

Double Flask Technique for Fabrication of Hollow Denture: A Case Report

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Abstract

The most commonly encountered challenge while fabricating a complete denture is an excessive interarch space due to residual ridge resorption. If processed conventionally, this leads to increase in weight of the final prosthesis which, in turn, results in loss of retention due to falling of maxillary complete denture, accompanied by further bone loss due to increased load per unit area. Lateral forces in such cases tend to harmfully dislodge the denture due to lack of an adequate surface area for stability. Reducing the weight of such a prosthesis can help in minimizing the troubles caused by a conventionally processed denture and improve the prognosis by increasing retention and stability along with minimizing bone loss. Materials such as asbestos, silicone putty, modeling clay, thermocol, salt, and wax are regularly used for creating a hollow in dentures and obturator appliances. However, the double flask technique using silicone putty is a better method out of all current methods, which has been described in this article.

Keywords: Hollow denture, Increased inter-ridge distance, Reduction in weight, Resorbed ridge.

INTRODUCTION

Fabricating a complete denture becomes challenging especially when the residual ridge has resorbed over a period of time. In case of an atrophied maxillary residual ridge, the interarch space tends to increase leaving the residual ridge with a challenging task to uphold the denture and resist dislodging forces. This is frequently common if the issue is not addressed while processing the denture, because conventional methods of processing can result in a heavy prosthesis that harms the patient in certain ways. First, the resultant load per unit area is increased due to the increased weight and hence bone resorption is further increased. Reduction in retention and stability can also affect the patient's overall experience of wearing the denture. To solve the issue of increased weight, materials such as asbestos, silicone putty, modeling clay, thermocol, salt, and wax have always been considered as means for building a hollow space that aids in reduction of weight.^[1,2]

Patients with large defects in the maxillofacial region post-surgery are the most common beneficiaries from such techniques. Although not universally accepted,^[3] weight reduction can significantly improve patient's difficulties.

Fattore *et al.*^[4] modified the double flask technique using a second drag, followed by a thin resin layer around the acrylic teeth, and this was helpful in obturator fabrication.^[5] Holt^[6] gave a technique of using a spacer, while the residual ridge was covered by a shim of resin. Indexing was done and acrylic resin was packed and processed. After removal, the two portions were joined using autopolymerizing resin. The indices were necessary to stabilize the two halves.

The major disadvantage of these methods is the technique sensitivity that is associated with processing of denture. Inaccuracy in the amount of hollow to be created can result in fracture of the denture and difficulty in repair as well. Any kind of seepage into the hollow space can cause bacterial accumulation and infections in the oral cavity. If processed

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accurately, though, the results of using silicone putty and double flask technique can be quite successful and the operator can easily control the amount of hollow and easy retrieval.^[7]

CASE REPORT

A 60-year-old male patient reported to the Department of Prosthodontics, Crown and Bridge, with completely edentulous upper and lower jaws which were extracted 6 years back due to periodontal reasons. Diagnostic mounting revealed increased interarch space. This could result in lesser retention and stability if the maxillary rim was to be kept following ideal esthetic and phonetic concerns. Hence, only reducing the weight of upper denture could ensure no compromise in function while tackling the heaviness at the same time. A hollow maxillary denture was decided to be fabricated in this case.

1. The steps leading up to try in were followed as for any conventional denture and wax-up was completed (Figure 1).
2. Land area of the master cast was grooved to ensure indexing before duplication.
3. Waxed up master cast with grooves was duplicated with irreversible hydrocolloid (Tropicalgin; Zhermack).
4. 1 mm hard thermoplastic sheet (Leone s.p.a) was vacuum adapted to the duplicated cast.
5. Dewaxing of the waxed up denture was done in conventional manner.
6. After dewaxing, the drag was used with a second flask for fabrication of a heat polymerized base plate by investing two layers of baseplate wax (Prevest DenPro). These were to process heat-polymerized acrylic resin (Dental Products of India Ltd.).
7. After deflasking, the master cast with the heat-polymerized baseplate was used to measure the space available for making the hollow. The vacuum adapted thermoplastic template was seated on the indices made earlier on the master cast. The space was calculated accordingly using an endodontic file (Dentsply Maillefer) with a rubber stop.
8. Now, condensation silicone-based putty (Zetaplus, Zhermack) was shaped and mixed according to the ridge size and adapted to the heat-cured baseplate. 2 mm of space was given over the artificial teeth to prevent chances of fracture. To ensure easy retrieval, putty was placed in two parts splitting at midline and to ensure stability during compression molding, a drop of cyanoacrylate adhesive (Loctite 495, Henkel Adhesives Technologies, India) was used to fix the putty matrix (Figure 2).
9. Now, the original cope with artificial teeth was used for packing and curing of the denture.
10. The distal most region to the posterior most teeth was drilled to retrieve putty spacer. The putty spacer was scraped off by an orthodontic wire by making a loop at the end (Figure 3).
11. The hollow space was then disinfected (Cidex OPA, Advanced Sterilization Products, Johnson and Johnson



Figure 1: Wax-up done



Figure 2: Space measured for creating hollow

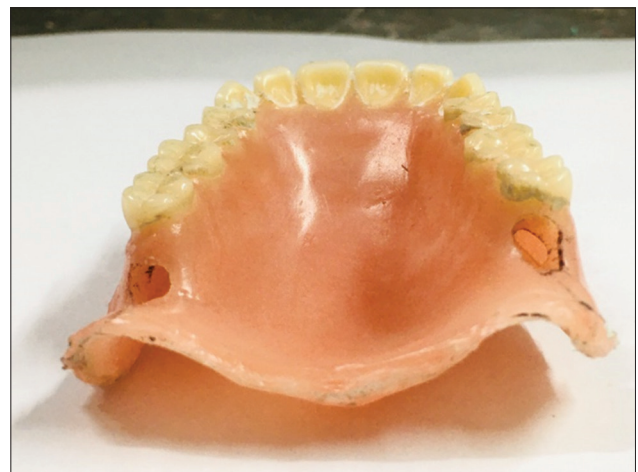


Figure 3: Resultant hollow space

Medical, Skipton, UK). This was followed by sealing of the holes using autopolymerizing resin (Dental Products of India Ltd.) (Figure 4).

12. The denture was immersed in water to check for the successful sealing.



Figure 4: Sealed with autopolymerizing resin

DISCUSSION

The major drawback of techniques used for fabrication of a hollow space in complete dentures is the inability to accurately measure and create the desired amount of hollow and hence chances of fracture are inevitable. However, silicon putty using double flask technique ensures accuracy and minimal use of autopolymerizing resin afterward to seal the junction. Hence, it is currently the best possible way to manipulate

conventional approach and execute the desired outcome in prosthesis fabrication.

CONCLUSION

To plan and accurately execute fabrication of a hollow denture is a complicated task. However, by using silicon putty as a spacer and using two properly fitting flasks, discrepancies in processing and inaccuracies in location of the hollow space can be easily dealt with.

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