

CUSTOMISED AESTHETIC MAXILLARY COMPLETE DENTURE PROSTHESIS USING CHARACTERIZATION- A CASE SERIES

Mayank Kumar Parakh ¹, Krishna Prasad D ^{2*}

¹ Post Graduate student, Nitte (Deemed to be University), AB Shetty memorial institute of Dental Sciences (ABSMIDS), Department of Prosthodontics and Crown & Bridge, Mangalore, India.

² Professor, Nitte (Deemed to be University), AB Shetty memorial institute of Dental Sciences (ABSMIDS), Department of Prosthodontics and Crown & Bridge, Mangalore, India.

ABSTRACT

For an esthetic appearance of a complete denture, characterization of the denture plays a significant role. Furthermore, giving appropriate contours and characterizing the denture bases can give a more natural and life-like appearance.

In this case series, the esthetics of a maxillary complete denture were enhanced using various shades of gingival composite resin, a flangeless maxillary denture with a diastema was fabricated, and a case of maxillary and mandibular sectionally characterized dentures.

On 6 months follow-up, all the characterized dentures showed good function and esthetics. Characterizing denture bases is an art, and fulfilling a patient's esthetic need should be prioritized during treatment planning.

Key words: Characterization, Esthetics, Complete denture, Composite resin.

Introduction

Good oral health is important to maintain general health and well-being ¹⁻⁴. The loss of oral hard and soft tissues has a major impact on the appearance of the lower one-third of the face. The rehabilitation of the lost tissues has to be done in harmony with the upper one-third of the face to optimize complete facial esthetics. ⁵ For an esthetic appearance of a complete denture, characterization of the denture plays a significant role. Additionally, giving appropriate contours and characterizing the denture bases can give a more natural and life-like appearance. ^{6,7}

Characterization of dentures has been attempted for many years and Pound was the first one to attempt it way back in 1951. Inspired by this work, various dentists began to pursue characterizing dentures to meet the patient's esthetic demands. ⁸ Pattanaik ⁹ described a technique of staining wherein, a strip of tissue paper was adapted onto the waxed up denture. The gingival contours are followed and the tissue paper is cut accordingly and this tissue paper is stained and used to internally characterize the complete denture. Various other techniques involving extrinsic stains using the brush-on technique, ¹⁰ adding tints post-trial packing have been reported and used to enhance patient satisfaction. ^{11, 12}

Various techniques have been used to characterize the dentures such as using absorbent tissue paper with acrylic stains, externally staining the denture after acrylisation, etc. ^{6, 7} In this case series, the esthetics of a maxillary complete

denture using various shades of gingival composite resin was done, a flangeless maxillary denture with a diastema was fabricated and a case of maxillary and mandibular sectionally characterized dentures was customized for the patient.

Case Series:

Case Report 1:

A 51-year-old patient reported to the Department of Prosthodontics with the chief complaint of unesthetic dentures. The patient's existing denture had worn teeth and the fit was compromised. The treatment plan was to construct a new denture. The Mental attitude of the patient was graded as exacting in nature based on House Classification which demanded characterization of the maxillary and the mandibular dentures.

Conventional clinical and laboratory techniques were used until the dewaxing procedure. Sectional characterization of both maxillary and mandibular dentures was done using acrylic paints. For this, a small quantity of monomer is dispensed into a dappen dish, and acrylic paints are mixed to obtain a closely matched tone for the patient's gingiva. To this toned monomer, the pink heat-cured acrylic polymer is added. In another mixing jar monomer and polymer are mixed in proportions as suggested by the manufacturer. Trial packing is done. The dentures were then acrylised using a short curing cycle.

Characterisation:

Step 1: For the maxillary denture a cutback of 1.5 mm was done on the buccal flange, following this the denture was sandblasted at 2 bars of pressure to create a rough surface. (SILENT compactCAM, Renfert, Germany) The sandblasting particles are removed using a clean brush.

Step 2: The visio.link primer was applied as a thin coat of the buccal flange of the denture and the denture base was light-cured for 90 seconds. (bre.Lux PowerUnit 2, Bredent, United Kingdom) Crea.line composites from Bredent were used for enhancing the esthetics of buccal flange.

Step 3: G1 light flowable composite resin was used to give the denture slight bony prominence, following this, G3 pink composite was used and the entire buccal flange was covered with a thin layer. The denture was then light-cured for 180 seconds.

Step 4: Following this M4 Lila flowable composite resin was used to give a more lifelike appearance to the denture and was applied as a thin layer and light-cured for 180 seconds.

Step 5: Following this Multisl Epithetics fibers, signal red were added into G3 pink composite resin and coated onto the borders to give effects of blood vessels and cured for 180 seconds.

Step 6: A final layer of T1 clear acrylic was applied and the denture was cured for another 180 seconds

Step 7: Final polishing was done using a clean dry buff and final fit and insertion of the dentures were done. [Figure1] Post insertion instructions were given

Case Report 2:

A 64-year-old male patient reported to the Department of Prosthodontics with the chief complaint of completely edentulous maxillary and mandibular arch. The patient was not satisfied with the old denture due to the bulky appearance of the dentures. On examination, it was noted that the patient has a prominent premaxilla and hence a flangeless denture with acrylic projections was planned.

Clinical steps were done in a conventional manner and the denture trial stage; the labial flange was trimmed off. A diastema of 3mm was incorporated as the patient wanted a diastema to mimic his dentate photos. Following this a 19 gauge metal wire was adapted to the cast on the labial aspect and loops were created on either side. Following this flasking and dewaxing procedure was done. Sectional

characterization on the denture base was done for both maxillary and mandibular denture bases. The denture base was acrylised using a short cycle and later trimmed and polished.

On the fit and insertion appointment, a self-cure clear acrylic was manipulated and the metal loops were covered with the acrylic and molded in the patient's mouth. These cold cure projections were trimmed and polished. The mandibular denture was sectionally characterized by the patient's tone. [Figure 2]

Case Report-3:

A 54-year-old male patient reported to the outpatient department with a chief complaint of ill-fitting complete dentures. A sectional characterization of the prosthesis was planned. For sectional characterization, a small quantity of monomer is dispensed into a dappen dish and acrylic paints are mixed to obtain a closely matched tone for the patient. For making the tone Persian blue, red, orange, green are mixed and a melanin tone closely resembling the patient is made. In another mixing jar monomer and polymer are mixed in proportions as suggested by the manufacturer is mixed. The stained acrylic is first applied over the cervical and facial areas of the dewaxed flask and the rest of the mold cavity is filled with conventional pink acrylic. Trial packing was done and the denture was acrylised using a short cycle. [Figure-3]

Follow Up:

Patients with these characterized dentures were followed up after 6 months. The dentures were esthetic and patients were satisfied with the treatment outcome of the complete dentures.

Conclusion:

Characterizing denture bases is an art and fulfilling a patient's esthetic need should be prioritized during treatment planning. Using composite resin can aid in chair-side modification and characterization which in turn enhances patient compliance and satisfaction. The longevity of composite characterized denture has not been established and longitudinal studies need to be done in this field to make this as a mainstay treatment.

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Corresponding Author

Dr. Krishna Prasad D.

Professor, Nitte (Deemed to be University), AB Shetty memorial institute of Dental Sciences (ABSMIDS), Department of Prosthodontics and Crown & Bridge, Mangalore, India.



Figure 1: Characterized composite denture



Figure 2: Flangeless maxillary denture with a diastema



Figure 3: Sectional characterized dentures.