INDIAN JOURNAL OF DENTAL ADVANCEMENTS

Journal homepage: www. nacd. in

CASE REPORT

Quick Response Code

doi: 10.5866/3.4.767

Maxillary Hollow Complete Denture

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Article Info
Received: July 15, 2011
Review Completed: August, 17, 2011
Accepted: September, 18, 2011
Available Online: January, 2012

ABSTRACT:

The technique described in the article is an adaptation of the double-flask technique that is well-known for the fabrication of the hollow bulb portion of a maxillary obturator. It can be used for patients with both an atrophic maxillary alveolar ridge and a greater than usual interocclusal distance. Anything less will not permit fabrication of a hollow denture. This article presents a case report of a severely resorbed maxillary ridge situation treated with a hollow maxillary complete denture, states the rationale behind the treatment and highlights a technique for the fabrication of a hollow complete upper denture with the objective of emphasizing the use of a hollow complete denture in situations where there is excessive resorption of the residual alveolar ridges and where implant treatment is not a realistic option.

Key words: Residual ridge resorption, Stability, Hollow denture.

INTRODUCTION

Extreme resorption of the maxillary denture bearing area may lead to problems with prosthetic rehabilitation. These may be 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 teeth1. 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 stability[1,2].

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. 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[3]. 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[1,4].

CASE REPORT

A 62 year- old male patient reported with a complaint of heavy, ill-fitting denture. The patient gave a history of being a denture wearer for the past 5 years. Within this span his dentures were replaced twice. Medical history revealed that there was no underlying systemic disorder. Intraoral examination revealed a severely resorbed upper ridge. The patient was assessed with a view of providing him with a conventional complete lower denture. But the patient was reluctant due to ill fitting heavy denture. So as an alternative the patient was treated with a hollow complete maxillary denture.

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This article describes a technique for fabrication of a hollow maxillary complete denture using silicone putty to develop a cavity within the denture base.

LABORATORY STEPS

Make a definitive impression of the maxillary and mandibular residual ridge and fabricate the denture up to the trial denture stage. Index the land area of the cast using a conical bur and seal the trial denture to the definitive cast. Duplicate the trial denture in reversible hydrocolloid and pour the impression in dental stone. Make a clear template of the stone cast using a 0.3-mm thermoplastic sheet (Fig:1). Process the trial denture in a flask (flask1) the standard manner through the wax elimination stage (fig 2a). Adapt 2 layers of base plate wax to the definitive cast in the drag, conforming to the border extensions. Use a second flask (flask 2) to invest the base plate wax and again complete the wax elimination process (fig 2b). Pack the cope and second drag with heat polymerized acrylic resin and process. Separate the cope, with the polymerized acrylic resin still attached, from the drag. Place the clear matrix on the definitive cast using the indices in the land area as seating guides. Use an endodontic file with a rubber stop to measure the space between the matrix and the processed resin.(fig 3a,3b).Mix and adapt vinyl polysiloxane putty to the bur roughened acrylic resin (fig 4) and shape to the approximate contours of the matrix . Shape the polymerized putty with a bur to leave 2-3 mm of space between the putty and matrix. Provide an additional 1-mm space over the tooth portion of the denture (Fig 5). Fix the putty to the acrylic resin using cyanoacrylate. Reseat the original cope on the drag and verify complete closure of the flask(Fig 6). Mix, pack, and polymerize the acrylic resin. Verify adequate thickness of resin around the teeth at the packing stage using a periodontal probe. Recover the processed denture in the usual manner. Remount the denture on an articulator and adjust the occlusion as necessary. Cut an opening with a bur into the denture base distal to the most posterior teeth (fig 7). Remove the silicone putty by scraping with a sharp instrument. Widen the openings as necessary, laterally, to facilitate access. Remove the putty and fabricate 2 covers using clear autopolymerizing resin. Clean and disinfect the cavity. Attach the clear resin covers by bonding them into position using auto polymerizing resin or light-polymerizing gel.

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 (fig 8,9).

DISCUSSION

The method described has advantages for hollow denture fabrication. Leakage and difficulty in gauging resin thickness are problems inherent in[5]. The procedures described in this article overcome these problems. Heat-polymerizing portion of the denture against polymerized resin may reduce leakage at the junction of the portions of the denture[6]. The small window in the cameo surface facilitates recovery of the spacer in an area that is not commonly adjusted after denture insertion and has a small margin along which leakage could occur. The clear resin window allows for verification of the integrity of the denture at patient recall[7]. The thickness of resin can be controlled through the use of the putty and clear matrix, ensuring an even depth of resin to prevent seepage and prevent deformation under pressure of flask closure[8]. Additional verification of adequate acrylic resin thickness may be achieved at the packing stage using a periodontal probe, allowing recontouring of the putty at that time if required[9]. Silicone putty is used as a spacer advantages, including its stability, its ability to be carved, and the fact that it does not adhere to acrylic resin. The cyanoacrylate bond between the resin and the putty may be easily removed[10].

SUMMARY

A technique for fabricating a hollow maxillary denture is described. The technique uses a clear matrix of the trial denture to facilitate shaping of a silicone putty spacer to ensure an even thickness of acrylic to resist deformation and prevent seepage of saliva into the cavity. This type of dentures would be more comfortable for the individual due to less weight.

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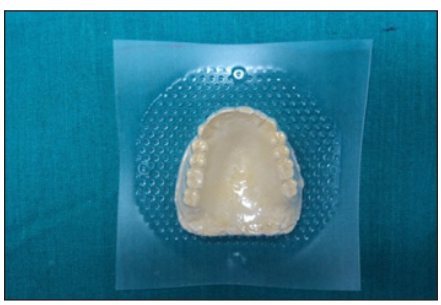

Fig1a: Stone cast template

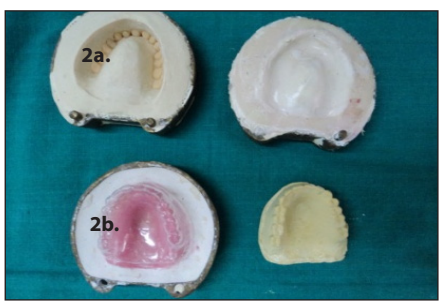

Fig : 2a. flask1 **2b. flask2**

fig3a: measuring space between

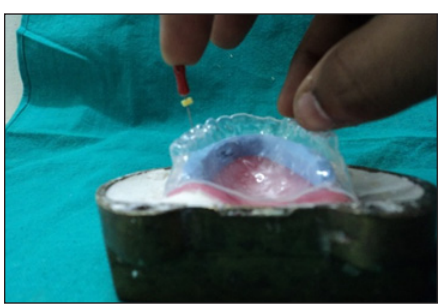

fig3b: Measuring space between the matrix and the processed resin.

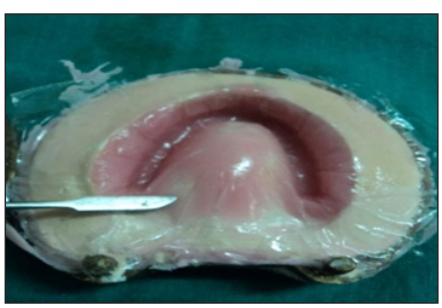

Fig 4: trial closure

Fig5 putty index

Fig 6: reseating

Fig 7 : opening to retrieve putty

Fig. 8 & 9