Interocclusal Record (Bite Registration)

Objective of bite registration:
To transfer the relation between the upper and lower dental arches from the patient’s mouth to the articulator we need bite registration. Proper interocclusal record is important to orient the die (s) of the same arch to the opposing arch.

When enough teeth are present in both dental arches we can transfer the relation by hand articulation of the casts. i.e., no bite registration is needed in such cases, so we can occlude the opposing casts by hand, and then we mount them on the articulator.

If the remaining teeth are insufficient to produce hand articulation of the casts, we have to record the bite by using either of the followings:

1. Pink base plate wax.
2. Bite registration paste.
3. Bite rim or occlusal rim.

How to record?
Whatever the material used to record the relation between the upper and lower dental arches, we have to guide the mandible to the required relation (centric or eccentric). So, the patient is asked to close and guide him, put reference points, and then we put the record material and register the relation.

Pink base plate wax is the most widely used material to record the relation. The procedure is by softening the wax at first, then we ask the patient to bite on it, keeping in mind that we have to guide the mandible to the reference points that we have marked to have the correct bite registration. Meanwhile, the patient is asked to mold the wax at the lingual area by his tongue, while we adapt the wax on the labial and buccal sides by our fingers. After complete setting of the wax, we remove it from the patient’s mouth, trim the excess wax, and attach it to the cast and transfer it to the articulator.

Bite rim: The bite rim is used in the following cases:

1. Free end saddle.
2. When we need to restore the anterior teeth.
3. When we don’t have enough teeth to obtain the centric relation.
Provisional restoration (Temporary crowns):

It's important that the prepared tooth should be protected and the patient kept comfort while the restoration being fabricated.

Requirements:
1. The temporary crown must completely cover the prepared teeth without applying any pressure on the gingival tissue (without any over extension).
2. It must restore the shape of the natural teeth with good proximal and occlusal relationship to prevent the tilting of the adjacent teeth and over eruption of the opposing teeth.
3. It should be able to withstand the force to which it subjected and have some strength and retention.
4. The margins should be well adapted to the finishing line to provide good marginal seal.
5. It must be fabricated from a material that prevent the conduction of heat, cold and other chemicals of the mouth (not harmful to the pulp).
6. It should provide esthetic, phonetic and function as indicated.

Advantages:
1. Pulp protection.
2. Positional stability.
3. Protect the prepared teeth from fracture.
4. Function and esthetic.
5. Protection of gingival tissue from irritation and prevent over growth of the gingiva.
6. Facilitate plaque removal from the area.

Types of temporary crowns:
1. Preformed temporary crowns.
2. Customized temporary crowns and bridge (Chair side temporary crowns).
3. Laboratory made temporary crowns and bridge.

1. Preformed temporary crowns:

A. Metal crowns: Mainly used for posterior teeth, it comes in different shapes and sizes made of stainless steel or aluminum. The Aluminum T.C. is either anatomical (morphological) or non-anatomical types (flat).
Technique for application of metal T.C.:

1. Select the proper size which fit the prepared tooth.
2. Trim (cut) the gingival margin with scissor to confirm it to the gingival finishing line of the preparation & to accommodate the vertical height of the occlusion.
3. Seat the T.C. on the prepared tooth inside the patient’s mouth & check the margin, occlusion & the proximal relation with opposing & adjacent teeth, if it fit properly.
4. Remove the T.C. from the patient mouth; smooth the margin with stone bur.
5. Cement T.C. with ZOE cement on the prepared tooth.

B. Plastic crowns:

Polycarbonate temporary crown: made from poly carbonate plastic combined with micro-glass fibers, available for anterior and posterior teeth.

Acrylic temporary crown:
Made from acrylic resin (tooth colored) and available in different size and colors, they used for anterior teeth.

Clinical procedure:

1. Select the proper size of T.C.
2. Try the crown on the prepared tooth if it is not fit on the prepared tooth, you should select the most suitable size T.C. & follow the steps.
3. Cut the margin of the crown according to the finishing line.
4. Put a thin layer of separating medium on the preparation.
5. Mix cold cure acrylic.
6. Fill the crown with provisional crown material (acrylic or composite) & seat it on the prepared tooth.
7. Remove the crown before it completely set; this is due to polymerization reaction of acrylic which is exothermic reaction & this irritant the pulp (On the polymerization reaction there is shrinkage in the acrylic).
8. Seat the crown on the prepared tooth.
9. Check the occlusion, contact point, fitness and extension.
2. Customized temporary crowns and bridge:

The technique called direct chair side temporary crown or over impression, and its indication:

1. Coverage of multiple individual crown preparations.

2. Single tooth preparation which is usually large or of special design.

3. Abutment preparations for fixed partial denture to construct temporary bridge.

Methods of construction customized temporary restorations

1. Impression method (The most commonly used method is the impression method).

2. Template method

3. Polycarbonate matrix method

4. Acrylic shell method

Indirect impression method (clinical procedure)

- An alginate over impression is made from the patient mouth and carefully stored until complete tooth preparation.

- When the tooth preparation completed, another alginate impression is made and poured in quick set plaster or stone, wait till stone is set, the cast was then separated from the impression.

- Coat the prepared tooth (on the cast) with a separating medium, a colored acrylic is mixed and loaded in the over impression at the area of prepared tooth only.

- Seat the cast onto the over impression in upright position and maintain pressure (rubber band can be used for this) until acrylic is set completely, be sure that the cast is correctly seated into the over impression.

- After complete polymerization, separate the cast from the over impression, removed the formed crown from the prepared tooth.

- Trim any excess material from the formed crown, the crown were seat on the prepared tooth, check the occlusion and smooth the margins.

- Cement temporary crown on the prepared tooth with ZOE cement.

Direct impression method (clinical procedure)
Is the same procedure and steps as that indirect method except that it is done directly inside the patient mouth. In this technique we need preoperative over impression, there is no need to have study cast, prepare the teeth, mix acrylic and place it into the over impression, lastly seat the over impression inside the patient mouth, then follow the same steps as that use in indirect method.

**Advantages of indirect over direct technique:**

1. There is no direct contact of free monomers with the prepared teeth or gingival tissue which might cause tissue damage or allergic reactions.
2. The procedure avoids subjecting a prepared tooth to the heat of polymerization of resin (acrylic exothermic polymerization reaction).
3. The marginal fitness of temporary restoration is significantly better (stone restricts resin polymerization shrinkage).
4. Save the clinician chair time.

**3. Laboratory made temporary crowns:**

A preoperative impression is made, prepare the tooth on the cast, and temporary crown or bridge is done.

**Temporary restoration for tooth prepared to receive Post crown:**

It is often difficult to fabricate T.C for a tooth which have been prepared to receive post crown, because there is so little of tooth structure left standing supra-gingivally. In such a case, a piece of stainless steel wire can be placed & adapted to the prepared canal then select ordinary ready-made T.C (acrylic, polycarbonate or celluloid) trim it & adapt it to the prepared tooth. T.C was then filled with a cold cure acrylic (tooth colored type). The acrylic filled the temporary crown were then seated on the prepared tooth & over the wire. Remove the T.C (with wire attach to it), after complete setting of the acrylic resin, remove any excess acrylic & cement the T.C.

**Cementing of the T.C. or Bridge:** Zinc oxide eugenol is the most commonly used cement as cementing medium for T.C and T. Bridge, this cement provide less irritation to the pulp & allow easy removal of the temporary restoration.