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Hollow Denture Rejuvenated - A Case Report Using A Novel Dental Technique

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Abstract

Fabrication of a Hollow denture is a very well-researched area. Yet, many techniques require an opening to be made in the final prosthesis to remove the spacer material, and later seal the opening using cold cure acrylic. This procedure is like denture repair. Literature has shown procedures like denture repair to ultimately compromise the strength and were only 57% as strong as the original heat-cured material, further limiting the longevity of the prosthesis. This technique using thermoplastic splint in the fabrication of Hollow denture overcomes this disadvantage, as there is no need for the removal of a spacer. It is a simple and efficient method in the fabrication of a Hollow denture. Material and Method: Seal the trial denture on the stone cast and duplicate it in stone. Adapt a Biostar sheet (Scheu-Dental GmbH) on the duplicate stone cast using the Biostar machine (Scheu-Dental GmbH) to obtain a Biostar splint as the replica of the trial denture outline. On the other hand, prepare a heat-cured record base and place it on the edentulous cast. Following this, design the size and shape of the wax spacer and duplicate it in stone along with the seated record base and edentulous cast. Adapt a Biostar sheet on the duplicate stone cast (made from wax spacer) using the Biostar machine. This final Biostar splint is the spacer that will be incorporated into the denture during processing to create a hollow denture.

Keywords: Edentulous, Denture, Hollow, Biostar, Denture Repair.

Introduction

The fabrication of hollow dentures is a very well-researched field with innumerable published techniques. The 3 Dimensional space historically was created using the Holt technique [1] Double flask technique[2] and Lost salt technique[3] further innovating spacers using Lost-wax technique, [4] Putty, [5] Caramel, [6] Catheter wires, [7] Soap, [8] Thermocol, [9] Gelatin mix, [10] Pumice. [11] Yet in many techniques an opening is made to remove the spacer material. The opening is later sealed using cold cure acrylic, which is like denture repair. This compromises the strength and longevity of the prosthesis. 12 The use of thermoplastic splint in the fabrication of Hollow denture overcomes this disadvantage as there is no need for the removal of a spacer.

Case Report

A 78 years old male patient reported to the Department of Prosthodontics, Manipal College of Dental Sciences, Manipal with chief complaint of difficulty in eating due to loss of teeth and heavy upper denture. History reveals that the patient lost his teeth due to periodontal reasons.

Various treatment options available for the patient were:

a. Implant supported complete denture

b. Conventional Complete denture

c. Hollow maxillary complete denture and conventional mandibular complete denture

Considering the economic constraints, increased interarch space and retention factor, third option was chosen.

Technique

1. Prepare the denture till the Trial denture stage (Figure 1). Complete the trial in the
patient's mouth.

2. Seal the trial denture on the stone cast, then duplicate it in stone.

3. Adapt a Biostar sheet (Scheu-Dental GmbH) on the duplicate stone cast using the vacuum and pressure thermoforming Biostar machine (Scheu-Dental GmbH) to obtain a Biostar splint (Figure 2). The Biostar splint obtained is a replica of the trial denture outline, which will later be used to plan the spacer dimensions.

4. On the other hand, prepare a heat-cured record base and place it on the edentulous cast. Now place the Biostar splint on the heat-cured acrylic record base, as a template to plan the size and shape of the future 3-Dimensional hollow space mould. Use endodontic files to measure the height of the spacer (Figure 3).

5. Mold a wax spacer using Modelling wax (Figure 4).

6. Duplicate the entire set up of the wax spacer resting on the heat-cured acrylic record base seated on the edentulous cast.

7. Adapt a Biostar sheet on the duplicate stone cast (made from wax spacer) using the Biostar vacuum and pressure thermoforming machine (Scheu-Dental GmbH) (Figure 5). Now the final Biostar splint obtained here is a replica of the wax spacer outline.

8. Incorporate this Final Biostar splint as the spacer during packing of the heat-cure Acrylic material into the flask (Figure 6,7).

9. Process the denture and retrieve it. Complete with Finishing and polishing. Hollow
Denture floats on the water surface (Figure 8).

Discussion

Beyli MS and Von Fraunhofer JA demonstrated that denture repairs with cold-cure resin decreased the strength of denture base and were only 57% as strong as the original heat-cured material. Furthermore, fracture occurred at the junction of the repair. 12 Hence creating an opening in order to remove the spacer material and then closing the space with cold cure is like repairing a newly fabricated denture, which compromises on the

strength and longevity of the hollow denture. The advantage of this technique is that the thermoplastic sheet remains in-situ within the hollow denture along with the 3 dimensional space. The strength and longevity of the newly fabricated denture is not compromised. The technique used in current study facilitate better visibility, assessment and execution of the space to be hollow without any compromise in quality.

