

# ***CROWN AND BRIDGE***

*Lecture: 6*

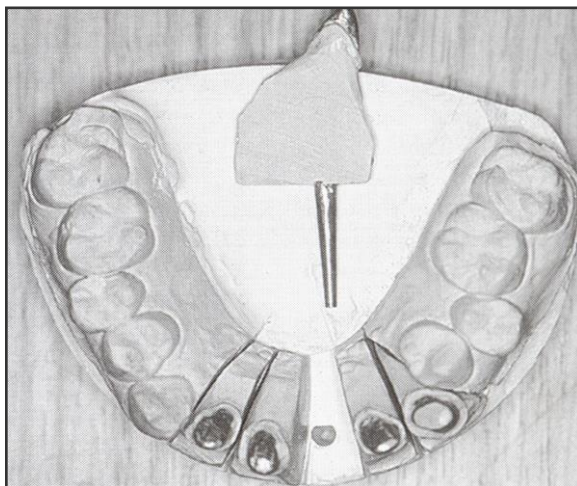
**Dr. Farid**

## **Working casts and dies:**

**Working cast:** It is a replica of the prepared tooth (teeth), ridge area and other parts of the dental arch. It is produced from the final Imp. On which we will make the wax pattern (Lab. Work) of the final restoration.

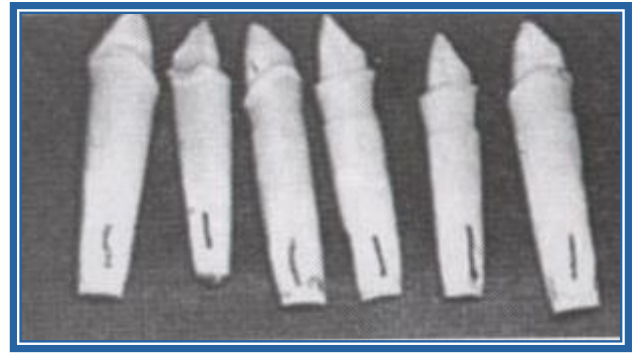
### **Requirements of good working cast:**

- 1- Must be free from air bubbles especially at the area of the finishing line and occlusal surface.
- 2- Must reproduce all the details that have been captured by the imp.
- 3- Must be free from any distortion.
- 4- It should be trimmed to ensure access for carving of the wax pattern (at the margin).
- 5- It should allow precise articulation.



## **Die:**

It is the positive reproduction of the individual (single) prepared tooth on which we will do wax pattern. (It's produced from the final imp.).



## **Requirements of dies:**

- 1- Must reproduce the preparation exactly.
- 2- Must be free from air bubbles.
- 3- Must return to its exact position on the cast when it is removed.
- 4- Must be stable, even when the cast inverted.

## **Types of dies:**

- 1- Silver-plated dies.
- 2- Copper plated dies.
- 3- Amalgam dies.
- 4- Stone dies.

The two critical properties of die material are the dimensional stability or accuracy and resistance to abrasion, during the construction of wax pattern.

## **Advantages of stone dies are:**

- 1- Easy to be prepared.
- 2- Can be used with all types of imp. Material.
- 3- Cheap.
- 4- Need less requirements and easy to manipulate.

According to ADA specification (American Dental Association) **we**

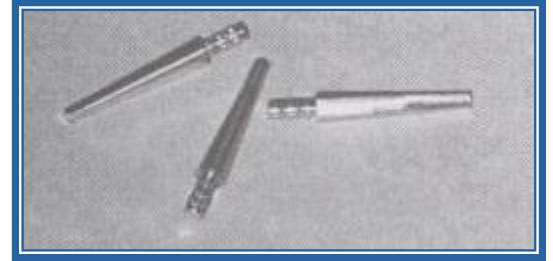
## **have 4 types of gypsum material:**

- I) Type I: Impression plaster.
- II) Type II: Model plaster.

III) Type III: Stone.

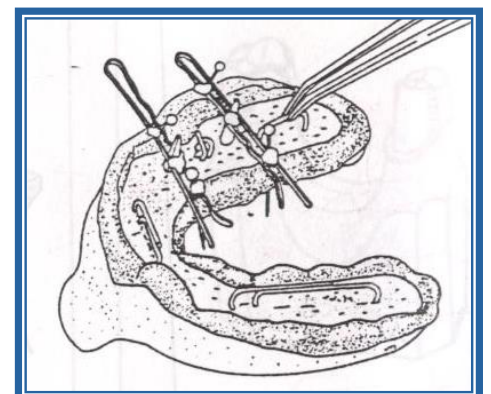
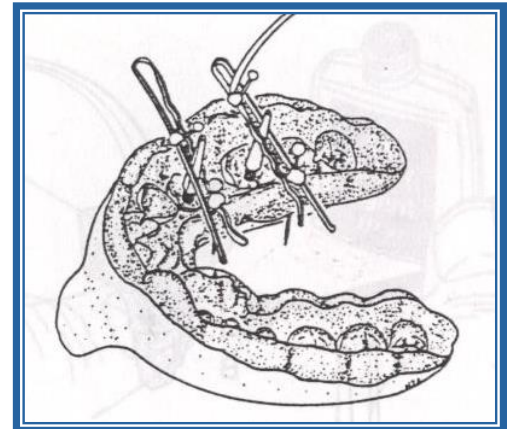
IV) Type IV: High strength stone (die stone).

