

A NOVEL TECHNIQUE FOR FABRICATION OF HOLLOW DENTURE

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Abstract:

A severely resorbed maxilla poses a clinical challenge for fabrication of a successful complete denture. This article describes a novel method for fabrication of a hollow maxillae complete denture. It includes a laboratory procedure to make a hollow space between the two halves of the denture in order to reduce the weight of the prosthesis which require only 1 flask as compare to other technique in which multiple flask are used reorientation of the flask becomes complicated.

Key Words: Severely resorbed maxillary ridge, Hollow maxillary denture, complete denture, shim, Prosthesis, Resorbed ridge,

INTRODUCTION

Increased resorption in the maxillary residual alveolar ridge poses a clinical challenge for Prosthodontic rehabilitation due to the constricted residual ridge and eventually leading to decreased supporting tissues. This may result in a heavy maxillary complete denture that may compound the poor denture bearing ability of the tissues, hence loss of retention and resistance. Studies have shown that gravity and the addition of weight to the mandibular complete denture may enhance prosthesis retention.^{1,2} Reducing the weight of a maxillary prosthesis has been extremely beneficial for resorbed cases.

CASE REPORT 1. (Fig 1a,b,c)

Male patient aged 90 years reported to the department of Prosthodontic MDCRC, indore, with history of denture wearing from past 12 years. Intraoral examination revealed severely resorbed maxillary & mandibular ridge (Figure no 1 and 2). Patients O.P.G. shows significant decrease in denture bearing area. He got his denture replaced 4 times during I year due to lack of adaptability. Medical history revealed

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that there was no underlying systemic disorder. A conventional mandibular denture with hollow maxillary denture was planed.



(Figure 1a)



(Figure 1b)

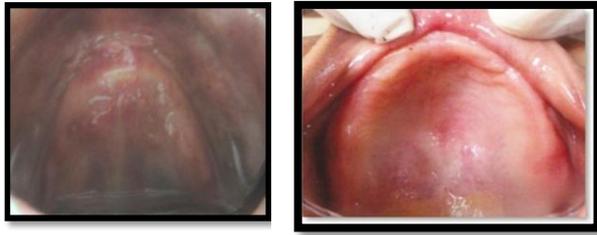


(Figure 1c)

CASE REPORT 2. (Fig 2a,b)

Male patient aged 80 years reported to the department of Prosthodontic MDCRC, with history of denture wearing from past 16 years. Intraoral examination revealed severely resorbed maxillary & mandibular ridge (Figure no 1 and 2). Patient gives history of denture wearing since 10 year. Patients O.P.G. shows significant decrease in denture bearing area. He got his denture replaced 2 times during I year due to lack of adaptability. Medical history revealed that patient has history of diabetes science

5year. A conventional mandibular denture with hollow maxillary denture was planed



(Figure 2a)

(Figure 2b)

FABRICATION TECHNIQUE

1. Maxillary & mandibular impression was made followed by border molding and final impression with zinc oxide eugenol free impression paste.(IMAGE, Prime Dental Pvt Ltd.)

2. Master cast was duplicated using irreversible hydrocolloid impression material (Fig. 3).(Neocolloid,Zhermack)

3. After pouring the impression in type III dental stone (Denstone,Pankaj Enterprises) temporary record base (Trealon) was fabricated using auto polymerizing resin.

4. While on the master cast a heat cured permanent record base (Trealon) was fabricated (Fig. 4).



(Figure 3)

(Figure 4)

5. With the help of facebow orientation jaw relation was recorded.

6. The maxillo-mandibular relationship was recorded and transferred and secured to the articulator which was followed by arrangement of teeth.(Fig. 5, 6).



