OCCLUSION, TEETH SELECTION & TRYIN REMOVABLE PARTIAL DENTURE

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Definition of Occlusion

• **Occlusion**: means simply the contact between teeth.

More technically: it is the relationship between the maxillary (upper) and mandibular (lower) teeth when they approach each other, as occurs during chewing or at rest.
Centric relation

- It is the relation of the mandible to maxilla when the mandible in the most retruded unstrained position and the condyle articulate with the thinnest a vascular portion of the articular disc.
Eccentric relation

- Any relation other than centric, like protrusion and lateral movement
Protrusion movement

• During protrusive movement the posterior guidance system of the mandible is provided by the temporomandibular joints.
Lateral movement

• Working side. Toward which the mandible moves.

• Balancing or non working side: Away from which the mandible moves
• **Balance Occlusion:**
  Where there is simultaneous contact between the upper and lower teeth, anterior and posterior, left and right, during centric and eccentric movement.

• **Non balance occlusion:**
  Where the contact between the upper and lower teeth is only during centric movement.
Occlusal Relationship for RPD

• The fourth phase in the treatment of patients with RPD is the establishment of functional and harmonious occlusion.

• Occlusal harmony between a removable partial denture and remaining natural teeth is a major factor in preservation of the health of their surrounding structures.
Desirable occlusal contact relationship for RPDS:

1. For tooth supported RPD opposed by tooth supported RPD (class III):
   - Simultaneous bilateral occlusal contact of opposing posterior teeth should be present when the patient in centric occlusion
   - Occlusion for tooth supported RPD may be arranged similar to the occlusion seen in natural teeth, since stability results from the direct retainers at both ends of the denture
Desirable occlusal contact relationship for RPDS

2. For lower PD opposed by upper CD, bilateral balanced occlusion should be formulated in both centric and eccentric positions to promote stability of the CD.
Desirable occlusal contact relationship for RPDS

3. Class I mandibular PD opposed by upper natural dentition:
   - **In working side** there must be contact to distribute the stresses over the greatest possible area in order to improve the masticatory function.
   - **In balancing side and in protrusion** there must be no contact to achieve stability of the PD.
Desirable occlusal contact relationship for RPDS

4. In Class I mandibular opposed by class I maxillary bilateral balance occlusion is needed.
Desirable occlusal contact relationship for RPDS

5. For class II (maxillary or mandibular) opposed by natural dentition, unbalanced occlusion is needed.

• In working side there must be contact
• Balancing side contact will not enhance stability since it is entirely tooth supported by the framework.
Desirable occlusal contact relationship for RPDS

6. In class IV RPD opposed by natural teeth:
   - Contact is required in centric position between anterior teeth to prevent over-eruption of the natural teeth.
   - During eccentric position contact anteriorly should be avoided to eliminate the unfavourable forces to the opposing ride, and to enhance the stability of the RPD.
Methods for establishing occlusal relationships

- Occlusal relationship may be established by using one of the most appropriate of the following methods to fit a particular partially edentulous situation.
Direct apposition of casts

- The first method is used when there are sufficient opposing teeth remain in contact to make the existing jaw relationship obvious.
- In this method, opposing casts may be occluded by hand.
- The occluded casts should be held in apposition with rigid supports attached with sticky wax to the bases of casts until they are securely mounted in the articulator.
Interocclusal records with posterior teeth remaining

• Second method, which is modification of the first, is used when sufficient natural teeth remain to support RPD (Kennedy class III or IV), but the relation of opposing natural teeth does not permit the occluding of casts by hand. In such situations, jaw relations must be established by use some type of interocclusal record (bite registration material).

**Technique:**

• Place softened wax wafer/silicon or plaster between teeth and patient is guided to close in centric relation (correct closure must be examined before wax placement)
• Wax removed, chilled in water & examined
• Record is placed between upper & lower casts during mounting.
Occlusal relations using occlusion rims on record bases

A third method is used when:

- One or more distal extension areas are present.
- When a tooth–supported edentulous space is large.
- In these instances, occlusion rim on accurate jaw relation bases must be used.

