

Try-in of Complete Denture

Trial denture: is defined as a preliminary arrangement of denture teeth that has been prepared for placement into the patient mouth to evaluate the fit, esthetics and maxillo-mandibular relationship.

Once the dentures have been processed it is difficult to make any alterations, whereas in the waxed-up stage changes can be made easily.

Objectives:

1. To check and verify the established maxillo-mandibular relationship.
 - ✓ Verify that centric occlusion and centric relation coincide.
 - ✓ Test for the acceptance of the established vertical dimension of occlusion.
2. To determine if the positions of the teeth and the contours of the denture bases are compatible with the surrounding oral environment.
3. To verify tooth selection and arrangement for proper aesthetics and phonetics.
4. To verify the occlusal plane level relative to the inter-pupillary and ala-tragus plane horizontally.
5. To make additional inter-occlusal maxilla-mandibular records if needed for further adjustment of the articulator (protrusive inter-occlusal record).

Steps of try-in procedure:

The trial dentures should be evaluated extra-orally and intra-orally:

1. Extra oral examination (evaluation of the trial dentures on the articulator).

This includes:

A. Evaluation of Impression surface

The bases of the trial dentures should be accurately adapted to the casts such that there is no movement when finger pressure is applied to the occlusal surfaces. The impression surfaces of the acrylic trial denture should be checked for any sharp projections, roughness or excessive extension into undercuts.



B. Evaluation of the polished surface

This surface should be smooth for optimum comfort and to facilitate plaque removal. This is important around the neck of the teeth. The polished surface should be contoured and stippled to simulate the mucosal surface.

C. Evaluation of the denture extension

The border regions of the dentures should be shaped to conform to the depth and width of the sulci on the casts. In the upper jaw, the base should normally be extended posteriorly to the post-dam area and in the lower jaw over the pear-shaped pads.

D. Evaluation of the occlusal surface

There should be a bilateral even contact in the inter-cuspal position and the occlusal surfaces of the teeth should be free of wax.

E. Evaluation of the position of the lower teeth

The teeth on a lower denture should be positioned to conform fairly closely to the crest of the mandibular ridge. If there are gross discrepancies between the position of the teeth and the ridge, the teeth may become the cause of instability in the mouth.

The position of the lower posterior teeth is checked by holding a straight edge instrument on the ridge section of the mandibular denture after removing it from the articulator. The central fossa of the mandibular posterior teeth should overlay the straight edge (Figure 1).



(Figure 1)

F. Evaluation of the position of the upper teeth

The relationship of the upper posterior teeth to the mandibular ridge is assessed after the removal of the mandibular trial denture from the articulator. The palatal cusps of the maxillary premolars and molars should lie over the mandibular ridge.

G. Evaluation of the inter-ridge space

When both dentures removed from the articulator, inspect the inter-ridge space to ensure no unplanned increase or decrease in dimension has occurred.

2. Intra oral examination (evaluation of the trial dentures in the patient's mouth).

Upper and lower trial dentures should be checked separately inside the patient mouth then both dentures together.

➤ Evaluation of maxillary trial denture:

This includes

1. Extension of the denture bases (labial, buccal and posterior extensions):

❖ Labial and buccal extensions

The accuracy with which the denture borders conform to the depth and width of the sulci must be determined. If marked over-extension of the denture flanges is present, stretching of the sulcus tissues will occur when the denture is inserted into the mouth and this will cause dislodgement of the denture.

The presence of under-extension is determined when the depth of the sulcus will be seen to be greater than that of the denture flange and this is an indication of poor physical retention.

Clinical steps in border extension examination:

- Insert the upper trial denture in the patient mouth with light pressure on the occlusal surface, move the check in functional movement. Then, release of the pressure, if the denture falls down this means that the borders are overextended. Therefore, the trial denture needs adjustment till little or no movement occurs. In case of under-extension of the upper trial denture, the denture should be corrected by making a new final impression.
- Providing of the frena space {labial and buccal}. This should be done to ensure that they have adequate clearance and the denture should be thinned and blended in these areas.

