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### CASE REPORTS

Year : 2005 | Volume : 5 | Issue : 3 | Page : 155-157

## Rehabilitation of an acquired maxillary defect

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#### Abstract

Prosthetic rehabilitation of acquired maxillary defects can be achieved satisfactorily if all facets of treatment planning and design considerations are taken well into account prior to the rehabilitation process. In many cases effective obturation is achieved but in the relative majority the prosthesis is usually rejected by the patient and the out come is a failure. Complications associated with maxillary defects limit the treatment protocols to a great extent. The prosthodontist has to identify these problem areas and suitably device feasible options and incorporate them in the design. A case of acquired maxillary defect with limited mouth opening and unfavourable undercuts in the defect was successfully treated by making a two piece hollow bulb obturator. The two pieces were connected by the use of magnets. Additionally a transitional implant was placed so as to aid as an auxiliary retentive aid to enhance the overall treatment outcome. The methodology greatly reduced the chairside time and number of visits in the patient prospective and effective obturation was satisfactorily achieved.

**Keywords:** two piece hollow bulb obturator, open top obturator, resiliently lined obturator, transitional implant, acquired maxillary defect

#### How to cite this article:

Srinivasan M, Padmanabhan TV. Rehabilitation of an acquired maxillary defect. J Indian Prosthodont Soc 2005;5:155-157

#### How to cite this URL:

Srinivasan M, Padmanabhan TV. Rehabilitation of an acquired maxillary defect. J Indian Prosthodont Soc [serial online] 2005 [cited 2006 Jul 13];5:155-157. Available from: <http://www.jprosthodont.com/article.asp?issn=0972-4052;year=2005;volume=5;issue=3;page=155;epage=157;aulast=Srinivasan>

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## Introduction



Management of acquired maxillary defects warrants all facets of patient care from diagnosis and treatment planning to rehabilitation. Most of patients with acquired surgical defects can be restored close to normal function and appearance. [1] On the other hand, if a patient has a protracted struggle with the prosthesis, it ultimately proves a failure. [2] The success and the failure of the prostheses may be because of different reasons such as - the degree of malignancy; the propensity of recurrence; the level of resection; and other associated complications. They however illustrate a primary factor that the prosthodontist should bear in mind - and that is the acceptance and effectiveness of the prosthesis. [3] Maxillofacial rehabilitation should not only involve the design and fabrication of the prosthesis, if possible, also provide fail safe mechanisms to ensure that the prosthesis is given a fair chance by the patient.

## Case report



A 55-yearold lady presented with a history of oral tumour and having undergone surgical resection of the hard palate and the contiguous structures; and wearing no resection prosthesis. Thorough intra-oral examination revealed a total maxillectomy of the right side and a completely edentulous maxilla on the left. The mandibular arch was dentate with numerous supraerupted teeth, and other dental disorders requiring a multidisciplinary treatment approach.

The defect itself presented with a lot of unfavourable bony and soft tissue undercuts [Figure - 1]. A mild degree of trismus was also presence to further complicate the situation.

### Treatment plan

The treatment plan devised was rehab of the lower jaw to establish a satisfactory occlusal plane. This warranted few extractions, intentional and indicated root canals therapies followed by crown and bridge procedures. The definitive obturator configuration selected for this case was of type - *A two-piece, hollow bulb obturator with an open top configuration*. The obturator was to be then lined with a resilient silicone material so to accurately engage all soft tissue and hard tissue undercuts in the defect making it a very stable and retentive prosthesis. The obturator was to be constructed in two phases: the construction of the hollow bulb and then the denture portion. The hollow bulb and the denture portions were to be linked by magnets. A transitional implant (TRI) was to be placed in the canine region on the edentulous left maxilla, which would connect to the denture portion through the aid of a silicone o-ring attachment.

### Method

01. A sectional impression of the defect was made using poly vinyl siloxane silicone impression material of putty consistency. The sectional impresson was then adjusted to eliminate any undercuts and tried in the defect. A pick up impression of the sectional impression was then made with an alginate impression material.
2. Working cast was made from this impression and the undercuts present in the defect were blocked out using a thin layer of putty material.
3. A wax shell was fabricated to the desired dimension of the obturator on the blocked model and was processed to an open top configuration with heat cure polymethylmethacrylate resin. Processed obturator was finihed and tried for fit.
4. The hollow bulb obturator shell was then lined with a resilient poly vinyl siloxane permanent relining

material (Mucopren soft, Kettanbach) using the direct technique. The obturator was then inserted in place [Figure - 2] and the seal was evaluated by instructing the the patient to consume liquids and determine whether any escape of fluids into the nasopharynx was present.

5. The denture portion was then constructed in accordance to the conventional complete denture procedures.

6. A TRI was then placed in the canine region on the left maxilla [Figure - 3].

7. To link the two components - Dyna magnets were placed at the posterior border of the obturator to create a posterior seal. An o-ring type silicone was processed in the denture portion to receive the TRI [Figure - 4].

8. The post insertion, follow up and patient care were carried out at the prescribed intervals of time and revealed that the patient was thoroughly satisfied and extremely comfortable in the functioning and esthetics of the prosthesis.

## Discussion & summary



Most patients who wear obturator-retained prosthesis have had an extensive amount of surgical and dental treatment. The prosthetic rehabilitation of the post maxillectomy patients generally require an immediate post surgical prosthesis, an interim prosthesis and a permanent prosthesis. [4] This is a protracted process for the patient. This report describes a technique to manage an acquired hard palate defect and a simplified and effective protocol was followed to illustrate the procedure. The advantages to the patient are comfort, easy to maintain and exceptionally good retention. A hollow bulb - open top configuration was selected, as researchers have advovated a significant enhancement in speech as compared to a closed hollow bulb. [5],[6] An open top enhances speech via an increase in the resonance balance, nasal airflow and maintenance of the configuration of the nasal and maxillary sinus cavities. [7] A two-piece construction makes it possible to easily refabricate or repair the bulb alone without disturbing the harmony of the maxillary denture or *vice versa* . Insertion of the prosthesis is easy and done piece by piece making it less a stuggle for the patient with limited mouth opening. Magnets were used to link the two portions and create a definite posterior seal between the two components. A resilient lining with permanent silicone relining material was done to aggressively engage into the soft tissue and bony undercuts of the defect area to enhance retention. The placement of a transitional implant was placed as an adjunctive temporary retentive aid until the neuromuscular control took over and if warranted the TRI could be remove later.

From the clinician point of view, a reduction in the chair side time for both the patient and clinician is a great consideration especially for the patient who has already had extensive medical and surgical treatment. [4] The need for re-fabrication or repair of the obturator or the denture part can be done independently without disturbing the other's harmony. [8] The treatment planning and method employed in this particular case report was extremely time saving and patient compliant.

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