

COMPLETE DENTURE CHARACTERIZATION: A REVIEW

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ABSTRACT:

Esthetics plays a vital role in rehabilitation of complete dentures to achieve a pleasant smile. Denture esthetics is the effect produced, which improves beauty and attractiveness of a person. In the era of implants and ceramics, the conventional denture needs to be updated. Denture characterization is must in avoiding denture look and giving natural look. Only changes in tooth arrangement is not sufficient this article is an attempt to highlight various methods of denture base characterization in order to improve one's personality. Characterization is a procedure in which the character or collective qualities of a person are introduced in the complete denture, either by modification of teeth or denture bases, to make it appear more natural for that particular person. Characterization of the complete dentures is necessary to give the dentures a life like appearance, to make it appear more natural. This paper reviews various principles in an effort to produce a natural appearing denture.

Key Words: Denture characterization, Conventional denture, Denture esthetics



INTRODUCTION

Denture characterization is simply defined as, modification of form and colour of denture base and teeth to produce a more life like appearance. Realism –tooth arrangement, gum imitation: especially with features such as muscle attachments, stippling root details and colouring of denture base was use to provide the patient with a 'true-to life' prosthesis. Treatment challenges for completely edentulous patient have traditionally been described as combination of esthetics, function and comfort. Some studies regarding predictors of complete denture success failed to show esthetic as more

important than function or comfort.^[1] In contrast to these studies, Carlsson et al found that esthetic was the factor more responsible for complete denture success.^[2] Vig agreed with the importance of esthetics in denture success, Stating that, 'Good appearance is so related psychologically to comfort that the 2 cannot be separated.'^[3] A survey by Vallittu et al found that patient wearing removable denture considered appearance to be the most important property of teeth.^[4]

Conventional denture are normally set up in a uniform manner and gum work

can be smooth and featureless, that's why denture wearers get artificial ,sometimes ugly appearance. A **pleasant smile** is an expression of joy. Restoring smile in edentulous patient may be considered as an achievement because smile is an integral part of the face and more generally of whole person it expresses beauty, age, personality and youth. [5] It is the dentist's responsibility to preserve, enhance or create a pleasing smile through dental treatment without impairing function. The dentition and how it influences the formation of a pleasing smile is extremely important in the **emotional development** of the individual. Characterized dentures plays a vital role in improving one's confidence and there by allowing them to smile freely. [6]

Complete dentures must be esthetic as well as functional. Hardy stated that, "To meet the esthetic needs of the denture patient, we should make the (denture) teeth look like (the patient's) natural teeth⁷."

COMPLETE DENTURE CAN BE CHARACTERIZED BY TWO BASIC METHODS.

1. Characterization by selection, arrangement and modification of artificial teeth
2. Characterization by tinting the denture bases.

CHARACTERIZATION BY SELECTION: (ARRANGEMENT AND MODIFICATION OF ARTIFICIAL TEETH)

The teeth can be modified to harmonize with the patient's age, sex, and personality to provide subjective unity. Fisher said that gender, personality, and age can be used as guidelines for tooth selection, arrangement, and characterization to "enhance the natural appearance of the individual. [8]

the ways of characterization are;

1. Varying the direction of the long axis of teeth.
2. Place the teeth so that the tips of the maxillary lateral incisors show when the patient speaks seriously; the amount depends on the age and sex, less for old than for young people and more for woman than for men.
3. Create asymmetry in the divergences of the proximal surfaces of the teeth from the contact points. Martone stated that, "The key to esthetics lies in asymmetry. [9]" Most things in nature are asymmetric, and in the human face many minute and subtle differences are found from one side to the other.
4. Use an eccentric midline.
5. Place one maxillary central and lateral incisor parallel to the midline and rotate the other central and lateral incisors slightly in a posterior direction.

6. Place one maxillary central incisor slightly in an anterior direction to the other central incisor.

7. Place the neck of one maxillary central incisor in a posterior direction and the neck of other central incisor in an anterior direction.