❖ Posterior extension

The posterior border of the upper trial denture base should be extended from the hamular notch to the other along the vibrating line of the soft palate, and correctly placed on the master cast. If the posterior palatal seal area is not done before, it must be done at this stage.

Clinical steps in recording vibrating line:

Ask the patient to say "Ah", there will be a vibration in the soft palate (movement in the soft palate), make a mark on the middle area where the vibration started by indelible pencil. Then join the middle mark with the both hamular notches (following the vibration). After

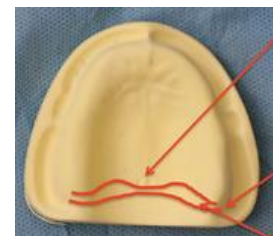
that, insert the upper trial denture in the patient mouth and transfer the marked line to the denture by asking the patient to hold his nose and attempted to blow through it. The excess denture base should be removed, and then the denture is placed on the master cast and by indelible pencil marks this line on the cast following the posterior limit of the denture.



Drawing vibrating line inside the patient mouth



Transferring vibrating line to the trial denture



Posterior palatal seal area on the master cast

2. Retention

It is noted that the retention of the trial denture is less than that of completed denture, this is due to the absence of a posterior palatal seal and poor adaptation of the trial denture base to the tissues.

The trial denture should stay in position when the mouth is opened. Looseness of the upper trial denture makes it impossible to carry out an accurate assessment of the occlusion. Therefore, denture adhesive is indicated in patients with unfavorable anatomical factors.

3. Stability

It is the quality of a denture to be firm, steady or constant to resist displacement by functional horizontal stresses. It is checked by the application of pressure on one side denture toward the tissue, if it rotates the denture shows lack of stability.

4. Lip contour and occlusal plane orientation

❖ The trial denture should provide sufficient lip and cheek support.

The position and expression of the lips is the best guide for determining the antero-posterior orientation of the anterior teeth. If the anterior teeth positioned too far posteriorly then this will result in insufficient lip support as well as dropping of the corners of the mouth.

If the anterior teeth positioned too far anteriorly then the lips are contracted giving a stretched tight appearance and this will dislodge the denture during function.

❖ The orientation of the anterior end of the occlusal plane (anterior height of the occlusal plane) is determined by esthetics.

The amount of upper anterior teeth that will be seen during speech and facial expression depends on the length and movement of the upper lip. If the upper lip is relatively long, the teeth may not be visible when the lip is relaxed or during speech and the reverse is true. The movement of the lips during function varies considerably among patients; thus, when artificial teeth are placed in the same position as the natural teeth, the amount of the upper teeth that will be visible varies for each patient.

➤ **Evaluation of mandibular trial denture:**

This includes:

1. Extension of the denture bases (labial, buccal, posterior and lingual extensions):

The lower trial denture extension should be tested with the patient's mouth is opened no more than half opened position to allow the surrounding musculature to be in an acceptable state of relaxation. Labial and buccal extensions are checked as for the upper denture, while the posterior extension of the dentures should cover the pear-shaped pads. However, in the lingual pouches, visibility is poor, so the clinician will have to make an assessment based on the behaviour of the lower denture as the tongue is moved.

Clinical steps in lingual border extension examination:

- The disto-lingual area: ask the patient to protrude the tongue to moisten the lips. If the denture base lifts at the back so, the lingual pouch is overextended.
- The lingual area: ask the patient to move the tongue to bring the tip of the tongue into contact with the cheek on each side so, any displacement of the trial denture which arises note the site which extent.
- The under extension is determined by the intraoral examination as the depth of the sulcus will be greater than that of the denture flange.
- The lingual frenum area: ask the patient to curl the tongue backwards to touch the posterior palatal tissues by the tongue tip; if the trial denture lifts in the front, it is overextended.

2. Retention

Usually the lower denture retention is poor when compared to the upper denture. This is due to the small denture bearing area and difficulty in obtaining an efficient border seal.

