

Laboratory work (Waxing)

Before waxing, we should do *Ditching*, which is the trimming of the stone that represents the gingiva around the prepared tooth in order to expose the finishing line which is located subgingivally or with level of the gingiva. It is done by using a sharp instrument Fig. (1).



Fig. (1) Ditching of the die

Wax pattern: made from wax material, it is the precursor of the final cast restoration that will be placed on the prepared tooth Fig. (2).



Fig. (2) Wax pattern

Requirements of the wax pattern:

1. It should be smooth and free from any debris.
2. It should duplicate accurately the anatomical features of the original tooth. Information needed for duplication is taken from the adjacent teeth, opposing teeth, and from general knowledge of dental anatomy.
3. It should have a contrasting colour so that the margins of the pattern can be distinguished from the cast.

❖ Why we use wax for duplication?

1. It is easily manipulated.
2. Inexpensive.
3. Easily eliminated from the mold cavity during burn out procedure.

Types of wax and techniques used for construction of the wax pattern:

According to the ADA, there are two types of inlay casting wax:

1. **Type I inlay casting wax:** which is a hard wax used for intra-oral waxing technique (*direct technique*), (the wax pattern constructed inside the patient's mouth, which is mostly used for anterior post crown), this type of wax has a higher melting temperature.
2. **Type II inlay casting wax:** which is a softer wax used for extra-oral waxing technique (*Indirect technique*), (wax pattern constructed on the die of the working cast), this type of wax has a lower melting temperature.

Waxing procedure (*Indirect technique*):

- Apply a wax lubricant on the die and leave it to dry.
- Cover all the preparation in one time with molten wax to make a coping wax by immersing the preparation in a dish containing molten wax (this is the first layer of wax pattern).
- Add wax to the proximal surfaces of the tooth to build the contact areas with the adjacent teeth.
- Build the axial walls (buccal and lingual) to the normal contour.
- Build the occlusal surface of the restoration, then check and adjust the occlusion with opposing teeth in centric and eccentric relation.
- The margin of the wax pattern should not have over or under extension.

Lost wax technique: It is the process, which includes surrounding the wax pattern with a mold of heat resistance material (investment), eliminating wax by heating and then introducing molten metal into the mold cavity through a channel called the (**sprue**) Fig.(3).

Sprue: It is a small diameter pin of wax, plastic or metal, one end of it is attached to the wax pattern while the other end is attached to the **crucible former**. It provides a channel after burn out procedure to act as an inlet for the metal that is forced in the mold cavity.



Fig.(3) sprue

Dimensions and location of the sprue:

Diameter: The diameter of the sprue should be as large as possible (larger than the thickest part of the wax pattern (2-2.5mm)) to improve the flow of the molten metal into the mold cavity to provide a reservoir to compensate for the shrinkage of the metal during solidification.

Length: It should be adjust so that when we attached the sprue to the crucible former, the margin of the wax pattern should be about 6 mm away from the end of the casting ring. So that the wax pattern will be in the center of the casting ring and surrounded by a uniform thickness of investment material (Fig 4).

Location: The sprue should attached the wax pattern at the bulkiest area and at an angle (45 degree) that allow the incoming metal to pass freely without any turbulence. The attachment should also be at non-centric area.

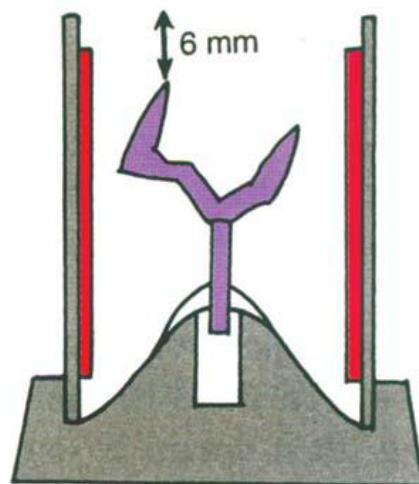


Fig 4 The wax pattern should be positioned such that there is a maximum spaces of 6 mm between tip of the pattern and the free end of the casting ring