8. Create asymmetry for the maxillary right and left cuspids. Rotate one in a posterior direction than the other.

9. Gingival tissues recede with age. Selecting a long tooth, contouring the wax to show gingival recession and then staining it a bit, can give natural appearance, can reproduce this recession. Long clinical crowns with receded gingiva after periodontal destruction, may also play a role in achieving a natural-looking denture for selected patients.^[10]

10. Grinding the incisal edges. Teeth abrade with age. Reshaping the incisal edges and mesiodistal diameter makes it possible to modify any tooth to the desired form.^[11]

11. A teeth arrangement that is too perfect may not be ideal. In fact, slight modifications in the position of teeth such as overlapping, tilting, rotation and incisal variations may contribute to a natural-looking denture. ^[11]

12. Spacing and diastemas often exist in natural dentition. Thus slight diastema can be created between the lateral incisor and the cuspid on one side. The wearing away of the natural teeth at the

contact points creates spaces between the teeth. The migration of teeth also creates spaces. To simulate the wear by positioning the artificial teeth to create spaces, can give a natural appearance. Diastema given should exceed 2-3mm and should be wider at the incisal edge than the base. In diastemas smaller than 2-3 mm, fibrous food tends to be trapped and can be a source of embarrassment.^[12]

13. A hair line crack can be given in the teeth.

14. Often, gold or alloy restorations can be placed in these teeth to create the illusion of naturalness. The use of gold occlusal surfaces on the teeth of prosthesis can contribute to its clinical success.^[13]

15. Silver filling can be given on posterior teeth.

16. Cast crown can be given on posterior teeth. Some patients who seek new dentures ask that a metal crown be placed in the denture to resemble their natural dentition.^[10]

17. A discolored tooth (as R.C.T treated) can be shown by selecting one or two teeth of darker shade compared to the rest of the teeth set. Older patients tend to have darker teeth as a result of discoloration from fillings and food stains.

Stock artificial teeth as provided by manufacturers have a uniformity of color and shade, inherent to their production

that does not impart a natural esthetic result to dentures. Methods have been developed for making acrylic resin teeth by incorporating staining and characterization to natural denture teeth.^[14]

CHARACTERIZATION OF THE DENTURE BASES

Pound in 1951 incorporated the racial and individual colour peculiarities, of the gingiva in artificial denture. He was the first to suggest a method of tinting acrylic denture bases to simulate the gingival colour. Kemnitzer used a combination of blue and brown stain to reproduce the melanotic pigmentation of the gingiva.^[14]

INDICATION FOR CHARACTERIZATION OF DENTURE BASE

1. Patients with an active upper lip.
2. Patients with a prominent pre-maxillary process.
3. Actors, singers and others who may expose gum tissues areas during their performances.
4. The psychological acceptance of the dentures by the patient.

The smooth, pink, polished surface of an average acrylic denture quickly reveals it's false. Therefore, the surface of the denture base can be modified by

stippling: Lynn C. Dirksen described a procedure which provides an inexpensive means of obtaining more

natural appearing buccal and labial contours for complete dentures. The stippled surface produced by these plastic veneer forms enhances the esthetic appearance of plain pink acrylic resin. The ultimate esthetic result, however, is obtained by the combination of stippling and tinting. The stippled plastic contour veneer is applied to a wax-up in approximately five minutes, and the carving and polishing of the buccal and the labial surfaces of the cured denture is practically eliminated.^[14] Suresh Nayar and Nicholas W. Craik had stated that gingival stippling is a characteristic of the healthy attached gingiva. Copying gingival texture and contours contributes to the natural appearance of labial flanges in complete dentures by causing uneven reflection of light. This, in turn, reduces the shine and reflection typically seen in highly polished denture flanges and provides a more natural appearance.^[15]

PROCEDURE

1. Wax the anterior flange and perform gingival characterization (festooning).
2. Flame the wax and press a synthetic sponge made from low-density polyurethane foam over the flamed region. Emboss the roughness of the sponge onto the softened wax.
3. Gently flame the anterior flange again to reduce the roughness, the gingival stippling becomes selfevident
4. Invest and process the prosthesis, polish with pumice and finish with rag

wheel and polishing compound. The area of the attached gingiva can be stippled at the try in stage. A modified bristle brush or toothbrush having two or three tufts at the end can be used for this purpose. By jabbing the surface of the wax in the selected region, a series of shallow holes are produced. The wax surface is then slightly flamed to reduce the depth of the holes and produce a dimpled effect. Finally, the surface polished lightly with water and cotton wool. [15]

