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Review Article

EXACT 'O' BITE: WHAT MATERIALS?

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Abstract

An exact reproduction of occlusal relation on the articulator during all stages of treatment for fabrication of prosthesis depends upon correct interocclusal records. The records are totally dependent on procedures and materials used for the recording from time of diagnosis until the definitive treatment. Various materials' for recording the interocclusal record are discussed.

Key words

Bite Registration, Silicones, Interocclusal Records.

INTRODUCTION

Obtaining accurate maxillo-mandibular registrations is fundamental for the appropriate relation of the casts. The clinical results depend on the exact reproduction of the interocclusal relation in the articulator from the time of diagnosis until the definitive treatment. Thus, the role of inter-occlusal registration in oral rehabilitation is highly relevant. In prosthetic dental treatment, casts, which duplicate the patient's dentition, are frequently mounted in an articulator, which simulates jaw movements.

Ideal Requirements of Interocclusal Bite Registration Material:

1.Limited resistance before setting to avoid displacing the teeth of mandible during closure.
2.Rigid or resilient after setting.
3.Minimal dimension changes after setting.
4.Accurate record of the incisal and occlusal surface of teeth.
5.Easy to manipulate.
6.No adverse effects on the tissues involved in recording procedure.
7.The interocclusal record is verifiable.

Types of Interocclusal Recording medium:

1.Plaster of paris.
2.Waxes.
3.Zincoxide eugenol pastes.
4.Silicone elastomers.
5.Polyether elastomers.
6.Acrylic resins.

1.Impression Plaster :

Advantage: Records of impression plasters are accurate, rigid after setting and do not distort with extended storage.

Disadvantage : Impression plaster is difficult to handle because material is fluid and unmanageable prior to setting.

Technique :

Impression plaster is applied over the top of the recording plate and the patient is asked to close in centric relation. The impression plaster on the adjacent teeth is cut away so that a rectangular contact area in plaster remains. Undercuts due to adverse tooth contours are reduced to assure removal of the plaster without chipping or cracking the record. Right angle cuts are made on buccal and lingual / palatal indices of the teeth adjacent to the copings. The interocclusal record and the buccal and lingual / palatal indices are removed and are reassembled. The dies are positioned in the record and a master cast is poured.

2.Waxes

The bite registrations are frequently made from 28 gauge casting wax or from base paste wax, specially formulated from bee wax or hydrocarbon waxes such as paraffin or creasin. They have been used in the shape of quadrant strips or segments, horse shoe shape wafers and complete or partial arch wafers and can be applied directly in sheet form or they can be laminated over tinfoil and gauze.

Advantage: A major factor in popularity is clinical flexibility of waxes and accounts for the broad range are which records can be modified changed, corrected and verified with comparative ease.

Disadvantage: Studies have demonstrated that wax interocclusal records are inaccurate, unstable and inconsistent.

Technique: A wax interocclusal centric relation record is made before the abutment are prepared. Then the abutments are prepared and another interocclusal record is made with a half of sheet of softened wax. The wax is molded into the shape of the dental arch and is positioned on the teeth and the patient is asked to close the jaws or, the mandible is

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guided into centric relation. Then patient is asked to open and close the mouth several times. The wax is cooled with water, while the teeth are held together, the patient is asked to open the mouth and the wax is cooled further. The total cooling must be atleast two minutes. The wax record is removed from the mouth and is allowed to cool for one minute under running water. The wax record is trimmed for possible interferences and is returned to the mouth. The trimming for possible interferences is done by shaving the wax with a sharp blade to prevent its distortion. The seating of record on the teeth and closure must be precise. The registration is compared with the record made prior to abutment preparation.

3. Zinc oxide Eugenol Paste

Zinc oxide Eugenol paste is an effective interocclusal registration material.

Advantages: Fluidity before setting – Fluidity is a critical quality of an interocclusal registration material because it ensures minimal interference with mandibular closure during record making procedures.

- Adhesion to its carrier.
- Rigidity and inelasticity after final set.
- Accuracy in recording occlusal and incisal surfaces of the teeth.
- High degree of repeatability Disadvantages:
- Lengthy setting time.
- Significant brittleness.
- Accuracy of the registration material may surpass the accuracy of the casts resulting in proper fit.

Technique: A Jones frame is used to carry the paste into position between the teeth. Sufficient paste is mixed to cover both sides of the gauze and to register half of the length of the abutments and at least one adjacent tooth. The frame is placed distal to the last tooth to prevent impingement upon the metal of the frame. The patient is asked to close in centric relation. The record is removed from mouth after the paste has set. The interocclusal record is then removed from the frame and is used for mounting the cast.

4. Silicone Elastomers :

Two types of elastomers are available as interocclusal registration materials.

1.Addition silicone
2.Condensation silicone.

Advantages:

- Accuracy
- Stability after setting.
- Minimal Resistance to closure.
- Does not require a carrier.

Disadvantage

- Resistance to compression of a set material which contributes to difficulty.

Technique:

Take equal amount of base paste and catalyst paste and mix according to manufacturer's instructions obtaining a streak free mixture. Load the syringe by maintaining a slight angle while scraping the pad. Place the material over the occlusal surface of teeth. Guide mandible to centric and ask patient to occlude, wait for final set according to manufacturers instructions. Trim the excess and recheck the record.

5. Polyether Elastomer :

Advantages:

- Accuracy
- -Stability after polymerization and during storage.
- Fluidity and minimal resistance to closure.
- Does not require carrier.

Disadvantage:

- Resiliency and accuracy may exceed the accuracy of plaster casts.

Technique:

Place the material over the occlusal surface of teeth. Guide mandible to centric and ask patient to occlude ,wait for final set according to manufacturers instructions. Trim the excess and recheck the record.

6. Acrylic resin:

Advantages: Accurate and rigid after setting.

Disadvantage: Polymerization shrinkage.

Technique:

Apply petroleum jelly over occlusal surfaces of teeth. Measure monomer and polymer according to manufacturers recommendations wait until dough stage is reached. Form dough patty into a flattened shape approximately 2mm thick. Keep it over occlusal surfaces of teeth. Guide mandible to centric position and ask patient to occlude. Wait for final set according to manufacturers instructions. Trim the excess and recheck the record.

CONCLUSION

The success of rehabilitation treatment is closely related to an exact reproduction of occlusal relation in the articulator during all stages of treatment. The conditions are totally dependent on procedures and materials used for the interocclusal records which should result in the installation of prosthetic restorations, with a minimal occlusal adjustment. The interocclusal registrations must be obtained with special attention to the materials and manufacturer's instructions.

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