Slide#21:***

The main difference is the activator but components are the same. -

The big bullets demonstrates the advantages of cold cure.-

-heat cure is accompanied with high stress in the packing procedure which is done under high temperature and pressure in the flask so when we open the flask a change in the denture will occur as a result of releasing of the internal pressure while in cold cure we don’t have increased internal stress so the denture won't change that much.

***Slide#23:***

-inferior properties means worse.

-light cure gives inferior strength , the teeth and the base should be compatible so the teeth won't fall off from the denture and the bond must be strong as that in cold or heat cure and NOT light cure (inferior strength).

-porcelain teeth have NO good bonding.

-the initiator that'll be used must be affected by light.

-light cure is used for relining and repair to change the surface and improve fitting of denture.

- It differs in Activator and components.

-good for patient who are sensitive to monomers (no leaching in the future).

-Dentures are always made by heat or cold cure except for monomer sensitive people they are made by light cure.

***Slide#24:***

"REALLY :P". طقم=Denture -

-Pour and cure resin method:

1-used when the patient is in a hurry

 2- Alginate is used to produce a model of the denture

 3- The setting is fast but the mechanical properties are weak.

-High impact strength acrylics:

1-it improves Mechanical properties

2- Used to make either an upper or a lower denture because of increased occlusal load.

3-its similar to heat cure but with some modifications.

4- Its more expensive.

-Rapid-heat polymerized acrylic

\*rapid setting.

***Slide#27***

***''IMPORTANT" :***

-After mixing the liquid with the powder we watch the changes while the setting is taken a place.

-in the sandy stage we have granular sandy substance.

-the dough stage is the most important because its when components are held up tight together (packed) which can't be done in the previous stages because the material is still fine (soft) and the reaction didn’t reach the required limit.

-Rubbery stage: the material becomes rigid and not moldable anymore.

-stiff: very rigid material.

***Slide#28:***

-the flasking procedure is when we do the wax phase with the teeth on it in a flask , and pouring a material around then melting the wax and replace it with acrylic.

-Important: heat curing is done under Pressure.

-curing cycle in heat curing is long.

-pressure prevents raised bites and gives the same thickness that’s needed without any changes.

-pressure reduces porosity because when packing is done the particles are closer to each other and spaces are much less.

-74 is the temperature of the surrounding media (water) while in the flask it's higher because the reaction is exothermic.

-74c is the ideal temperature that will not cause boiling of monomers and thus it reduces porosity m having higher temperature with the reaction being exothermic itself will cause us to exceed the boiling point of monomers.

***Slide #29:***

-upper left picture shows the flask which is the metal part.

-warm water is used to remove the wax(elimination).

-a space is left between the teeth and the cast and here we pack the acrylic.

-then the flask is closed and put under pressure so acrylic can be well distributed.

-the next step includes the curing on the long cycle.

***Slide#30:***

-additional heat in long cycle causes stress formation.

-residual monomers are found in heat cure but much less than that in cold cure.

 -slow cooling is required for better mechanical properties.

-some dentist may give 24 hr! terminal boiling so residual monomers will leach.

-pressure decreases porosity by packing.

-high temperature causes evaporation of monomers and porosity.

-a very flowy material means loss of pressure and leads to porosity.

-slow cooling releases internal stress and results in HIGHER STABILITY.

NOTE:

THESE ARE EXTRA NOTATIONS, FURTHER EXPLANATIONS AND "MO5TA9ARAITIONS " SO REFER TO SLIDES PLZ. ☺

A Smile is a curve that sets EVERYTHING RIGHT and it surely worth A DENTAL FIGHT ☺

