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Review Article

A literature review on esthetics in complete denture

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ABSTRACT

Denture esthetics in the field of prosthodontics has become a prime most demand of the edentulous patients in the recent time. The different processes that are required in the fabrication of complete denture in terms of esthetics constitutes from impression making, selection of teeth, occlusion, proper vertical dimension, accurate recording of the occlusal plane and a good smile line.

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1. Introduction

Esthetics means the sense of beautiful which is derived from nature.¹ In the year 1950 the term esthetics was first coined. According to websters esthetics was defined as as appreciative of, responsive to, or zealous about the beautiful, having a sense of beauty or fine culture. And according to glossary of prosthodontics terms esthetics is defined as pertaining to the study of beauty and as well as the sense of beautiful.² in the year of 1728 the construction of complete denture with metal frame work was firstly described by pierre fauchard. There are different school of thoughts that involved in the fabrication of complete denture in terms of esthetics. Stated by one author that fitting the personality of the aged patient is quite difficult as when compared to the fitting of the denture in to the patient mouth.³ According to burns the concept of psychological self and body image is very much involved in the fabrication of complete denture in terms of esthetics. According to frush a smile is the prime most asset in the appearance of the patient and describes the

personality of the patient too.⁴

Based on different personalities of the edentulous patients Wilhelm Zech a professional sculptor chose to give smooth or soft touch features to the female personality and some coarse features to the male patient. According to zech esthetics should be idealizing the artificial with the natural in the year 1955 Dentogenic concept was introduced by frush and fischer, brings the revolution in terms of esthetics in fabrication of complete denture.⁵

Characterization of denture started from impression making, selection, arrangement and modification of the selected artificial teeth, selection of occlusal plane, and it also includes characterization of the denture base.

1.1. Esthetic components

That includes facial components, dento labial considerations, dental considerations, tooth considerations that include tooth form, tooth shape, tooth dimension. Phonetics along with gingival health of the patient.

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1.2. Facial components

The selection of the tooth shape and size is primarily determined by the profile of the patient as seen from the frontal side. There are different frontal profiles of the patients that includes, square profile, tapering profile, square tapering and ovoid profile frontal of the patient. Frontal profile is one of the aspect of selecting of tooth size, shape in terms of esthetics in the fabrication of complete denture. The inter pupillary line should be perpendicular to the face midline. The midline of the face is the important line that plays an important role in the formation of esthetics in the frontal aspect of the face in the complete denture. The midline is marked by joining the glabella with the tip of the nose with philtrum and the tip of the chin.

In dento labial consideration the incisal curve should be convex in nature in the incisal region. That follows the concavity that is natural of the lower lip when the patient is smiling and this is known as the incisal arc.⁶ The position of the incisal edges must be in the confines of the border of the lower lip.

The vertical alignment of the maxillary teeth is compared by the axial inclination of the maxillary teeth that are visible in the smile line. Axial inclination can also be referred to the degree of tipping with reference to any plane.⁷ It was stated that the ratio of length to width of the central incisors should be 5:4 approximately. The function that is created by the relationship between the tongue, teeth and the lips is known as phonetics. If there were improper phonetics there would be improper Pronunciation of the words like m,p,f,v that corresponds to the improver or inadequate vertical dimension that may alter the final esthetic outcome of the complete denture. So phonetics plays an important role in establishing the appropriate tooth position and length along with determining the appropriate vertical dimension for the patient.^{8,9}

In reestablishing the normal tone of the orbicularis muscle, lips should be supported correctly by the complete denture. If there is any insufficient or unnecessary support given to the lip may alter the philtrum, along with nasolabial and mentolabial fold. So supporting the muscles of the face with the complete denture adequately is very much necessary and required for good esthetic outcome for the complete denture. There should be proper or adequate extension of the denture flanges should be given, over extension of these borders should give the unaesthetic appearance.⁷

1.3. Selection of the teeth

Teeth selection falls under two different categories

1. Anterior teeth selection
2. Posterior teeth selection

In teeth selection some pre extraction records along with post extraction records are required for appropriately

decision of tooth shade, shape and size.

