

OCCLUSAL PLANE CORRECTION TECHNIQUE USING MODIFIED OCCLUSAL TEMPLATE AND CUSTOMIZED TRANSFER JIG.

Prosthodontics

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ABSTRACT

Single complete denture treatment option is a challenging as there are chances of prosthetic failure because the plane of occlusion will always be disturbed. A correct plane of occlusion is the key to success. To correct the plane different techniques have been described in literature. But there are short comings in each technique. To counter the short comings modifications were needed. Those modifications are described in following article from which satisfactory results have been obtained.

KEYWORDS

Occlusal plane template, Occlusal plane correction, Single complete denture, Modified Yurkstas Technique.

INTRODUCTION:

Single complete denture fabrication is more challenging as there are more chances of failure for this treatment if certain things are neglected. It is more difficult because of presence of natural dentition opposing edentulous arch. In such conditions occlusal plane for remaining teeth is generally altered. For the success of the treatment occlusal plane has to be corrected. To correct the occlusal plane different authors have given different techniques.¹ Among them Yurkstas used metal U-shaped occlusal template that is slightly convex on the lower surface. Yurkstas did the required corrections intraorally by placing it in patient's mouth by doing gradual reduction. Since this template is made up of metal it is not possible to see exact contact of template on occlusal surfaces of teeth. The intraoral corrections are also time consuming as it has to be done gradually.¹ To get better results and simplify the process, modifications were needed in occlusal template and the technique to correct the occlusal plane.

MATERIALS:

1. Shellac base plate (Pyrex)
2. Heat cure clear acrylic resin (Densply)
3. Type III Gypsum (Kalabhai)
4. Modelling wax (Y-Dents)
5. Sticky wax (DPI)
6. Air rotor and Air Rotor Diamond Points

METHODOLOGY:

Occlusal Template

A volleyball was selected of approximately 8 inches of diameter, which simulates the Monson sphere. Shellac base plate (Maxillary) of 1mm thickness was softened and it was properly adapted on the ball. Once it got hard, it was removed from ball. [Fig. 1]



Fig. 1

Molded base plate was packed into flask with Type III gypsum. Once the gypsum had set, the flask was kept in boiling water for 5 Minutes. After this, flask was opened and base plate was removed from flask. [Fig.2]

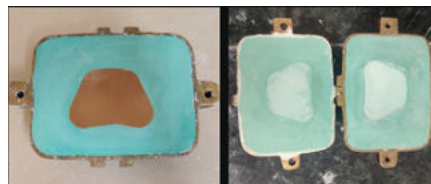


Fig.2

When temperature of flask had come down to room temperature, separating media was applied. Heat cure clear acrylic resin was packed in flask and after bench curing, acrylization was done. Finishing and polishing was done. [Fig.3]



Fig.3

Occlusal Plane Corrections

Template was placed on the occlusal surface of the cast which was articulated on semi-adjustable articulator. Plane was analysed, where only few teeth were contacting the plate. Gradual reduction was done onto the cast to obtain maximum point of contacts. [Fig. 4]



Fig. 4

Transfer Jig

After correction of occlusal plane, a transfer jig was fabricated from modelling wax. Modelling wax was softened and adapted in the manner that it can cover the buccal, distal surface of posterior most tooth and lingual surfaces of the posterior teeth at the level of crown height. To obtain better stability of the jig intraorally, sticky wax was adapted on buccal cusp tips. Two separate jigs were fabricated on either side of the arch. [Fig. 5]

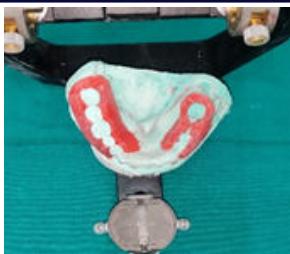


Fig. 5

Intraoral Plane Correction

Transfer jig was placed in mouth and stability was checked. Tooth structure above the jig was reduced by maintaining the occlusal anatomy using air rotar diamond points at a single go, at level of the jig. After corrections occlusal plane was analysed. [Fig.6]



Fig. 6

DISCUSSION:

The term plane of occlusion refers to an imaginary surface that theoretically touches the incisal edges of the incisors and the tips of the occluding surfaces of the posterior teeth. Because the term plane refers geometrically to a flat surface, it is not entirely correct to describe the occlusal surface as following a true plane. Instead of a flat surface, the plane of occlusion represents the average curvature of the occlusal surface.²

The curvatures of the posterior plane of occlusion are divide into (1) an anteroposterior curve called the curve of Spee and (2) a mediolateral curve, referred to as the curve of Wilson.² Combinedly termed as curve of Monson.

Among the other theories of occlusion Dr. George S. Monson gave the spherical theory. According to theory, in an ideal occlusion, the cusps of all the teeth and center of both the condyles conform in the main to the surface of approximately an 8-inch sphere, and the long axis of each tooth converges to the common center of this sphere.³

To correct plane of occlusion there are certain techniques described in literature, which includes Swenson, Yurkstas, Bruce, Boucher, and Broadricks occlusal plane analyser.⁴

Swenson was the first one who described a correction technique. But it was not accurate, corrections were arbitrary and much more time consuming. Yurkstas gave another technique in which metal template was used. From which was impossible to see occlusal surfaces contacting template and it was also time consuming procedure. Bruce modified this with clear acrylic resin template, but it was also a time consuming as repetitions were needed. Boucher et al. gave another technique in which corrections were arbitrary, process was lengthy and time taking.¹ Broadricks occlusal plane analyser did corrections more accurately but it needed specific instruments and was more destructive.

Bipin Y. Muley, Pravinkumar G. Patil, Arun N. Khalikar, Santosh B. Puri described technique to fabricate occlusal plane template. But how to correct plane intraorally was not described.⁵

Tamizhesai Balavadivel et al. described technique, in which broadricks occlusal plane analyser was used for corrections and custom template made up of self-cure acrylic resin was used to do intraoral corrections. But template was covering buccal surfaces of the maxillary teeth and did not include palatal surfaces of teeth.⁶

So, decision was made to do the corrections with less destruction as teeth were vital. That's why we decided to go with Yurkstas technique but short comings were there. So, to overcome those, new clear acrylic occlusal plane template was fabricated and occlusal corrections were done after analysing the occlusal plane and wax transfer jig was fabricated to transfer the corrections of occlusal plane intraorally. The jig was fabricated in the way that it can be stabilised in the mouth accurately and corrections were done.

The occlusal corrections may be required on both the cuspal surfaces of teeth i.e., buccal and lingual or palatal, which was not described earlier in different techniques. With this technique corrections can be done on cusps of teeth wherever it is required. By using this technique occlusal plane corrections can be done more accurately, with better ease and in less time. We have got satisfactory results in patients with this.

CONCLUSION:

For better treatment outcome, correct occlusal plane is the key to success. Therefore, occlusal plane has to be corrected in the condition of occlusal plane discrepancies. Different techniques have been described in literature for the correction, but each technique has some short comings. That's why the modifications were needed to obtain better results. So, Yurkstas technique was modified to get more accuracy, more conservation, better ease and to consume less time for the procedure.

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