3. Stability

Stability of the lower trial denture is checked as for upper denture. Also, observation of the relationship of the tongue to the occlusal surface of the lower denture, the lateral margins of the tongue should be seen to be lying over the occlusal surface of the posterior teeth.

4. Height of lower occlusal plane

The lower lip is a better guide for the vertical orientation of the anterior teeth than the upper lip. In most patients, the incisal edges of the natural lower canines and the cusp tips of the lower first premolars are located at the level of the lower lip at the corner of the mouth when the mouth is slightly open.

When the lower teeth are above the lip at the corner of the mouth so it may be due to one or a combination of the following conditions:

- a) The plane of occlusion may be too high.
- b) The vertical overlap of the anterior teeth may be excessive.
- c) The vertical space between the jaws may be excessive.

The posterior end of the occlusal plane should be at the level of the anterior two thirds of the retro molar pad.

The final check of the occlusal plane level is to determine whether the plane of occlusion is appropriate cosmetically for the patient in general {at rest, during speaking, and smiling}.

5. Tongue space

The positioning of teeth in the neutral zone is of particular importance in the case of the lower denture because the physical retention is relatively weak. Neutral zone is the zone where the inward pressure of the lips and the cheeks is neutralized by an equal and opposite outward pressure of the tongue; in this zone the artificial teeth must be set. When the lower denture is inserted, it should remain in place when the mouth is half open and the tongue is positioned so that its tip lies just behind the lower anterior teeth.

The back teeth should lie in the neutral zone to avoid cheek and tongue biting. During chewing, the food lies on the occlusal surfaces of the lower teeth, as the mandible closes, the crushed food escapes both to the buccal and lingual. The tongue and the buccinator muscles team up to push the food back onto the food table. If the teeth are too far buccally, the tongue cannot function properly; if the teeth too far lingually, the buccinators cannot function well and the food will pile up in the buccal pouch. As the tongue is more mobile than the cheeks therefore, it will cause greater instability of the lower denture.

➤ **Evaluation the maxillary and mandibular trial dentures together:**

It is advisable to insert the lower trial denture first and then the upper because there is less chance of having the upper denture drop down.

1. Evaluation of the vertical dimension:

The vertical dimension of occlusion and rest must be evaluated because the final position of the anterior and posterior teeth will depend to a great extent on the amount of space available vertically.

The patient should be seated in an upright position and his head is supported by the headrest (the headrest may affect the physiologic rest position of the mandible; therefore it will affect the amount of inter-occlusal distance).

A combination of methods to evaluate the vertical dimension of occlusion would give a more accurate evaluation after the artificial teeth have been arranged

A. Pre-extraction record.

B. Study of facial dimension and facial expression

Instruct the patient to wet his lips, swallow, and then allow his mandible to rest. While the patient is in resting position, part his lips to see whether his teeth are touching, or there is adequate space between his teeth.

If the teeth are in contact while the mandible is at rest, the vertical dimension of occlusion is high and need a new record of vertical dimension of occlusion.

C. Phonetics

❖ Evaluation of the "closest speaking space":

Ask the patient to say s,s,s or count from 50 to 60

If the teeth make contact during speech, this indicates that there is not enough inter-occlusal distance between the teeth. If there is whistling during saying sss, so the vertical dimension of occlusion may need to be increased or the position of the anterior teeth changed. If the anterior or posterior teeth contact during speech, the vertical dimension of occlusion needs to be decreased.

❖ Instruct the patient to pronounce "j" "ch"

These sounds are used as guides to the adequacy of the horizontal and the vertical overlap of the anterior teeth. If there was inadequate space, the mandibular teeth might clash with the maxillary teeth.

❖ Instruct the patient to say "th"

Naturally, the tongue should protrude to occupy the inter-occlusal space when pronouncing "th". If the inter-occlusal space is less than 2-4 mm, the anterior teeth may be

placed too far anteriorly or the vertical overlap may be so great that there is insufficient space for the tongue to protrude between the teeth.

