Selection Of Denture Teeth

What are the functions of denture teeth?

To:
1. Prevent migration of the remaining teeth.
2. Restore masticatory efficiency.
3. Retain proper interarch space.
4. Maintain esthetic of a normal facial contour.

Types of materials used to fabricate denture teeth:

1.Acrylic. 2. Porcelain. 3. Metal: gold &chrome.

Choice of materials

1- Modern **acrylic denture teeth**, hardened by cross-linking agents, are resilient, wear-resistant moderate, natural-sounding in function and possess good esthetic properties. They are easy to adjust, can be recontoured when necessary and polish simply with little effort. Acrylic resin teeth can easily be recontoured for limited space applications or when metal components of the RPD framework need to be closely approached. The acrylic resin teeth bond chemically to the denture base resin; the bonding prevents staining and leakage around that junction. Acrylic resin has a low abrasion resistance so it can wear rapidly in some patients. It is preferred that acrylic resin denture teeth oppose other acrylic resin teeth; occlusal wear should be monitored more closely when they function against natural teeth or restorations using porcelain or metal occlusal surfaces. Proper function of the occlusal relationships must be checked more frequently when acrylic resin teeth are used.

2- **Porcelain** denture teeth have a high abrasion resistance and exhibit minimal wear. They are excellent esthetic and match the porcelains used for fixed restorations. They may sound unnatural to the patient, also they are brittle; may chip or crack; also they are difficult to be adjusted, recontoured and polished. Porcelain teeth do not bond chemically with the denture base resin but are mechanically retained with holes or pins. They may stain dramatically at the tooth-to-base interface. They are not suited for patients with minimal interocclusal space or those in whom extensive adjustment is needed to approximate a minor connector or precision attachment. Porcelain may cause severe wear of opposing natural teeth.

3- Highly polished **metal** surfaces caused minimal wear to opposing surfaces of natural teeth, other metals, acrylic resins, or porcelain. Polished metal has high abrasion resistance and can be used when the clinician might be concerned about future loss of vertical dimension. They can be used in RPD made for patients with reduced interocclusal space. Cast surfaces also are easily adjusted and polished. In addition, patients state that the cast surfaces feel and sound natural during function. Another option similar to cast metal occlusal surfaces is using cast ceramic surfaces to improve the esthetic results of the occlusal restorations.

Factors affecting arrangement of teeth in RPD:

1. Occlusal relationship of the remaining teeth.
2. Orientation of the occlusal plane.
3. Space available for restoration of missing teeth.
4. Arch integrity.
5. Tooth morphology.

Landmarks for setting anterior teeth

The incisive papilla: is an important landmark for the maxillary anterior teeth. With few exceptions the incisive papilla bisects the midline of the natural dentition, important anatomic feature of the incisive papilla is the distance between the most anterior border of the incisive papilla and the labial surface of the central incisors. This distance varies from 5 to 7mm.

Also the average distance from the depth of the **labial vestibule**, immediately lateral to the labial frenum to the incisal edge of the maxillary central incisor is 22mm. in extremely small individuals it may be as small as 18mm.

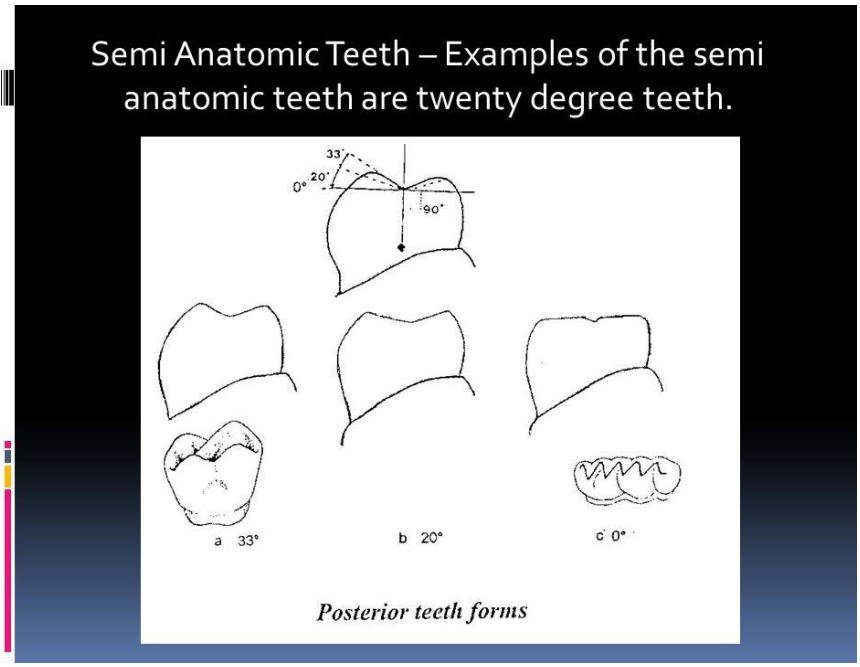
The position of the maxillary anterior teeth is dictated by the esthetic and phonetic requirements of the patient but must function in harmony with the remaining dentition.

