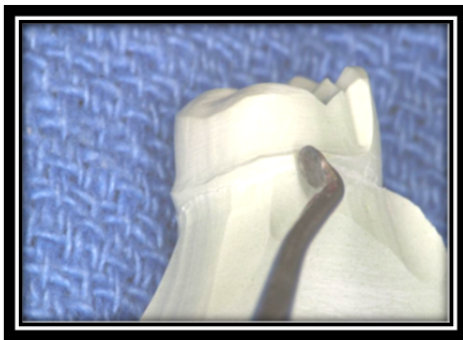


Waxing

Ditching: 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 our finishing line which is located subgingivally or with the level of the gum. It is done by using a sharp hand instrument (sharp knife).



Cutting of the stone representing the gingiva to expose the finishing line (ditching)

Wax pattern : It is the precursor of the final cast restoration that will be placed on the prepared tooth.

Requirements of the wax pattern:

1. It should be clean and smooth.
2. It should duplicate accurately the anatomical features of the original tooth.
3. It should be free from any debris.

Information needed for duplication of the anatomical features is taken from the adjacent teeth, the opposing teeth, and from general knowledge of dental anatomy.



Why we use the wax for duplication?

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

Types of wax used for duplication:

The type of wax used in construction of the wax pattern is inlay casting wax according to the ADA, we have two types of inlay casting wax:

- **Type I inlay casting wax:** it is a hard wax used for intra-oral waxing technique. It has a higher melting temperature.
- **Type II inlay casting wax:** it is a softer wax than type I and is used for extra-oral waxing technique. It has a lower melting temperature. It is used to construct the wax pattern on the cast.

Requirements of good inlay wax:

1. It must flow readily when heated.
2. It must become rigid when cooled.
3. It must be capable of carving without chipping or smearing when it is done in fine margins.

Techniques of construction of the wax pattern:

1. Intraoral technique (direct technique):

The wax pattern is constructed inside the patient's mouth using type I inlay wax. This technique is mostly used to construct the posterior inlay restoration and anterior post-crown.

2. Extraoral technique (indirect technique):

Type II inlay wax is used to construct the wax pattern on the die of the working cast.

Advantages of indirect technique over direct technique:

1. It reduces chair time, so it saves the dentist's time, and is more comfortable to the patient.
2. It offers an opportunity for visualization of the restoration and direct access for waxing of the margin.
3. It is probably the easiest mean of fabricating a cast restoration.

Waxing procedure (extraoral technique):

- Apply a wax lubricant (die spacer) on the die and leave it to dry.
- Cover all the preparation in one time with molten wax to make a coping of wax. This can be obtained by immersing the preparation in a dish

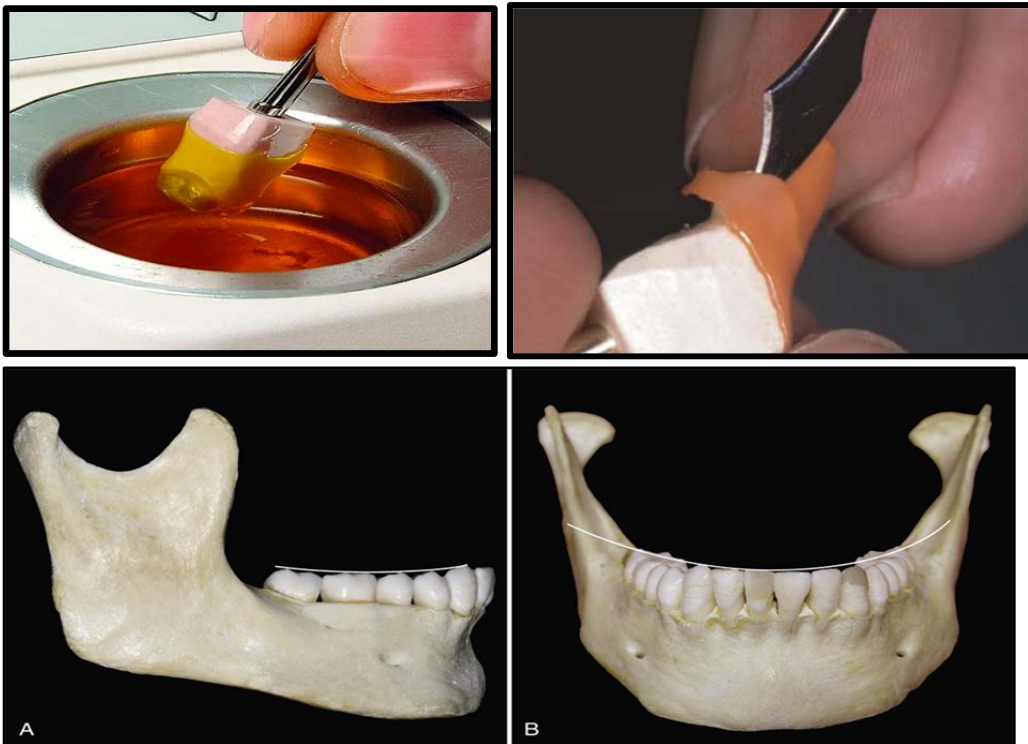
containing molten wax (this is the first layer of wax pattern).

-Add wax to the proximal surfaces of the preparation to build the proximal surfaces and contact areas with the adjacent teeth.

-Build the axial wall (buccal and lingual wall) to the normal contour.

-Build the occlusal surface of the restoration following the curve of Spee and curve of Wilson, then check and adjust the occlusal relation with the opposing teeth in centric and eccentric relation.

-Check the margins of the wax pattern to ensure that the margins of the wax pattern have no over or under extension.



Lost wax technique:

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

Sprue:

It is a small diameter pin made 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 gold which is forced in the mold cavity.

Requirements of the sprue:

1. The sprue must allow the molten wax to escape from the mold cavity.
2. It must allow the molten metal to flow into the mold cavity with as little turbulence as possible.
3. The metal within the sprue must remain molten slightly longer than the alloy that has filled the mold. This will provide a reservoir to compensate for the shrinkage that occurs during solidification of the metal casting.

Dimensions and location of the sprue:

Diameter: the diameter of the sprue should be as large as possible to • improve the flow of the molten metal into the mold cavity and to provide a reservoir to compensate for the shrinkage of the metal during solidification.

Length: the length of the sprue should be adjusted so that when we attach it to the crucible former the margin of the wax pattern should be about 6 mm away from the end of the casting ring. It is made so that the wax pattern will be in the center of the casting ring and surrounded by a uniform thickness of the investment material.

Location : the position of the attachment of the sprue with the wax pattern should be to the bulkiest area of the wax pattern and should be at an angle to allow the incoming metal to pass freely to all portions of the mold cavity without any turbulence. The attachment should also be at the non-centric area.