**Technique:**

- Record bases used to help support occlusal record wax rim.
- Record base may be made of shellac, acrylic resin, metallic framework
- Softened wax occlusion rim is used to get the exact vertical dimension
- Then an interocclusal record material (ZnO eugenol, silicon or quick setting plaster) is used to record occlusal relationship
FACTORS THAT INFLUENCE OCCLUSION:

• Occlusion is influenced by:

1. the temporomandibular joints,
2. the mandibular musculature, and
3. the occlusal surfaces of the teeth.
FACTORS THAT INFLUENCE OCCLUSION:

• The Hanau Quint:

consists of five elements. These elements display consistent relationships to one another. The factors comprising the Hanau Quint include:

1. The inclination of the condylar guidance.
2. The inclination of the plane of orientation.
3. The prominence of the compensating curve.
4. The inclination of the incisal guidance.
5. The heights of the cusps.
FACTORS THAT INFLUENCE OCCLUSION:

• In complete denture prosthodontics, the condylar guidance is the only factor that cannot be altered. The compensating curve, plane of orientation, incisal guidance, and heights of the cusps may be changed rather easily.
Arrangement of the Artificial Teeth

Anterior teeth:

Loss of the anterior teeth without immediate replacement may result in drifting or tilting of the adjacent teeth which, in turn, produces a noticeable decrease in the restorative space and forces the selection of one or more prosthetic teeth that are narrower than their natural counterparts. This will inevitably produce an artificial appearance in the patient’s mouth.
Arrangement of the Artificial Teeth:

During the mouth preparation appointment, an attempt should have been made to regain the original width of the space by reshaping the proximal surfaces of the adjacent teeth. If the entire width cannot be recovered, consideration should be given to overlapping the artificial teeth so that a normal-sized tooth may be used to harmonize with the patient’s face and remaining teeth.
Arrangement of the Artificial Teeth

When selecting denture teeth, the practitioner should use the shade guide provided by the tooth manufacturer. The matching process should be accomplished using natural light and should be completed as quickly as possible. The first assessment usually will be the most accurate since the ability to discriminate between shades decreases rapidly as a result of eye fatigue.
Arrangement of the Artificial Teeth

In most instances, it will be necessary to reshape the ridge lap portion of an artificial tooth to position it over components of the framework and selective recontouring of axial and incisal surfaces permits improved adaptation and appearance.
Arrangement of the Artificial Teeth

If the maxillary central incisors are missing, it is essential that these teeth be set first. This allows the practitioner to reestablish the maxillary midline in the center of the face.
Arrangement of the Artificial Teeth

**Posterior teeth:**

Posterior replacement teeth must not only fit into the available edentulous spaces, but also must be in harmony with the opposing occlusal surfaces. The dentist should not be overly concerned with replacing the exact number and type of teeth that are missing. For example, the edentulous space may have been occupied by a second premolar and first molar, but because of drifting of the remaining teeth, the most suitable replacement teeth may be two premolars.
Arrangement of the Artificial Teeth

To provide the best possible result, the posterior teeth shade should be matched as closely as possible to the adjacent teeth or fixed restorations.
Arrangement of the Artificial Teeth

When selecting posterior denture teeth, the practitioner must consider the occlusogingival height for each denture tooth. Denture teeth that are too short may create esthetic problems. In this instance, a short artificial tooth is positioned between teeth with relatively long clinical crowns. To avoid esthetic difficulties, artificial teeth must harmonize with natural teeth.
Try-in and Completion of the Partial Denture:

The arrangement of the anterior teeth should be pleasing to the eye and conform to any requests on the laboratory card. The labial surfaces and incisal edges should harmonise with the abutment teeth. If incisal wear is present on the natural teeth it should be simulated on the denture.
Try-in and Completion of the Partial Denture:

A common error, which creates a poor appearance, is to place the gum margin of the artificial maxillary premolars at a lower level than that of the adjacent natural teeth (a). This may be overcome by careful waxing up and by the selection of an artificial tooth of appropriate crown length (b).
Try-in and Completion of the Partial Denture:

Wax flanges should be of a thickness and extension corresponding to the amount of bone resorption in the area so that they only replace the tissue that has been lost, restoring the former contour of the alveolar ridge. Mesial and distal borders should be thin so that the flange blends with the adjacent mucosa, thus avoiding food trapping and promoting patient comfort.
Try-in and Completion of the Partial Denture:

The borders of mucosa, or partially mucosa-supported saddles, should extend to the full depth of the sulci recorded on the cast. This is so that the occlusal forces may be distributed as widely as possible and so that the adjacent musculature may be utilised to reinforce the retention and stability of the prosthesis.
Try-in and Completion of the Partial Denture:

The appearance of the trial denture must always be discussed with the patient, using a mirror (preferably wall-mounted to ensure that viewing takes place at conversation distance) to view the situation before and after any modification. Approval of the appearance must be obtained before the denture is processed.

This is the last stage at which modifications can be made before the wax is replaced by acrylic resin. A careful routine must be followed to prevent any errors from continuing through to the finished dentures.
References:


Thank you