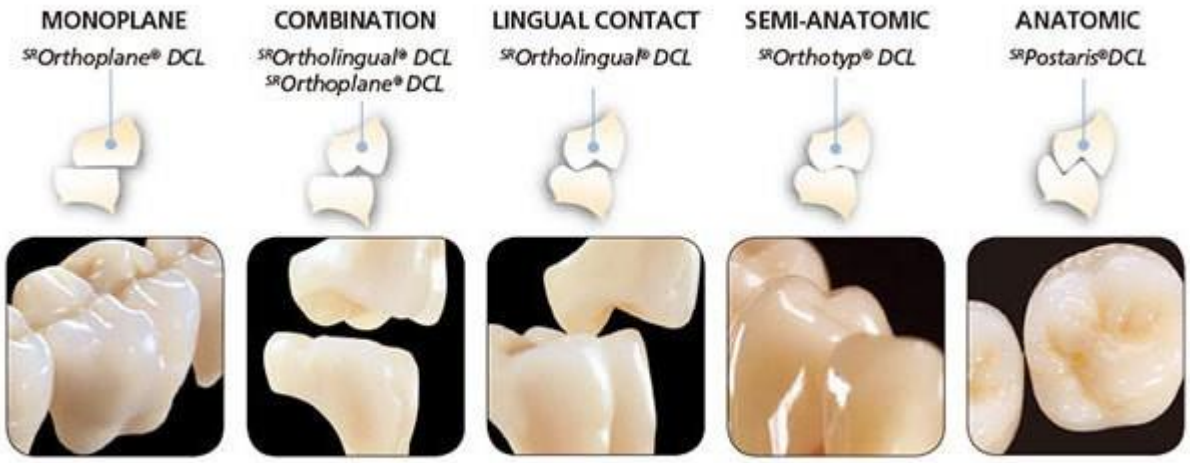
For patients with RPD, the plane of occlusion is frequently established by the remaining natural dentition, especially in Kennedy cl.III and cl.IV patients. For Kennedy cl.I and cl.II patients, however, the plane must often be reestablished. When an occlusal plane must be reestablished, a line may be drawn from the incisal edge of the cusp tips of the most distal natural teeth to the (middle to upper) one third of the retromolar pads. To provide acceptable room for positioning the posterior artificial teeth, it may be necessary to alter the position of the occlusal plane by either raising or lowering the posterior determinates. Ideally, the plane of occlusion equally divides the available interarch space.

Posterior teeth

For esthetic, phonetic and functional reasons, the posterior teeth on a RPD should be positioned to harmonize with any remaining natural dentition. Not every natural tooth that is lost must be replaced with an artificial tooth. Only teeth required for esthetic, phonetic and functional purposes should be used. For cl.I and cl.II RPD, any remaining opposing natural dentition dictate the placement of the artificial teeth. The established plane of occlusion should be used to position the artificial teeth vertically for patients with no remaining natural posterior teeth.

Posterior denture teeth may be obtained with occlusal morphologies varying from a monoplane from (0), to a semi anatomic form (10-30), to a completely anatomic form (30-45). Depending on the occlusal morphology of the tooth selected, differing occlusal articulations have been advocated ranging from multiple functional excursive contacts (balanced) to minimal excursive contacts (monoplane).





Esthetics in teeth selection and arrangement (How to get an esthetic result?)

