



National Journal of Medical and Allied Sciences

[ISSN Online: 2319 – 6335, Print: 2393 – 9192|Case report |Open Access]

Website:-www.njmsonline.org

THERMACOL MAXILLARY DENTURE: A LIGHT WEIGHT PROSTHESIS

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Abstract

Fabrication of a prosthesis that is stable, retentive and also has enough support is the dentist's responsibility. It lays the basis for patient satisfaction. In clinical situations where there is a long lip length or severely resorbed ridges with increased inter arch distance; the total weight of a maxillary complete denture is increased thus acts as a dislodging factor. In this case report, a light weight maxillary denture was designed and processed for better retention.

Key words: Hollow maxillary denture, light weight denture, residual ridge resorption

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Introduction:

In clinical presentations where there is extreme resorption of the denture bearing area, it becomes a challenge for the restorative dentist to rehabilitate it. The residual ridges gets narrow as resorption progresses, causing decrease in supporting tissue and hence resulting in a large restorative space between the maxillary and mandibular residual ridges. A clinically long lip dimension adds to this problem. This results in a heavy maxillary denture that further decreases retention and resistance of the prosthesis¹. The restorative dentist must use his clinical expertise to overcome this problem. Reduction in the weight of the prosthesis decreases the leverage action as the cantilever mechanics of suspension and overtaxing of the remaining supporting structures is reduced². Various weight reduction approaches have been used in past like using a solid three dimensional spacer, including dental stone as described by Ackermann³, cellophane wrapped asbestos as given by Brown⁴ in 1983, or modelling clay as described by DaBreo⁵ in

1990. Holt⁶ in 1981 processed a shim of indexed acrylic resin over the residual ridge and used a putty spacer which was then removed and the two halves luted with auto polymerized acrylic resin. Fattore et al⁷ in 1988 used a variation of the double flask technique for obturator fabrication by adding heat polymerized acrylic resin over the definitive cast and processing a minimal thickness of acrylic resin around the teeth using different drag. Both portions of resin were attached using a heat polymerized resin. Holt et al processed a shim of indexed acrylic resin over the residual ridge and used a spacer which was then removed and the two halves luted with autopolymerized acrylic resin. Heat polymerizing resin was then mixed, packed and processed for 7-8 hrs. Two small openings were made with bur into denture base distal to most posterior teeth. Dental plaster – pumice – sugar syrup paste was then removed by scraping and putting it in water. This opening was later closed with auto polymerizing resin.⁸ Sullivan et al⁹ in 2004 described a modified method for fabricating a

hollow maxillary denture. A clear matrix of the trial denture base was made. The trial denture base was then invested in the conventional manner till the wax elimination. A 2 mm heat polymerized acrylic shim was made on the master cast, using a second flask. Silicone putty was placed over the shim and its thickness was estimated using a clear template. The original flask with the teeth was then placed over the putty and the processing was done. The putty was later removed from the distal end of the denture and the openings were sealed with auto polymerizing resin.¹⁰ The technique was useful in estimation of the spacer thickness, but removal of the putty was found to be difficult especially from the anterior portion of the denture. Moreover, the openings made on the distal end had to be sufficiently large to retrieve the hard putty. This study was conducted to devise a method for fabrication of a light weight prosthesis.

Case report:

A 65 year old male patient reported to the Department of Prosthodontics, Rural Dental College, District Ahmadnagar, Maharashtra with the chief complaints of difficulty in chewing food and heaviness in his upper denture. During case history, it was revealed that the patient was edentulous for past 13 years and had used many sets of complete dentures. On oral examination, it was found that both maxillary and mandibular ridges were severely resorbed. His upper lip was long with an increased inter-ridge distance. The previous set of complete denture was heavy and with generalized attrition. Hence, it was decided to fabricate a new set of complete dentures for the patient. The treatment options for complete denture provided to the patient were: implant supported over denture, conventional complete denture, hollow maxillary complete denture and conventional mandibular complete denture. After discussion with the patient and analyzing all the pros and cons, the decision was made to fabricate a thermacol maxillary complete denture. The patient also approved of the treatment modality as it was light in weight, inexpensive and a non-surgical procedure.

Technique: Preliminary and definitive edentulous impressions were made in the conventional manner. Jaw relation was done and proper aesthetics established according to the patient's long upper lip. Teeth were selected and arranged in balanced occlusion and try-in was done in two parts; anterior teeth and then for posterior teeth. For making the thermacol Maxillary denture, a set of two interchangeable flasks were arranged.¹¹ The lower denture was processed in the conventional manner. For making the maxillary denture base, a sheet of modeling wax was adapted over the maxillary cast and processed in heat cure resin (Trevalon, Dentsply, Gurgaon) using an interchangeable second flask. This permanent record base was left undisturbed on the master cast. Now a piece of thermacol was crushed and mixed with glue. This mix was applied over the permanent record base using an old toothbrush. To verify optimal space for the remaining heat cure resin making the cameo surface of maxillary denture, an index of thermoplastic template was used. It was previously prepared just after teeth arrangement. All the interfering areas of thermacol glue mix with the template were removed. The heat cure resin was mixed, packed and processed using short cure cycle. Lab remounting was done to correct processing errors.¹² The dentures were polished. The maxillary thermacol denture was then placed in water and it floated. Hence the role of thermacol in reducing weight was demonstrated. The dentures were inserted in the patient's mouth and instructions were given.