Conclusion

This technique for fabrication of hollow maxillary denture is described to reduce the weight of heavy maxillary complete denture in cases with severe ridge resorption, greater inter arch space and decreased retention. Hollowing of maxillary denture thus prevents residual ridge resorption, compensates and improves the retention lost due to virtue of its heavy weight. In this simple and convenient technique in fabricating hollow dentures the thermoplastic sheet is left in-situ, which overcomes the drawbacks of spacer removal techniques and doesnot compromise in the quality of prosthesis.

References

1. Holt Jr RA. A hollow complete lower denture. The Journal of prosthetic dentistry.1981 Apr 1;45(4):452-4.
2. Fattore L, Fine L, Edmonds DC. The hollow denture: An alternative treatment for atrophic maxillae. The Journal of prosthetic dentistry. 1988 Apr 1;59(4):514-6.
3. Kumar UK, Murgod S. Hollow complete denture for resorbed ridges. International Journal of Oral Health Sciences. 2018 Jul 1;8(2):60.
4. Dange SP, Manjrekar NS, Khalikar SA, Mahale K, Khalikar A. Reducing the Burden with a Hollow Maxillary Denture: A Case Report.
5. Sullivan M, Hansen N, Cronin RJ, Cagna DR. The hollow maxillary complete denture: A modified technique. The Journal of prosthetic dentistry. 2004 Jun 1;91(6):591-4.
6. Bhushan P, Aras MA, Chitre V, Mysore AR, Mascarenhas K, Kumar S. The Hollow Maxillary Complete Denture: A Simple, Precise, Single- Flask Technique Using a Caramel Spacer. Journal of Prosthodontics. 2019 Jan;28(1):e13-7.
7. Fulari DS, Fulari SG, Badadare M, Chopade S. Hollow complete dentures: An innovative technique. Int J Contemp Med Res. a2016; 3:2744-5.
8. Qanungo A, Aras MA, Chitre V, Mysore A, Da Costa GC. An Innovative and Simple Technique of Hollow Maxillary Complete Denture Fabrication. Journal of clinical and diagnostic research: JCDR. 2016 Aug;10(8):ZD23.
9. Karnam S, Basimi S, Surapaneni H, Basapogu S, Gantala R. Severely resorbed edentulous ridges: a preventive prosthodontic approach–a case report. Journal of clinical and diagnostic research: JCDR. 2015 Oct;9(10):ZD17.
10. Deogade SC, Patel A, Mantri SS. An alternative technique for hollowing maxillary complete denture. The Journal of the Indian Prosthodontic Society. 2016 Oct;16(4):412.
11. Radke U, Mundhe D. Hollow maxillary complete denture. The Journal of Indian Prosthodontic Society. 2011 Dec 1;11(4):246-9.
12. Beyli MS, Von Fraunhofer JA. Repair of fractured acrylic resin. Journal of Prosthetic Dentistry. 1980 Nov 1;44(5):497-503.

Legend Figures

Figure 1: Trial denture

Figure 2: Adapted Biostar splint, is a replica of the trial denture outline.

Figure 3: Biostar splint placed on the heat cured acrylic record base as a template to plan the size

and shape of the future 3-Dimensional hollow space mould using endodontic files

4. Spacer moulded using Modelling wax

5. Adapted Biostar sheet, is a replica of the wax spacer

6. Spacer fixed to the Heat cured acrylic record base

7. Final Biostar splint incorporated as the spacer during packing of the heat cure Acrylic

material

8. Floating Hollow denture

Technique Figures 1 - 8 in order

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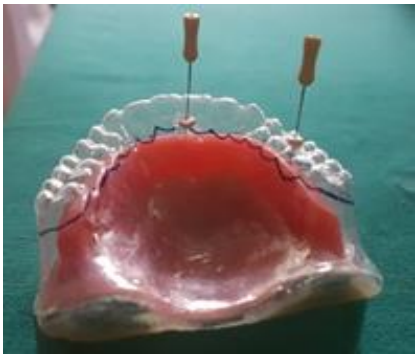

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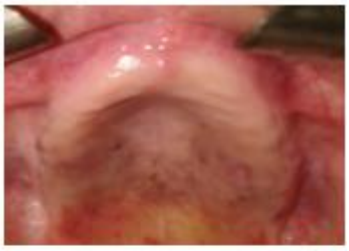

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