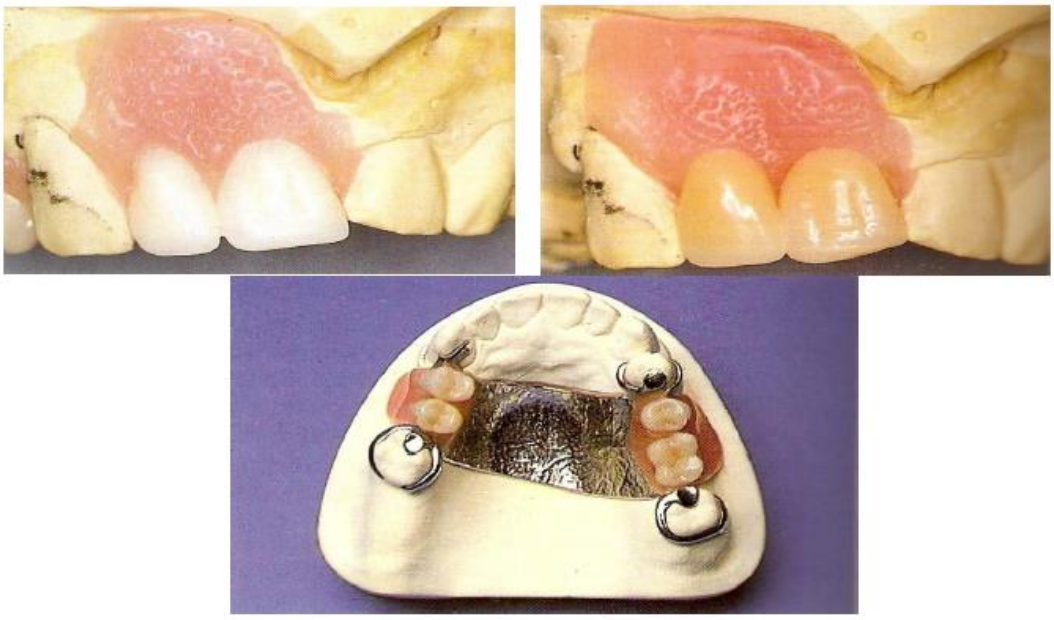
1- Teeth length:
If all anterior teeth are being replaced& the upper lip is of normal length, the edges of the central incisors should be visible when the lip is relaxed. When the lip is drawn upward, the gingival contours of the denture base should be minimally evident.

2- Short space:
If an anterior edentulous space has been decreased by drifting of the teeth, a decreased number of teeth should not be placed. Attempts should be made to rotate or overlap the denture teeth in order to achieve an acceptable esthetic result.

3- Large space:
If the anterior edentulous space is relatively large, diastema may be incorporated into the tooth arrangement. If this is to be accomplished, the patient should be informed of potential difficulties associated with interdental spacing.

4- Overlap of anterior teeth:
If some anterior teeth remain, the overlap should be duplicated. If no natural teeth remain, care should be taken to avoid excessive vertical overlap without accompanying horizontal overlap. This could result in the application of undesirable forces to the artificial teeth and associated soft tissues.

5- Vertical alignment of the teeth also should be evaluated:
A slight deviation from the vertical axis can produce an acceptable esthetic result, but a significant deviation can create esthetic difficulties. The practitioner should pay particular attention to the maxillary midline.
The positioning of any posterior is compared with the position of the remaining natural teeth.



The arrangement of the anterior should be harmonize with the abutment the appearance may need to be modified, if incisal wear is present on the natural teeth it should be simulated on the denture.

6- Tooth shade:
The presence of natural teeth makes shade selection and patient acceptance a critical component of RPD therapy. To ensure selection of an appropriate shade, the prosthesis should be viewed using a variety of light sources.

Trial denture appointment

This is the last stage at which modifications can be made before the wax is replaced by acrylic.

1- The dentures should firstly be examined on the **mounted casts** in respect of :-
• Adaptation of dentures on the casts.
• Occlusion
• Position of artificial teeth with regard to adjacent natural ones.
• The arrangement of anterior teeth.
• Extension and contouring of wax flanges.

2- What to check inside **patient mouth** (check list):

- Evaluate the fit, comfort, and function of the appliance, prove CR record.
- Check VD of occlusion and rest.
- Evaluate the shade, mold, and arrangement of the teeth (esthetic and phonetic).
- Take new occlusal registration.
- Note any changes on the laboratory prescription.
- Adaptation of the dentures.
- Occlusion including the vertical dimension of occlusion.
- Contouring of wax flanges with regard to peripheral extension, shaping of polished surfaces, coverage of gingival margins.
- Appearance. Modify positions of teeth and incisal edges of anterior teeth to achieve a pleasing result.
- Ask for patient's comments on appearance. Show the patient the dentures in the mirror and ensure that they are satisfied.
- If, at this stage, the occlusion is incorrect, modifications must be carried out before continuing with the next stages.

Verification of jaw relation

The jaw relation only needs to be verified in limited instances:
1. If problems were encountered during jaw relation procedures &there is any doubt regarding the accuracy of the articulator mounting.
2. If the partial denture is opposed by a complete denture.
3. If all posterior teeth in both arches are being replaced.
4. If there are no opposing natural teeth in contact and verification of the occlusal vertical dimension is necessary.

Instructions to the laboratory:

Carefully list and describe any modifications you wish the technician to carry out before finishing the dentures.

To ensure that interference with insertion of the finished denture will not occur as a result of inadequately blocked out tooth undercuts the following instructions and procedure must be followed:-

- Undercuts are blocked out in wax on the master cast, in respect of vertical path of insertion.
- The master cast should be duplicated.
- The denture should be processed on the duplicate cast.
- The processed denture should be fitted back on master cast.