(Figure 5)



(Figure6)

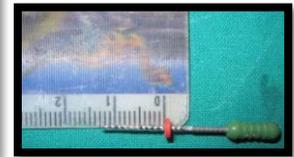
6. Try in procedure was done

The special steps involved in the fabrication are as follows:-

7. Endo-file was inserted incisally between maxillary central incisors until it touched the record base (Fig.7).



(Figure 7)



(Figure 8)

8. File was removed and distance was measured till the stopper (14mm) (Fig.8).

9. Central incisor was removed from the trial denture base and its occluso-cervical height was measured (11mm) (fig.9).



(Figure 9)



(Figure 10)

10. Endo file was inserted from the occlusal surface between 1st and 2nd premolar and the distance was measured from the record base to the occlusal surface (14mm) (fig.10).

11. Similarly the occluso cervical distance of premolar was measured after its removal from waxed up denture (10mm) (fig.11).

12. After recording the measurement the teeth were replaced back again in the same position of the waxed up denture.



(Figure 11)

13. Then the endo file was inserted from the buccal side between both premolar to calculate the bucco-lingual width (14mm) and same was done from the labial side of the central incisor (12mm). (fig.12)



(Figure 12)

14. Fabrication of shim

- Occluso-cervical height of wax rim (Anteriorly and Posteriorly) – 14mm and 13mm.
- Occluso-cervical height of Incisor and Premolar – 11mm and 10mm.
- Buccolingual width of wax rim (Anteriorly and Posteriorly) – 6mm and 8mm.

Shim Height:-

Anteriorly -: $14\text{mm} - 11\text{mm} = 3\text{mm}$

Posteriorly -: $13\text{mm} - 10\text{mm} = 3\text{mm}$

Shim Width:-

Anteriorly:- 4mm

Posteriorly:- 6mm

(2mm space for heat cured record denture base material)

These measurements were used to fabricate the shim which was made of plaster and pumice on heat cure permanent record base.

15. Height of the shim on anterior region was calculated by reducing the height of teeth with height of rim (3mm).

16. Similarly the height of shim was calculated for the posterior region.

17. Width of shim was calculated by reducing 1mm on labial, buccal & palatal side (fig.12).



(Figure 13)

18. A vacuum form sheet (0.5mm) was adapted on the shim (fig.14).



(Figure 14)

19. Trial denture was flaked and dewaxed

20. Then the heat cure record base with shim was placed on the edentulous cast in base flask and counter was placed to check the fit.

21. The discrepancy in fitting was verified and corrected.

22. Material was mixed, packed, and trial closure was carried out with the shim in place.

23 After the trial closer, the vacuum form sheet and plaster pumice shim was

removed from the heat cured record base and counter flask was placed back.

24. After curing the denture were deflasked and finishing was done.

25. Then the dentures were remounted on articulator to adjust the occlusal discrepancy.

26. Denture were polished and immersed in water to check for adequate seal. (Fig.15).



(Figure 15)

27. Denture insertion was done and occlusion was verified (fig.16).



(Figure 16a)



(Figure 16b)

DISCUSSION

The technique described here has the advantage over other technique for hollow denture as they have problem of leakage and difficulty in gauging resin thickness. Another advantage of this technique is that it requires only 1 flasks as compared to

other techniques in which multiple flasks are used in which reorientation of the flask becomes complicated. It also avoids the tedious effort to remove the spacer material from the denture.

REFERENCES

1. Fattore LD, Fine L, Edmonds DC. The hollow denture: an alternative treatment for atrophic maxillae. *J Prosthet Dent* 1988; 59:514-6.
2. Holt RA Jr. A hollow complete lower denture. *J Prosthet Dent* 1981; 45: 452-4.
3. Kalavathy N, Shetty M M, Premnath, Pawashe P.K., Patel R KV: Hollow mandibular complete denture - A case report. *Streamdent* 2010;3;243-6.
4. Sullivan M, Hansen N, Cronin R.J, Cagna D.R. The hollow maxillary complete denture: A modified technique. *J Prosthet Dent* 2004; 91:591-4.
5. Chowdhry P, Chandra S, Singh A, Tandon BK. Management of Severely Resorbed Mandibular Ridges - An Alternate Approach – A Case Report. *JIDA* 2010; 4:374-6.

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