**Dowel pin:** Ready-made metal pin used as a mean of orienting dies to the original model, which allow them to be easily removed and accurately replaced into the model. The pin is tapered and cylindrical but with one flat side for positive seating.



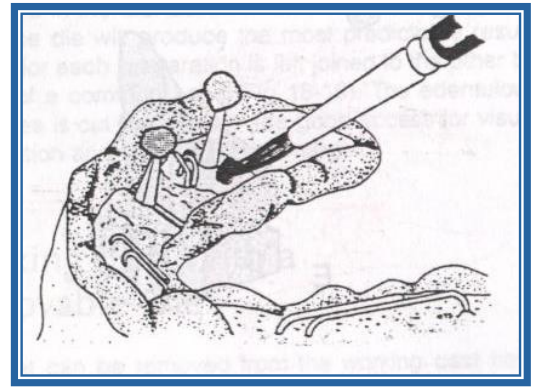
**Constructions of stone die (working cast with removable die):**

- 1- Dry the impression.
- 2- Dowel pin is used for each prepared tooth; it is placed over the center of the prepared tooth parallel to its long axis. We use bobby pin to hold dowel pin in such position by placing it between its arms. The bobby pins then positioned buccolingually across the imp. So that the dowel pin will be centered directly over the prepared tooth. Straight paper pin then is inserted between the arms of bobby pin and into the imp material buccally and lingually.
- 3- Stabilize the dowel pin in the bobby pin and the bobby pin itself against the straight pin with sticky wax.
- 4- Place the tray over the vibrator, add stone in small increments to about 2mm above the cervical margin (it should cover the serrated end of dowel pin).
- 5- A retentive means is placed (paper clips) in the stone before it SSTs to provide retention to the

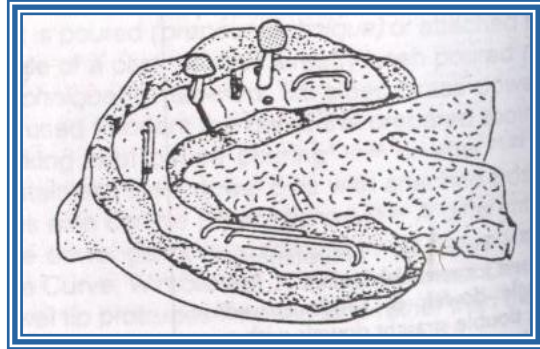


second layer (base) which will be placed later.

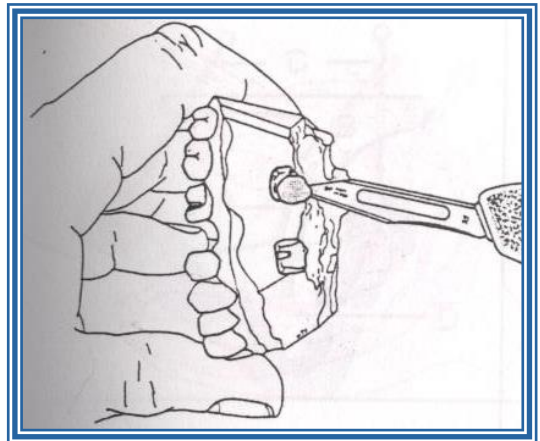
- 6- When stone is set remove the bobby pin and paper pins from the impression. A ball of soft wax is placed on the tip of each dowel.



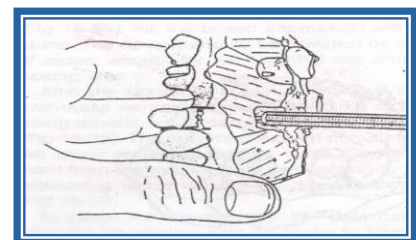
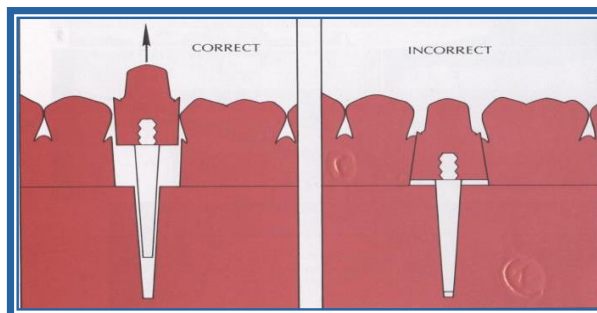
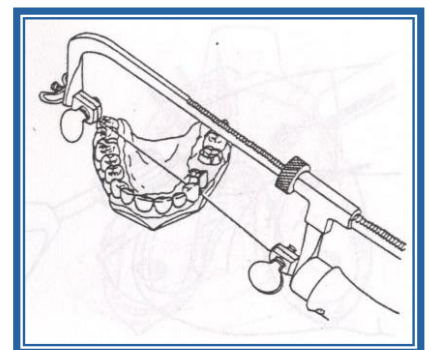
- 7- Lubricate the surface of the first layer with separating medium. Now pour the 2<sup>nd</sup> layer (base) with stone till the dowel is completely covered with stone.



- 8- After complete setting of stone, remove the cast from the imp. Then using sharp knife remove the wax ball from the end of the dowel pin. Section the proximal sides, (mesial and distal) of the prepared tooth using saw in bucco-lingual direction to obtain the die. The cut should be through the 1<sup>st</sup> layer only, and the cutting should be diverging toward the occlusal surface. Otherwise it is difficult to remove the die.



- 9- Gently tap on the end of dowel (after removal of the ball of soft wax) with hand instrument to loosen the die.



Reference:

Contemporary Fixed Prosthodontics