1-Wax pattern procedures for anterior teeth

2- Wax pattern procedures for posterior teeth

--- Introduction

1. Definition of Wax Patterns

Wax patterns are the precise wax replicas of the final dental restoration.

2. Importance in Dentistry

-Critical for accurate casting and fit of the restoration.

-Establishes proper occlusion, contours, and contacts.

-- Objectives of Wax Pattern Fabrication

1. Restoring form and function.
2. Maintaining occlusal relationships.
3. Aesthetic considerations.
4. Biocompatibility.

--- Materials and Equipment

1. Materials:

Wax (inlay or casting wax).

Die or model (stone, resin, etc.).

2. Instruments:

Wax spatula.

Carvers (e.g., Hollenback carver)

Burnisher.

Alcohol torch or wax heater.

---. Steps in Wax Pattern Fabrication

1. Preparation of the Working Die:

Ensure the die is clean and smooth.

Apply a separating medium to prevent wax adherence.

2. Wax Application:

Heat the inlay wax evenly.

Apply a thin base layer to establish the primary anatomy.

3. Contour Building:

Build up the wax to recreate cusps, grooves, and ridges.

Maintain occlusal harmony by referencing opposing teeth.

4. Refinement:

Carve and shape the wax to achieve anatomical accuracy.

Emphasize functional areas like cusp tips and marginal ridges.

5. Final Adjustments:

Verify occlusion using articulating paper.

Ensure proper contacts with adjacent teeth.

Step-by-step procedure

1. Apply die lubricant generously with a clean brush. Allow it to dry, and paint on a second coat (repeat periodically as needed). Waxing should not begin until the lubricant has soaked in completely.

2. Flow wax onto the die from a well-heated, large waxing instrument, making sure that any previous application is partially remelted. A large instrument holds sufficient heat to partially remelt previous wax increments and to prevent folds or

lines from developing in the fitting surface. Waxing is easier if the instrument is kept clean and only its shank is heated.

Wax pattern removal

The wax should be allowed to cool thoroughly before the coping is removed from the die .This is done by maintaining a constant light grip on the pattern by the thumb and forefinger of one hand while applying pressure against them with the thumb and forefinger of the other hand, which also holds the die. A small square of washed rubber dam increases friction between the fingers and the pattern.

If the pattern fails to move, there may be excess wax beyond the margin, locking the pattern in place.

Evaluation

The objective of the first waxing step is a perfectly adapted reproduction of the prepared tooth surfaces. Identifying defects may take some practice. The examiner rotates the pattern under a bright light and looks for shadows formed by folds or creases.

Proximal surfaces

The proximal surfaces of natural teeth are not convex. They tend to be flat or slightly concave from the contact area to the cementoenamel junction, and any restoration must reproduce this feature. Overcontouring often makes maintaining good periodontal health difficult, particularly if drifting of teeth has led to increased root proximity. Excessively concave or under contoured proximal surfaces also make flossing ineffective and must be avoided.

Contact areas

1- The mesial contact area of upper central and lateral incisors is located in the incisal third of the crowns while the distal contact area is located at the junction between middle and incisal 3rd ,

2- The distal outline is more curved than mesial outline; the mesioincisal angle of upper incisors approaches a right angle while desioincisoal angle is more rounded,

3- The mesial and distal contact area of lower central and lateral incisors is located in the incisal third of the crowns near from the incisal edge,

4- The mesial contact area of upper and lower canine is located at the junction between middle and incisal 3rd of the crowns; while the distal contact area is located in the center of middle 3rd ,.

5- The distal slope of canine is longer than mesial slope of it.

6- The contact area must be point with the adjacent teeth to provide enough space cervically to produce gingival interproximal embrasure.

7- Cervical to the proximal contact area should be flat or concave but not convex, overcontouring of the proximal surface apical to the contact area making it convex will produce severe inflammation of gingiva.

d- Axial surface:

1- The crest of curvature 'emergence profile' in labial surface is located in the center of cervical 3rd,

2- The tooth surface gingival to the emergence profile is usually flat or concave for brushing and maintains good oral hygiene,

3- Overcontoured restorations with large convexities promote the accumulation of food debris and plaque and form gingival inflammation. After complete all these procedures the wax pattern smoothing with a cotton roll dipped in die lubricant. Lingual and incisal surfaces the position of the incisal edges is determined by the overall arch form of the anterior teeth and the functional occlusal requirements. Opposing incisors should contact evenly during

protrusive movements but not during lateral excursions. This is achieved by making a concavity in the lingual surface of maxillary incisors. The ability to make this concavity smooth is very important.

----- Common Errors in the waxing :

1. Over or Under-Waxing:
Leads to improper occlusion or weak restoration.

2. Voids and Cracks in Wax:
Causes casting defects.
Prevent by ensuring wax is heated and applied smoothly.

3. Poor Contours:
May result in plaque accumulation or gingival irritation.

-- Evaluation Criteria for Wax Patterns

1. Anatomical accuracy.

2. Smooth surface finish.

3. Proper occlusal contacts and alignment.

4. Marginal integrity.

----- Applications

1-Crown and bridge prosthetics.
2-Partial dentures.
3-Inlays and onlays.

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