



PROSTHETIC REHABILITATION OF HEMIMAXILLECTOMY PATIENT : A CASE REPORT

Dental Science

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ABSTRACT

Rehabilitation of hemimaxillectomy patients can be challenging. The most common problem with prosthetic treatment in such patients is in getting adequate retention, stability, and support. Maxillary obturator prosthesis is most commonly fabricated for patient's undergone surgical maxillectomy. It helps in mastication, deglutition and aids in speech. Various methods have been described in literature to make it hollow for reduction of weight of prosthesis. This case report describes another method of making a hollow prosthesis.

KEYWORDS

Definitive obturator, Hollow bulb, maxillary defect

Introduction

Oral cavity is one of the common site for growth of tumor. The treatment includes surgery, radiation therapy and both of them with or without chemotherapy. The treatment requires close communication between surgeon, radiation oncologist, dental oncologist, prosthodontist for successful outcome.¹ When the surgery includes maxilla it is called maxillectomy, and it can be either partial or total.² As it results in surgical defect maxillary obturator prosthesis are the more common treatment opted for maintenance.³ This prosthesis seals the opening between oro and naso pharynx and create a seal between them thus improving patients mastication and speech.⁴ One of an important factor is to make these prosthesis light in weight . Various authors have described methods for fabricating open and closed hollow obturator. Both of type of prosthesis can be made hollow with proper extensions in the defect. Open bulb prosthesis are easily cleanable but it collect moisture and often requires cleaning . Closed hollow bulb prosthesis eliminate the moisture control.⁵ This article presents a case report for fabrication of hollow bulb obturator.

Case report

A 65 year old male patient reported to department of prosthodontics ,AMC Dental College and Hospital, Ahmedabad, with a chief complaint of difficulty in chewing and speaking. Patient had undergone surgical resection of right maxilla. The patient's medical history revealed that he was suffering from squamous cell carcinoma of maxillary right antero-posterior alveolar ridge extending from 12 to 17 regions. Which was operated before 2 years at Gujarat Cancer Research Institute. On intraoral examination, class 1 Armany maxillectomy defect was found on the right side associated with depressed cheek, nasolabial fold, and lack of lip support. The patient was initially rehabilitated with an interim obturator then planned for definitive cast partial hollow bulb obturator prosthesis replacing teeth number 12 to 17. The intra oral photograph (figure 1&2) shows maxillary and mandibular arch.



Figure 1: Intraoral picture of maxillary arch



Figure 2: Intraoral picture of mandibular arch

Procedure

The primary maxillary putty (figure 3) and mandibular irreversible hydrocolloid impressions were made and cast was poured with dental stone (figure 4).



Figure 3: preliminary impression



Figure 4: Primary cast

The primary maxillary cast was surveyed (figure 5) and cast partial framework design was planned. Then undercut areas were blocked (figure 6) and spacer was adapted over cast and auto polymerizing resin custom tray (figure 7) was fabricated for making final impression. Necessary mouth-preparation steps were carried out, Then defect area was recorded with admix technique (7:3 ratio of green stick and impression compound)(figure 8) and the final impression was recorded using light-body condensation silicone material(figure 9).

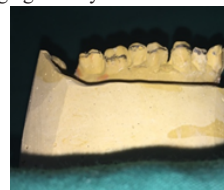


Figure 5: Primary cast surveyed

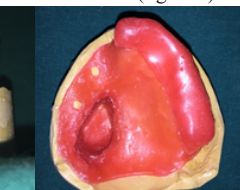


Figure 6: cast blocked for undercut

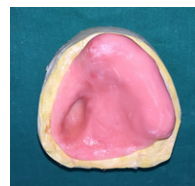


Figure 7: custom tray



Figure 8: Recording of defect area

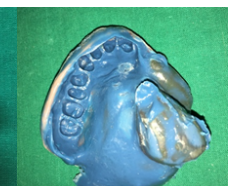


Figure 9: Final impression

This impression was poured with die stone (figure 10) and the master cast was made & duplicated in refractory material. Partial framework

of the cast was fabricated with the help of various wax patterns. Casting of the metal frame work was carried out. Trial of the finished and polished framework on cast (figure 11) & intraoral (figure 12) was done and needed adjustments were done. Wax occlusal rim was made on the framework and the jaw relations were recorded (figure 13). After teeth arrangement try-in was done (Figure 14). Cold cure resin hollow shim (figure 15) was fabricated in defect onto the cast. After flasking and dewaxing, rest of part of the denture was hollowed by putty technique and final prosthesis was fabricated with heat cured resin material. (figure 16,17)



Figure 10: Master cast **Figure 11: Metal frame work on cast** **Figure 12: Metal framework intraorally**



Figure 13: Jaw relation **Figure 14: Try-in** **Figure 15: cold cure hollow shim fabrication on cast**



Fig.16 final prosthesis



Fig.17 final prosthesis intraoral view
Final prosthesis delivered to patient. Frontal view without prosthesis (Fig.18). Frontal view with prosthesis (Fig.19).



Fig.18 frontal view without prosthesis **Fig.19 frontal view with prosthesis**

Discussion

Maxillectomy patients suffer from functional difficulty and hence the role of prosthodontist is crucial in function. The primary goal of the prosthetic obturator is it closes the defect and separates the cavities. Due to ease of fabrication and maintenance, maxillary obturator prosthesis is considered the most accepted treatment modality.⁶ The aim of bulb extension is to improve speech after providing resonance. Various methods in literature have been described for making a hollow bulb by using materials like modelling clay,⁷ sugar,¹¹ salt,⁹ wax,³ acrylic resin,¹⁰ ice,⁸ alum,¹¹ dental stone,¹³ Putty,¹⁴ etc. Dental stone, modelling clay have difficulty to remove. Sugar, salt, alum doesn't maintain the desired shape of the defect area. While ice requires extra effort of temperature. The use of hard thermoforming splint was used by Buzayan et al¹⁵ for the fabrication of closed hollow bulb. Many authors have used autopolymerizing resin which leaches out while in this article heat cure resin was used. The advantage of using Putty is it maintains proper shape of defect as it is rigid than salt and sugar.

Conclusion

This case report shows successful management of hemimaxillectomy

patient with definitive closed hollow bulb obturator. To make denture hollow two techniques were used. First shim technique and second putty technique.

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