

Volume 12, Issue 6, 836-841.

Case Study

SSN 2277-7105

## REHABILITATION OF ACQUIRED MAXILLARY DEFECT WITH CAST PARTIAL OBTURATOR-A CASE REPORT

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# Article Received on 28 Feb. 2023,

Revised on 21 March 2023, Accepted on 11 April 2023 DOI: 10.20959/wjpr20236-27828

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### ABSTRACT

Rehabilitation of patients with maxillofacial defect is not merely a post treatment eventuality. It has been always a challenging task to the prosthodontist to provide comfort, function, aesthetics and thereby improve the quality of life of the patient. Depending on size and location of the defect the amount of impairment and difficulty in prosthetic rehabilitation is seen. A prosthesis used to close such palatal defect is referred to as obturator. This case report discusses the steps of fabrication of a cast partial definitive obturator which was used to rehabilitate a patient with acquired palatal defect.

### **KEYWORDS:** Obturator, prosthetic rehabilitation, maxillectomy,

palatal defect.

## • INTRODUCTION

Maxillofacial defects may be congenital or developmental or it may be acquired due to accident, surgery or pathology. Almost all acquired defects are precipitated by resection of neoplasm of the palate. Post-surgical defects impair patients masticatory function, predispose to hypernasal speech and fluid leakage into the oral cavity.<sup>[1,2,3]</sup> Palatal defects are rehabilitated with help of obturator. The name obturator is derived from the latin verb "obturare" which means close or to shut off. A prosthesis placed following resection of portion of bony maxilla and adjacent structures is basically a covering prosthesis to reestablish the oro nasal partition and thereby allow adequate mastication, deglution, articulation, and soft tissue support to restore the aesthetics. The extension of obturator into the defect varies according to the configuration of the defect, character of its lining tissue and

functional requirements for stabilization, support and retention of the prosthesis. An obturator prosthesis is classified as surgical, interim or definitive and reflects the intervention time used in the maxillofacial rehabilitation of the patient with palatal defect with definitive cast partial obturator.<sup>[4]</sup> In this clinical report a patient was rehabilitated with definite obturator after complete healing of the palatal defect.

#### • Case presentation

A female patient aged 45 years reported to the department of Prosthodontics six month after surgery of a neoplastic growth in palate. The chief complain was inability to chew food because of loss of some teeth and she also wanted to close the post-surgical defect. The patient was operated for neoplasm after being diagnosed by biopsy. She was wearing surgical obturator and not undergone definitive obturator prosthesis. Intraoral examination revealed well healed Aramany's class- II<sup>[7]</sup> surgical defect on left maxilla, central and lateral incisor was retained on the defect side along with all teeth present on the opposite side of the arch. The treatment plan was made to rehabilitate this patient with definitive obturator with cast metal framework. The obturator was planned with antero posterior palatal strap type major connector, I bar retentive clasp on 22,13 and embrasure clasp on 16,17.

#### Step 1

The primary maxillary and mandibular impressions were made using irreversible hydrocolloid material alginate (Zelgan 2002; Dentsply, India) and the casts were poured with dental stone(Kalstone, Kalabhai) to obtain the primary cast. The defect was blocked with a gauge piece lubricated with petroleum jelly prior to impression making.

#### Step 2

Surveying of maxillary cast was done (Marathon-surveyor 103, complete Milly units#100769). After surveying necessary mouth preparation was performed on the patient before making secondary impression. Rest seat preparation and guiding plane preparation were done.

#### Step 3

Impression of pre-prosthetic mouth preparation was made with medium body elastomer(Reprosil, DENTSPLY) and casts were poured. Blockouts were made before duplicating the cast with refractory material(Bego, Wirowest).

## Step 4

On this refractory cast desired wax pattern was fabricated and casting was carried out.

## Step 5

Then the framework was tried in the patient's mouth and necessary adjustments were done.

## Step 6

Occlusal rims were fabricated on framework and jaw relations were recorded.

## Step 7

The missing teeth were arranged and try in procedure was performed.

### Step 8

Finally after flasking and packing with heat cure acrylic resin (Trevlon, Dentsply, India) the prosthesis was cured. Then the prosthesis was trimmed, finished and polished.

## Step 9

Then the polished prosthesis was inserted into patient's mouth and patient was educated for proper maintenance of oral hygiene and prosthesis.

### Step 10

Patient was recalled after 24 hours for post insertion check-up. Recall visits were also scheduled at 3 months and 6 months for the evaluation of treatment outcome.



Fig 1: Preoperative Extraoral Frontal View.



**2(a)** 



2(b) Fig. 2: Preoperative intraoral view.



**2(c)** 



**3(a)** 



**3(b)** 

Fig 3: cast block out



3(c)



Fg 4:Wax pattern fabrication







Fig 6: Metal framework try-in



**7(a)** 



7(b)





**8**(a)

**8(b)** 

**8(c)** 

Fig 8: Post insertion view of the obturator.

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Fig. 9: Post insertion frontal view of denture.

#### DISCUSSION

The Glossary of prosthodontic terms defines an obturator as a maxillofacial prosthesis used to close a congenital or acquired tissue opening, primarily of the hard palate and or contiguous alveolar or soft tissue structures.<sup>[5]</sup> Prosthetic restoration of the defect often includes use of surgical obturator, interim obturator, and definitive obturator. Definitive obturator should be constructed when the defect side is completely healed. This may take 3-6 months after surgery and depends on prognosis of the tumour, size of the defect, healing process and presence or absence of teeth. The patient presented here was planned for definitive prosthesis after stabilization and healing of the defect. The basic principle of removable partial denture designing should be followed when designing a metal framework for fabricating an obturator. Major connectors should be rigid, occlusal rests should direct occlusal forces along the long axis of the teeth, guide plane should be designed to facilitate stability, retention and support.<sup>[6]</sup> Support from palate became more important in this case because it can resist the vertical dislodging forces. In this case maximum distribution of support is achieved by incorporating more of the remaining teeth in the design of the framework, maximizing the use of rests. Cast partial denture is designed in such a way that I bar clasp placed adjacent to edentulous area and embrasure clasps on molars to enhance retention and bracing of denture. Maximum extension into the palate is achieved by antero-posterior palatal strap. Strong Lbeam effect contributes to good resistance and its circular configuration also dissipated the forces. In this case the defect was not so extensive so hollow bulb obturator was not used and the prosthesis was fabricated in a conventional manner. Changes in tissues supporting a maxillofacial prosthesis is more rapid. Therefore the occlusion and base adaptation must be re-evaluated frequently and corrected by elimination of premature contacts and rebasing it timely.<sup>[7]</sup>

#### CONCLUSION

This article makes an attempt to throw light on prosthetic philosophies and procedures in rehabilitating patients with maxillofacial defect as it has always remained as an enigma for the prosthodontist due to the unpredictable nature of the defect and uncertainty of recurrence. To reach the goal multidisciplinary approach should be adopted. Depending on the case the restorative dentist should select the best material and technique for successful rehabilitation. Present case rehabilitated with definite cast partial obturator definitely improved her quality of life.

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