ALVEOLAR EMINENCE: To further enhance the natural effect, it is necessary to imitate the anatomy the gingivae and alveolus. The labial flange of a complete denture should not be a smooth curved sheet of acrylic, but instead should show a series of swellings corresponding to the alveolar eminencies over the roots of the teeth. These are most marked anteriorly and become progressively less marked in the premolar and molar region. In the upper anterior region, the canine eminence is most marked. The lateral incisor eminence is small. In the lower jaw, again the canine eminence is most marked and a series of smaller ridges mark the presence of the incisor roots. Inflamed or bulbous gingiva: The reflection of inflamed or bulbous gingiva can also be reproduced by leaving more interdental wax.

use of tints in the denture bases: Several methods have been used to tint denture, base resins to achieve a more natural appearance. Usually heat curing or auto-polymerizing resins of various

shades or colors are painted on the denture base or are shifted on to the mold during denture construction to obtain a tinted denture. Most widely used tints today are the various pigments, which are placed with in the original mold chamber, so they do not affect contours

IDEAL REQUIREMENTS OF DENTURE BASE TINTING MATERIALS [16]:

1. It should be readily miscible with methyl methacrylate resin.
2. It should be non-toxic.
3. It should not add appreciable bulk to denture bases.
4. It should be stable and non-fading.
5. It should be resistant to loss from abrasion in cleaning and in normal function.
6. It should not alter the properties of the denture base resins. Additional shades aside from the standard Kayon Tints can be mixed from earth color pigments which enable the dentist to match virtually any color of gingival tissue. Most widely used tints are the Kayon dental stains or tinting resins. One Kayon Kit contains five shades.

techniques for using tints are

technique 1: This technique suggests initially trial packing the denture with a sheet of rubber dam between the teeth and the resin. The usual polyethylene sheets between the resin and the cast.

After the trial closure, the flask is opened. The tints are applied with a small camel's hairbrush wetted with monomer or by dusting and wetting with dropper on the external contours of the denture base and the imprints of the ridge-lap portions of the teeth. With either approach only small amount of the tinted resins are added which will not cause overfilling of the mold.

ADVANTAGE: This technique allows you to preview your efforts to some degree.

DISADVANTAGES:

1. The teeth are in other half of the flask, so the complementary effect of their shade cannot be appreciated.
2. Possibility of scuffing the color veneer, when it is returned to the flask.
3. Pigments are only on the surface, so subtle shading is more difficult.
4. The esthetically critical areas of gingival cuff and papilla are the most difficult once to control.

TECHNIQUE 2:

Dusting and wetting. This technique has more widespread acceptance, involves applying the tints in reverse order from outside in, i.e. after dewaxing the different shades of resins are applied in different areas by dusting and wetting prior to filling the base with the mold resins. Place as minimal an amount of monomer as necessary to barely wet the powder. Allow it to stand for about 15sec. before turning the flask. The

intense colors should be restricted to the deeper veneers. Allow the completed veneer to stand for 10-15 minutes before packing the rest of mold.

Simulating melanin pigmentation: This method involves the use of brown and purple resins for those with pigmented oral tissues.

Brush-on or paint-on technique-John L. Powers suggested that dusting and wetting technique is all-imaginary in the absence of the patient and its time consuming. Therefore, he developed a technique to apply the tinting material directly to the finished denture after processing, in the presence of the patient. He said coloring of the denture varies from one patient to another. So, one cannot use the same color resins for each patient and the coloring of the denture base can be modified according the tissue color of each patient.

CONCLUSION:

Complete denture fabrication not only replaces the missing teeth but also restores the esthetics, phonetics and function. Characterization of the complete dentures is necessary to give the dentures a life like appearance, to make it appear more natural. Every denture should be characterized according to the particular patient, rather than doing a pearl like arrangement of artificial teeth with a twinkling, plane sheet of acrylic resin denture base which quickly reveals it to be false. Our esthetic aim is the

production of anatomic characterization present before the extraction of teeth.

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