D. Aesthetics

Facial form is an important guide to whether the patient is at the correct vertical dimension of occlusion or not. If the appearance of the patient from the front face and the lateral view when the mouth is closed is like an old man (lower facial height is small) this indicates low vertical dimension. If the patient appears with his facial muscles stretched, this indicates that there is a high vertical dimension.

E. Patient's proprioception:

Ask the patient whether he has the feeling that the teeth touch before his jaws are closed far enough, this indicates high vertical dimension. If he feels that he closed too far before the teeth touch, this indicates low vertical dimension. If he feels that the teeth touch at about the right moment this means that it has correct vertical dimension.

2. Evaluation of the centric jaw relation

If the maxillo-mandibular relation was correctly recorded, the teeth should interdigitate in the mouth in the same manner as they do on the articulator, when both condyles occupy their most posterior functionally unstrained position in the glenoid cavity.

If the opposing cusps fail to interdigitate, when the denture is inserted in the mouth, this indicates that the previous centric jaw relation record was incorrect. In this case repeat the centric jaw relation record.

Clinical Procedure to check the centric relation record:

- ❖ Seat the maxillary trial denture in the patient mouth.
- ❖ A piece of base plate wax is warmed and placed on the occlusal surfaces of the lower posterior teeth bilaterally.
- ❖ Seat the mandibular trial denture in position with the index fingers placed bilaterally. Then guide the mandible to close in centric relation by placing the thumb fingers under the chin and ask the patient to close lightly on to the wax until a good index is made.
- ❖ Remove the trial dentures from the patient mouth and place the maxillary denture on the maxillary cast and the mandibular denture with the record on the mandibular cast
- ❖ The upper member of the articulator is carefully closed until the teeth fit into the wax index. The teeth should fit in the same position previously occupied by artificial teeth in the patient mouth. If any discrepancy exists then the centric relation is wrong. If this occurs, then the lower cast should be removed from the mounting and remount again with the new centric record.

- ❖ Never remount the upper cast, because the face-bow transfer will be destroyed.
- ❖ After the evaluation of the centric relation, protrusive and lateral relations can be registered when using the dentatus semi-adjustable articulator.

3. Evaluation of aesthetic:

After evaluating the vertical dimension and centric relation, it is important to evaluate the teeth while the patient rests, speaks, and smiles in order to obtain a harmonious appearance.

To achieve the best aesthetic results certain aspects of appearance must be checked:

A. *Artificial teeth selection:* includes shade, form, and size of the teeth.

The shade of the teeth should be in harmony with the patient face and skin. Also, the shape of the teeth should be in harmony with the age and gender of the patient. In this case old photographs can assist in the evaluation, as well as the patient opinion and acceptance. Regarding the teeth size, the six anterior teeth should be of sufficient width in order to occupy the space between the corners of the mouth.

B. *The midline and smile line:*

The midline of the upper and lower trial dentures is evaluated in relation to the midline of the patient's face. If it is incorrect, the upper and lower teeth will have to be reset in order to correct it.

The incisal edges of the maxillary anterior, and premolars should form a smile line which is consistent with the age, sex, and personality of the patient. This curvature tends to decrease with age, and also tends to be flatter in men than in woman. When the patient's smiles, the maxillary teeth should just touch the lower lip and should follow its curvature. The reverse smile line or curvature should always be avoided.

In some patients the upper labial flange will be visible during speech and smiling. In this case, a natural appearance will be achieved when the acrylic flange is contoured to resemble natural gum and the acrylic flange is slightly irregular or stippled to break up any reflections.

C. *Orientation and level of the occlusal plane*

The upper lip should be adequately supported by the incisal edge of the upper anterior teeth. Also, it is important to adjust the amount of teeth display when the lip is at rest or smiling. When the patient pronounces "F" or "V" sound, the incisal edges of the maxillary anterior teeth should make a few millimeter contacts inside the lower lip.