

Prosthetic Rehabilitation for Patients with Maxillectomy – A Case Report

S Sowmya¹, RaghavendraSwamy KN², Gujjari AK³, Madhumathi V⁴, Ravi MB⁵, Ganesh⁶

ABSTRACT

Fabrication of obturator for maxillectomy patient is not a easy task due to lack of anatomic structures required for support, retention and stability of the prosthesis. This clinical report describes the Prosthodontic management of patient operated for tumour. The technique described in this article to fabricate the hollow obturator is a variation of other well-known techniques, it can be fabricated in single day with very simple and easily available materials even in a very small dental setup like public health center or a satellite clinic.

Keywords: Obturator, Hollow denture, Prosthodontic rehabilitation

¹ Senior lecturer
Department of Prosthodontics
JSSDC&H(A Constituent college of JSS
University) Mysore, INDIA

² Professor
Department of Prosthodontics
JSSDC&H(A Constituent college of JSS
University), Mysore, INDIA

³ Professor and HOD
Department of Prosthodontics
JSSDC&H(A Constituent college of JSS
University), Mysore, INDIA

⁴ Consultant Prosthodontist
Bangalore

⁵ Reader
Department of Prosthodontics
JSSDC&H(A Constituent college of JSS
University), Mysore, INDIA

⁶ Reader
Department of Prosthodontics
JSSDC&H(A Constituent college of JSS
University), Mysore, INDIA

INTRODUCTION

Maxillectomy creates oronasal or oroantral communication with consequent difficulties in eating, speaking and breathing. The effect is diminished quality of life and hence lowered self esteem. Therefore restoration and or replacement of lost stomatognathic apparatus and associated artificial substitute by appropriate artificial substitute are advocated (1).

The design of an obturator is to engage the remaining natural teeth and tissue-bearing areas to optimize retention and stability. Obturators fabricated are often heavy, which can counteract the increased retention and stability. By decreasing the weight of the prosthesis, the retention and stability may be optimized to allow the obturator to function comfortably during mastication, phonation and deglutition. Wu and Schaaf showed that hollowing of the obturator for partial maxillectomy patients significantly decreased the weight of the obturator from 6.55% to 33.06%, depending on the size of the defect (2).

The purpose of this paper is to present a method of closed hollow bulb obturator fabricated in a single day as one unit with a simple processing technique with material easily available even in a very small dental

setup like public health center or a satellite clinic.

CASE REPORT

A 51 year woman was referred to our department for prosthetic treatment as she had missing teeth and maxillary defect. The defect showed deep perforation on the posterior mid palatal and soft palate region. It is a treated case of mucoepidermoid carcinoma of minor salivary gland. The disease diagnosed as stage II with T1 N0 M0. Surgical excision of lesion with wider margin was done without enblock dissection or radical neck dissection. No nodule metastasis or distinct metastasis was observed.

Chemotherapy or radiotherapy was not advised to the patient by oncologist. Dental examination revealed following maxillary teeth missing- right quadrant premolars and second molar, left quadrant second premolar and second molar. All mandibular teeth except third molar were present and free of caries and periodontal problems. After the examination on x-rays, photograph and study cast we decided to restore the defect with closed hollow obturator and obtained the patient's consent to this treatment.

Contact Author

Dr Sowmya S
Sowmya.neelan@gmail.com

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Procedure for fabrication of the closed hollow obturator prosthesis

- A primary impression was made using alginate to produce a cast of the maxillary defect, on which a custom tray was fabricated.
- Custom tray and addition silicone was used to record the final impression, while the final impression was in position; alginate in stock tray was used to pick up the final impression.
- After verifying the accuracy of pickup impression, this is used to fabricate the master cast to receive the obturator.
- On the master cast wax occlusion rim was fabricated to record jaw relation.
- Jaw relation records were mounted, teeth arrangement was made, try-in was carried out and investing and boil out was completed in the conventional way.
- The flask was flushed with hot water to remove all residual wax, the area to be packed was painted with tin foil substitute (Figure 1)
- Since a hollow bulb obturator was the design plan, packing was done on defective tissue surface maintaining a hollow trench in acrylic resin. Thus the trench accommodates salt placed over the acrylic resin upto a level just short of the existing natural tissue, which is later sealed with acrylic resin to complete the packing. This provided the hollow shell in the obturator. Curing, prosthesis retrieval and finishing were done (Figure 2). Fitting was verified and found to be ideal. Later two punch holes was made in non critical areas to drain the salt by flushing water. These holes were sealed with self cure resin to complete the prosthesis to receive polishing and insertion (Figure 3).

- To confirm the hollow nature and airtight seal, the obturator prosthesis was placed in a bowl of water and verified that it remains afloat.

The prosthesis was delivered and patient was recalled next day for any sore spots and this was eliminated by relieving the respective tissue surface of the denture base, later recalled for one week and every third month. The patient was satisfied with the prosthesis regarding function and phonation.

Placement of the obturator prosthesis provided remarkable improvement in speech and the patient was able to chew all except very hard foods well.

DISCUSSION

Literature describes many methods to make hollow bulb obturator (3-10). Earlier methods for hollowing the bulb was to grind the processed bulb, but this method is time consuming and not economic. Dissolvable material like ice (8) and sugar (4), were also used to make the bulb hollow and the two halves or the opening was glued using autopolymerising resin (6, 7). Paprocki *et al* suggested that any sealing procedure that is made accurately provide the needed result. The other methods for hollowing the bulb were plaster matrix, preformed plastic shapes. Acrylic shim was also used for hollowing and this was advocated by Chalian and Barnett. Tanaka *et al* (9) used polyurethane foam to make the bulb hollow. This method involves complicated impression method & laboratory steps and relatively time consuming procedures.

A full bulb is likely to increase the weight of the prosthesis and therefore, it cannot be used successfully (10). Hollow bulb prosthesis (either one piece or two pieces) is a better choice, as it is lighter in weight and is more hygienic.

This article describes a technique that is simple, cost effective, maintains the accuracy of the prosthesis and also is different from all other previously described technique in four ways. Firstly it provides a complete prostheses in heat polymerized acrylic resin, secondly, autopolymerising resin used to seal the opening which is relatively small compared to the total tissue contact area so the water leakage is minimized. Thirdly, salt which is antiseptic, used instead of sugar which can act as a good nidus for bacterial growth or ice which is difficult to control while making the bulb hollow, fourthly fabricated in single day with accurate fit. Therefore, it was planned to fabricate 'hollow bulb prosthesis' for the patient. Considering the patient's physiological, physical, psychological and economical conditions, the prosthesis was constructed in accordance to her needs.

CONCLUSION

Though it is difficult to improve the quality of life for a patient with surgical resection of the maxillae when compared with patients with conventional prostheses, this can be achieved with skill, knowledge and experience of specialists. The problem experienced by patients with Surgical resection of the maxillae are reduced if a team approach is adopted and specialists are careful to apply skill and experience at all stages and keep the patient under regular review.



Figure 1: Maxillary defect



Figure 2: Salt in the defect



Figure 3: Completed prosthesis

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