



PROSTHETIC REHABILITATION OF PARTIAL MAXILLECTOMY PATIENT WITH A DEFINITIVE PALATAL OBTURATOR: A CASE REPORT

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ABSTRACT

Maxillectomy defects can result in oroantral communication that causes difficulty in mastication, deglutition, impaired speech and facial disfigurement. The prosthodontist plays an important role in the rehabilitation of such defects with obturators. Reduction in the weight of the obturator is an important factor in improving the retention and stability of the prosthesis. This case report describes a simplified method of fabrication of a definitive hollow bulb obturator for rehabilitation of a maxillary defect.

KEYWORDS: maxillectomy, single piece hollow obturator, palatal defect.

INTRODUCTION

Maxillectomy defects can result in oroantral communication that causes difficulty in swallowing, impaired speech, and facial disfigurement. Prosthodontist plays an important role in the rehabilitation of such defects.^[1] The obturator prosthesis has been used to restore masticatory function and improve speech and cosmetics for such patients.

The design of an obturator should engage the remaining natural teeth and tissue-bearing areas to optimize retention and stability.

The bulb portion, which accommodates the defect area must add retention and stability by extending adequately into the defect to achieve a positive seal.^[1] However, Obturators fabricated with adequate extensions are often heavy, which can counteract the increased retention and stability generated by the extension.^[2] The obturator should be light in weight to provide favourable retention, stability, support, patient comfort and cleanliness.^[3]

To fabricate a lightweight prosthesis, an open hollow obturator or a closed hollow obturators are usually

chosen. There are many methods available to fabricate open or closed hollow bulb obturators. The reduced weight of both types of prostheses makes them more readily acceptable to the patients.^[4]

This article describes a case report of a patient who had undergone partial maxillectomy secondary to squamous cell carcinoma rehabilitated with a closed hollow bulb obturator.

CLINICAL REPORT

A 46-year-old man was referred to the department of prosthodontics for fabrication of a new obturator prosthesis. He had a history of squamous cell carcinoma (SCC) of the right maxilla, which invaded the maxillary sinus on the right side. The tumour was resected in 2012 by subtotal maxillectomy.

The patient complained that his current definitive obturator was loose. On examination, the maxillary arch was partially edentulous having an Aramany Class II maxillary defect.(Fig 1) A new maxillary obturator prosthesis using the remaining natural teeth on the

nonresected side for retention, support, and stability was planned.



Figure 1: Pre-operative photographs.

PROCEDURE

A preliminary impression was made using irreversible hydrocolloid taking care to block out unwanted

undercuts with petroleum laden gauge. The impression was poured using type III dental stone and diagnostic cast was obtained.(Fig 2&3)

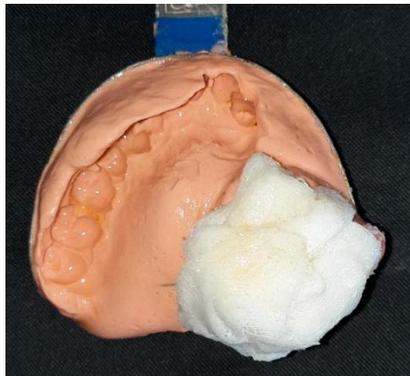


Figure 2: Primary impression



Figure 3: Primary cast

Severe undercuts around the defect in the cast were blocked out in wax, and one layer of modeling wax was used as relief before a custom tray was fabricated to cover the teeth and extended well into the defect.

border molding the patient was asked to perform various movements such as opening and closing the mouth, moving the mandible from side to side, turning the head from side to side, placing the chin down to the chest and extending the head backwards.