Fig. 1: Maxillary edentulous arch



Fig.2: First stage dewaxing



Fig.3: Second stage dewaxing



Fig.4: Adhesive placed



Fig.5: Crushed thermacol placed



Fig.6: Post placement confident smile

Discussion:

Clinical representations of severely resorbed ridges and also if accompanied with a long lip length acts as a challenge for the restorative dentist. Geriatric patients with systemic illness, economic constrain, usually possess reluctance for a long duration treatment procedure and show their unwillingness for any kind of surgical procedure. Apart from modifying the impression technique to get maximum denture bearing area, modifying the type of denture may also be better accepted by the patient. A conventional (heavy) heat cure denture whether maxillary or mandibular is likely to cause poor denture bearing ability. When there is an increased volume of denture base material provided to patients with large maxillofacial defects or in severe residual ridge resorption cases then there is always a challenge for a Prosthodontist. To increase the retention and stability of heavy prosthesis, many methods have been tried in past like utilising the undercuts, modifying the impression technique, use of magnets, use of implants etc. The rehabilitative treatment plan chosen for this patient was based on findings charted during case history and oral examination. In the technique used here, the weight of the maxillary prosthesis was reduced by incorporating thermacol particles into the maxillary denture. This method has advantages over previously described techniques for the hollow denture fabrication. The weight of denture can also be reduced by incorporating various spacers. In case

of putty spacer, the openings made for its removal gets blocked and also are very small. So it becomes difficult to completely remove putty spacer. In all the techniques where a spacer is used, the opening has to be closed using self cure resin. Hence a joint is established at microscopic level and is prone for debris attachment as shown by Kalavathy et al¹³ in 2004. In the technique used here, the thickness of resin was controlled by using thermoplastic template as it was transparent to adjust. This prevented seepage and deformation of denture under pressure of flask closure. The advantages of a thermacol denture are reduction in the excessive weight of the acrylic resin, resulting in the lighter prosthesis making the patient more comfortable and adjustable.

Conclusion:

Thermacol maxillary denture is a viable treatment option for rehabilitating a patient with severely resorbed ridges and a long lip length. It not only reduces the weight of the denture but also the leverage action of the same. This ultimately results in increased retention and stability and upto some extent preserves the existing residual alveolar ridge. This technique is not only simple to execute but also keeps an eye on thermacol thickness.

References:

1. Sullivan M, Hansen N, Cronin RJ. The hollow maxillary complete denture: A modified technique. *The Journal of Prosthetic Dentistry* 2004; 91: 591- 4
2. Mahdy AS. Processing a hollow obturator. *The Journal of Prosthetic Dentistry* 1969; 22: 682-6
3. Ackerman AJ. Prosthetic management of oral and facial defects following cancer surgery. *The Journal of Prosthetic Dentistry*, 1955; 5: 413-32
4. Brown KE. Fabrication of hollow- bulb obturator. *The Journal of Prosthetic Dentistry* 1969; 21: 97-103
5. DaBreo EL. A light cured interim obturator prosthesis: A clinical report. *The Journal of Prosthetic Dentistry*, 1990; 63: 371- 3

6. Holt RA (Jr.). A hollow complete lower denture. *The Journal of Prosthetic Dentistry*, 1981; 45: 445- 52
7. Fattore LD, Fine L, Edmonds DC. The hollow denture: An alternative treatment for atrophic maxillae. *The Journal of Prosthetic Dentistry*, 1988; 59: 514- 6
8. Gundawar S, Zamad A, Gundawar S. Light weight dentures: An innovative technique. *Contemp Clin Dent* 2014; 5: 134- 7
9. Sullivan M, Hansen N, Cronin RJ, Cagna DR. The hollow maxillary complete denture: A modified technique. *J Prosthet Dent* 2004; 91: 591- 4
10. Shetty V, Gali S, Ravindran S. Light weight maxillary complete denture: A case report using a simplified technique with thermocol. *J Interdiscip Dentistry* 2011; 1: 45- 8
11. Kaira LS, Singh R, Jain M, Mishra R. Light weight hollow maxillary complete denture: A case series. *J Orofac Sci* 2012; 4: 143-7
12. Kaira LS, Dabral E. Hollow maxillary denture: A new modified technique for improving retention in resorbed maxillary ridges. *SRM J Res Dent Sci* 2014; 5: 51- 4
13. Kalavathy N, Shetty MM, Premnath, Pawashe K, Patel RKV. Hollow mandibular complete denture - A case report. *SRM University Journal of Dental Sciences*, 2010; 1: 243- 46

Conflicts of Interest: None Funding: None

Citation: Ahmed N, Bashir T, Faraz A, Mishra S, Sharma N, Kumar P. *Thermacol maxillary denture: a light weight prosthesis. National Journal of Medical and Allied Sciences* 2014; 3(2):60-63.