**\*\*We will divide the material into 3 parts #**

1-polymares

2-metals and dental alloys

3- Porcelain (ceramic)

\*\*These material we use them as filling or for crowns and bridge

**\*\*The amalgam** as we mention before it is a metal ….and **composite** it is a polymers and ceramic ….mixed filling .. The **veneer** are ceramic ….

\*\*These materials are **developed** but not very easy ….each 100 year a new **fundamental** are added to them

\*\*We have many types of material we divide them according to main categories as mention before the three points above#

**\*\* Differences between these material :**

\*\***Metals** are behave differently to ceramic as an example if we applied a force on it …it will change it shape (it will goes under flexion or deformation )but not a fracture )

 \*\*In the other hand the **ceramic** we will see that there is a resistance in it till it reach to a point then it will fracture (catastrophic fracture ) (the same meaning )

**SO**  If someone has a **metal filling** ,or a metal crown ..it may goes under deformation but not a fracture in it , **BUT** if we use Porcelain and subjected to the pressure exceeds a certain limit ,so you expect instantaneous fracture .

\*Metals withstand or Bear higher deformation

\*\*We try to put **a metal crowns for** the last 2 molars because they subjected to huge force on them on the oclusal surface more than the others teeth .so we put **a porcelain crown on the** others" anterior which do not subjected to pressure for Aesthetic purpose .

\*\* It is not easy to make a stress strain test on the materials ,so we do a Dimettral compression test . (dr .said that we have to make a research to know what is that test)



The dimettral compression test, also known as the Brazilian disk test or indirect tensile test , is widely used to measure the tensile strength of elastic, brittle materials .It induces a tensile stress in the direction transverse to the applied compressive load which causes the disk specimen to split into 2 halves along the loaded diameter .

(be sure u know it well cause these things come in the exam )

\*\*when we want to put an **amalgam filling** we have to drill in the tooth (make a cavity for 1.5 to 2 mm .less than this it will fracture .

\*\*for **composite filling** we have to make some roughness in the tooth so the filling not fall down . the test for those are called bond test ." bond strength test"

\*the material always **stronger** 8 – 10 times in **compression** rather than in tension

\*ceramic is stronger 10 times in compression than in tension ..we have to think in it in an atomic level ….because we become near to the center of the atom " nucleus"

\*\*in brief the doctor want us to know that the best thing to put a filling .when we put it on the occlusal surface .but we can’t always make thins thing .because we don’t have always caries on the occlusal surface.

\*\*as we mention before that **enamel** is a dead tissue so the bonding for it is easy ..in other hand **dentin** ,if we applies bonded .like composite ,there will be a degradation on it ,because the is a molecule destroy (eat ) collagen .(collagenases ,proteogenases)

\*\*any filling day by day after facing a hot and cold things and forces, it become weak .

bending and torsion endodontic files and reamers

\*\* pre point mediators !!! the name of the bridge of three unite(three tooth ) so we made it from metal cause it can resistance more force

any structure have a fatigue. at this point we have to change it.

\*so any material we want to put it in the mouth it should handle some forces . **like partial denture** there is a hook attached to it to connect the next tooth ,we put it around and below the bulk of the tooth ,this hook day by day it become weak and for that it has to resist a lot of force .

he talk about viscose material and elastic material.. the **viscose** material, it take the shape of the place (container) Where you put it .but the **elastic** when we remove the force applied on it ,it reform to the original form like springs .

**\*\*thixotropic** ?? DR . told us to search for this

\*\*what is **viscosity** and what it **the****science** that study the viscosity ??

**\*\*we have an 3 behavior for the materials**

1-psueduplastic behavior

2- Newtonian

3- dilatant

**Thixotropic material :** as we increasing the shear stress ,the flow( viscosity ) increase .

* amalgam filling after 5-6 years and after the huge force on it ,it elongate .this elongation become over the cavity and make a space between the filling and the tooth ,and this may lead to another caries.

\*\* there is a materials we have to cover its surface so it not interact with other materials and the environment .

"sorry for any wrong in this sheet but the record was not clear well "

