

The Hollow Maxillary Complete Denture - An Alternative Technique to Remove the Silicone Putty

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Abstract

The severely atrophic maxillas possess a clinical challenge for fabrication of a successful complete denture. This article describes a novel, innovative, alternate technique to fabricate hollow maxillary complete denture. This article incorporates easy removal of silicone putty from the inner two halves of maxillary denture, thus making the inner area hollow. This ensures that the weight of the denture is reduced.

Keywords: Hollow Denture, Silicone Putty, Atrophic Maxilla

Introduction

The severely resorbed maxillary denture-bearing area may lead to problems with prosthetic rehabilitation. Various methods have been done to reduce the weight of maxillary dentures. Historically, weight reduction approaches have been achieved using a 3-dimensional spaces, including dental stones, cellophane wrapped asbestos, silicone putty or modeling clay during laboratory processing to exclude denture base material from the planned hollow cavity of the prosthesis.

Fatlore, et al. used a variation of a double flask technique for obturator fabrication by adding heat polymerizing acrylic resin over the definitive cast and processing a minimal thickness of acrylic resin around the teeth using a different drag. Both portions of resin were then attached using heat polymerized resin. Holt processed a shim of acrylic resin over the residual ridges and used a space. (Insta-mold, Nobileum, Albany, NY). The resin was indexed and the second half of the denture processed against the spaces and the shim. The spaces were then removed and the two halves looted with auto polymerized acrylic resin using the indices to facilitate positioning. The primary disadvantage of such techniques is that the junction between the two previously polymerized portions of the denture occurs at the borders of the denture. This is a long junction with an increased risk of seepage of fluid into the denture cavity. A further disadvantage is that it is difficult to gauge resin thickness in the cope area. Silicone putty was used to make the denture cavity hollow but removing the silicone from the processed denture was difficult and time consuming. This article describes an alternative method to remove the silicone putty and to make the maxillary denture into 2 halves and join it with auto polymerizing acrylic resin.

Technique

- I. Make a definitive impression of the maxillary residual ridge and fabricate the trial denture stage.
- II. Adapt silicone putty (Aquasil (Dentsply Detrey, Konstanz, Germany) over the wax areas of the trial dentures, over the flanges and the palate excluding the teeth (Figure 1).
- III. The Trial denture base was flaked and de waxing was done. The teeth get transferred to the upper lid of the flask and the permanent denture base is in the lower lid.
- IV. 2 layer thickness of base plate wax is adapted over the teeth and trough like depression is made in the base plate wax to create space for the silicone putty (Figure 2).
- V. Silicone putty is mixed and made in the form of rope and adapted over the trough region (Figure 3).

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Figure 1: Silicone putty placed over the wax area .



Figure 2: Wax adapted over the teeth .



Figure 3: Silicone putty adapted over the wax.

- VI. Then the flask lids were closed and the silicone putty placed inside the wax trough is transferred to permanent denture base (Figure 4).
- VII. A cellophane sheet is adapted over the silicone putty present over the permanent denture base and the base plate wax covering the teeth is removed (Figure 5).
- VIII. Heat polymerized acrylic resin (Trevalon C) is mixed and placed over the removed wax area and the flask is closed and processing is done.
- IX. After processing, the flasks are separated and permanent denture base is present in flask and silicone putty is



Figure 4: Silicone putty transferred to the denture base .



Figure 5: Cellophane sheet adapted over the silicone putty .



Figure 6: Silicone putty transferred to the upper half of maxillary denture.

transferred to the upper half of the maxillary denture where teeth is present (Figure 6).

- X. Cellophane sheet and silicone putty is removed and upper Hollow Half of the maxillary denture with teeth is joined with the permanent denture base using auto polymerizing acrylic resin (Figure 7).
- XI. Polish the denture in the usual manner. Verify that the cavity is sealed by immersing the denture in water. If no bubbles are evident, an adequate seal is confirmed. The Maxillary Hollow denture floated in the water.

Discussion

Extreme resorption of the maxillary denture-bearing area may lead to problems with prosthetic rehabilitation [1]. These may be



Figure 7: Two halves of the maxillary denture joined together with the cold cure acrylic resin.

due to a narrower, more constricted residual ridge as resorption progresses, decreased supporting tissues, and a resultant large restorative space between the maxillary residual ridge and opposing mandibular teeth. The latter may result in a heavy maxillary complete denture that may compound the poor denture-bearing ability of the tissues and lead to decreased retention and resistance. Although not universally accepted it has been suggested that gravity and the addition of weight to the mandibular complete denture may aid in prosthesis retention [2,3]. Reducing the weight of a maxillary prosthesis, however, has been shown to be beneficial when constructing an obturator for the restoration of a large maxillofacial defect [4,5]. Given the extensive volume of the denture base material in prostheses provided to patients with large maxillofacial defects or severe residual ridge resorption, reduction in prosthesis weight may be achieved by making the denture base hollow. Historically, weight reduction approaches have been achieved using a solid 3-dimensional spacer, including dental stone [4-14], cellophane wrapped asbestos [15], silicone putty [16,17], or modeling clay [18,19] during laboratory processing to exclude denture base material from the planned hollow cavity of the prosthesis. Multiple and separate pieces of the prosthesis are polymerized around a 3-dimensional spacer. Following the initial polymerization process, the solid spacer is removed. Individual pieces of the prosthesis are then joined using auto polymerizing acrylic resin repair techniques. Fattore, et al. [12] used a variation of a double flask technique for obturator fabrication [20] by adding heat polymerizing acrylic resin over the definitive cast and processing a minimal thickness of acrylic resin around the teeth using a different drag. Both portions of resin were then attached using heat-polymerized resin.

Holt [18] processed a shim of acrylic resin over the residual ridge and used a spacer (Insta-mold; Nobilium, Albany, NY). The resin was indexed and the second half of the denture processed against the spacer and shim. The spacer was then removed and the 2 halves joined with auto polymerized acrylic resin using the indices to facilitate positioning. The primary disadvantage of such techniques is that the junction between the 2 previously polymerized portions of the denture occurs at the borders of the denture. This is a long junction with an increased risk of seepage of fluid into the denture cavity. Furthermore, this junction is a common site for post insertion adjustment increasing the risk of leakage.

Conclusion

An alternative technique for making maxillary Hollow denture is described. The technique used is silicone putty placed in between two halves of the maxillary denture and the two halves are joined with auto polymerizing acrylic resin. The method described has advantages over previously described techniques for hollow denture fabrication. Removing silicone putty from the processed denture is difficult and time consuming. The procedure described in the article overcomes these problems. Reduction in weight of the maxillary denture by making the inner cavity hollow is more useful for severely atrophic maxilla.

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