Pre extraction records like diagnostic cast of patient that have natural teeth or teeth restored with restorations, photographs of the patient that shows pair of teeth in the patient mouth or the radiograph of the patient with teeth in the oral cavity, helps in determining the shape of the natural teeth, size of the natural teeth and color of the natural teeth that the patient is having earlier. Post extraction record are helpful in case if the patient was edentulous earlier and was wearing the denture, one should check the patient with the denture in the mouth for checking whether the previous vertical dimension is correct or need to alter for enhancing the esthetics of the patient and whether the patient is satisfied with the previous given teeth size, shape or need to alter for esthetic reason.

There were various guides that were used in the selection of the anterior teeth

1. Size of the central incisor maxillary should be in harmony with the size of the face. Larger teeth should be used in case of large face and smaller teeth for small faces. Average width of maxillary central incisor was found to be $1/16^{th}$ the width of the face measured between both the zygomas. The combined width of the maxillary anterior teeth is found to be slightly less than $1/3^{rd}$ the bizygomatic width of the face.⁷
2. Properly contoured occlusal rims are required to measure the size of the arch of the maxilla. Measurements are made from the mid line of the maxillary occlusal rim to the most distal end of the cuspid eminence.
3. The casts should be articulated properly in centric relation for the determination of maxilla mandibular relationship.
4. The placement of the artificial teeth should or must follow the contour of the residual alveolar ridge.
5. If there is adequate availability of the space between the maxillary and mandibular arch, one should use artificial teeth according to it, if more space is available, long teeth can be used according to the aesthetics and is the space is less, one should go for small dimension teeth.
6. When the patient is relaxed, the maxillary anterior teeth should support the maxillary lip
7. Occlusal form of the posterior teeth should be determined, like modified anatomic teeth should be used for patients with good residual ridges. And non anatomic or zero degree teeth for resorbed ridges patient.

1.4. Dentogenic concept

It means that the technique and art which is used to achieve the primary goals of aesthetics in dentistry with respect to complete denture. Dentogenic concept primarily constitutes

of three factors i.e. sex, personality, and age of the patient.

In case of female patient, softness is the primary aesthetic characteristic, the roundness, softness, and smoothness are for typically women as and when compared to men they show boldness hardness, aggressiveness as well as forcefulness.¹⁰

1. Teeth set with lighter shades are most commonly used for patient of young age group and slightly dark coloured teeth set for patient belongs to older age group.
2. A slight modification in terms of long axis inclination of the artificial teeth is required to provide natural appearance in the complete denture.
3. Placement of one incisal edge of maxillary central incisor ahead of the other one to give slightly natural appearance in the complete denture.
4. In case of female patient, lateral incisor should be rotated to show its mesial surface a bit, helps in softening the smile and can be used in female patient complete denture.
5. In case of male patient lateral incisor can be rotated to show its distal surface a bit more helps in hardened the smile.
6. The key to aesthetics lies in asymmetry, means slight deviation in the midline helps in giving natural appearance in the complete denture prosthesis.
7. Grinding of incisal edge helps in giving the appearance of attrition in case of old aged patient.
8. In order to give natural appearance in complete denture with respect to diastema, slight disatema can be given between the lateral incisor and canine to mimic the natural appearance.
9. To mimic the natural appearance in the complete denture prosthesis, silver filling can be incorporated over the posterior teeth.
10. Characterization of the denture base should be given by festooning, carving, stippling.^{11–15}

Characterization is done by proper selection, arrangement and modification of the artificial teeth. The teeth modification should be done to match the patient age, sex and personality. Characterization of the denture base can be done by incorporating artificial stains in the complete denture prostheses to mimic the natural color of the gingiva with aging. Kemnitizer used incorporation of mixture of blue and dark stain to replicate the melanin pigmentation in the gingiva in old age patient. Stippling reflects the healthy gingiva in normal patient, so mimicking the appearance of stippling in the labial flanges of the complete denture corresponds to the natural appearance of the denture.

2. Conclusion

The more the natural appearance given to the complete denture, more will be the acceptability of the complete

denture by the patient, whether in the form of asymmetry or by tilting one incisal edge anterior to the other, or by making amalgam restoration over the posterior teeth, by the help of denture characterization.

3. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

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None.

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