On the diagnostic cast custom tray was fabricated followed by border molding and secondary impression. Impression compound and low fusing green stick compound in 3:7 ratio was softened in hot water bath and loaded over the tray corresponding to the defect area and border molding of the defect was performed. During

The peripheral margins were traced and final impression was made using light body condensation silicone material and during this, the patient was again asked to perform various movements to obtain a functional impression.(Fig 4)



Figure 4 Secondary impression



Figure 5 Master cast

The master cast was poured in type 3 dental stone.(Fig 5) Wax was adapted over the defect area until only 2mm of defect was left uncovered. A record base was made with auto polymerizing acrylic resin and occlusion rim was fabricated with baseplate wax. Jaw relations were recorded and transferred on to the semi-adjustable

articulator. Teeth arrangement was done and for additional retention two Ball end clasp, one C and one Delta clasp were adapted over 23, 24, 25 and 26 respectively. Waxing-carving was completed and evaluated intraorally.(Fig 6)

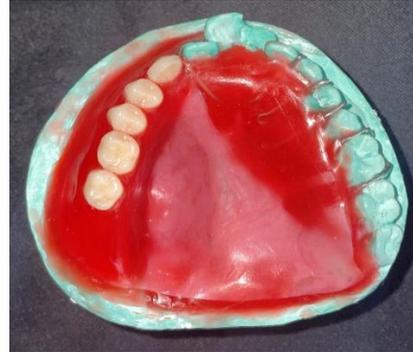


Figure 6 Teeth arrangement and wax up.

Fabrication of hollow bulb

After validation of the teeth arrangement, the wax model was sealed to the cast at its borders with molten wax. A cavity was created in the wax that filled the defect area using a hot wax knife in such a way that the cavity-wall

was free of undercuts. Wax pattern was then processed. Flasking, dewaxing and packing was done in a conventional manner. Finishing and polishing of the acrylized part was done.(Fig 7)



Figure 7 Acrylized part without the lid.

Fabrication of a lid for hollow bulb

A layer of modelling wax was adapted over the defect area of acrylized obturator for fabricating a heat cured acrylic lid. The wax lid was stabilized with a thin layer of self-cure acrylic using sprinkle on method taking care not to flow over the edges. The wax lid was removed and processed in a conventional manner. The defect area was then covered with this acrylic lid and sealed with self-cure acrylic material.(Fig 8)

It was then inserted into the patient's mouth and necessary intraoral adjustments were carried out. The patient was happy and satisfied with his improved speech, function and aesthetics.(Fig 9) The patient was instructed about the maintenance of the prosthesis and periodic recall check-up.



Figure 8: Fabrication of a lid to make hollow single piece palatal obturator prosthesis.



Figure 9: Post-operative photographs.

DISCUSSION

Oral Squamous cell carcinoma represents 90%–95% of all malignant neoplasms of the oral cavity. It is highly related with alcohol and tobacco consumption. It occurs in intra-oral sites such as the floor of the mouth, tongue, gingiva, lips, and buccal mucosa. It might also be present in tooth-bearing areas of either the maxilla or the mandible.

Prosthetic approaches to be used in cases of maxillectomy have a very important role in improving the quality of life of the patient.

In dentate patients, the remaining teeth play an important role in providing retention, support, and stability to the obturator. Retention can be achieved from the remaining teeth or ridge, lateral part of the defect, soft tissue undercut, scar band and by direct retainers that are placed on the teeth closest to and farthest from the defect to allow maximum protection of the abutment teeth during functional movements.

The tissues surrounding the defect are subjected to continuous stresses from large, heavy obturators, affecting the health of the tissues and compromising the patient function and comfort. Thus reduction in weight of the obturator is an important consideration in improving retention and stability of the prosthesis.

Several techniques and materials have been described previously to fabricate a lightweight, hollow obturator. Materials such as salt, sugar and ice were used to create the hollow space inside the processed resin.

The hollow bulb obturator given to the patient rehabilitated his function by improving masticatory efficiency and phonetics by adding resonance to the voice. Thus, it improved the clarity of speech and esthetics of the patient and morale of the patient greatly.

Closed hollow bulb obturators provide the advantage of preventing fluid and food accumulation, reducing airway space and allow for maximum extension.

CONCLUSION

The great challenge in rehabilitating a partial maxillectomy patient is to obtain adequate retention, stability, and support. Thorough knowledge and skills

coupled with a better understanding of the needs of the patients enable the successful rehabilitation of such patients. Definitive obturator prosthesis fabricated with maximum extension and proper design rehabilitates the patient by improving masticatory efficiency, increasing the clarity of speech and quality of life.

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