

# Use of Dalabona Attachment to Enhance Retention, Stability and Aesthetic of a Maxillary Obturator: A Case Report

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## Abstract

Maxillofacial prosthetics is widely used for patients with congenital defects, as well as for post-surgical rehabilitation. Patients with palatal defects may face aesthetic, functional and social distress. Palatomaxillary defects has divided into six classes by Aramany<sup>1-2</sup>. The case presented in this article belongs to class IV. The aim behind this defect-oriented classification is to simplify the complex nature of the restorative procedure for the maxillectomy patients.

**Keywords:** MFP, prosthesis, maxillectomy defect

## INTRODUCTION

Rehabilitation of maxillofacial defect is a complex procedure<sup>3-4</sup>. The main goal of obturator prosthesis is to close the oro-nasal or oro-antral communication, which helps the patient with speech as well as mastication. Procedure for obturator prosthesis is well defined and it is followed with the placement of surgical obturator which is given immediately following surgery for a period of 5-10 days. After 5-10 days an interim obturator is fabricated which is inserted until the wound healing period which is usually for 3-6 months. After the wound healing period, a definitive obturator is constructed and given to the patient<sup>5-6</sup>. For the successful rehabilitation of maxillary defects, it is important for the obturator to be stable, retentive and it should form a perfect seal with the tissues, so that there will not be any air or fluid leakage. These principals are sometimes difficult to achieve especially when the defect is large as in this case report, in such a situation defects overwhelm the remaining structures that stabilize the prosthesis<sup>7-8</sup>. Aramany gave the defect classification system, which considers the different parameters that have impact on the final outcome of the prosthesis<sup>9</sup>. Success of obturator prosthesis largely relies upon the volume of deformity and the positioning of the remaining hard and soft tissues to be utilized to stabilize, support and

retain the prosthesis in place<sup>10-11</sup>. Weight of the obturator also effects its retention and stability. Many techniques have been described to reduce the weight of the prosthesis<sup>12-15</sup>. The technique which was used in this case report to reduce the weight was open bulb for interim obturator, and closed hollow bulb for definitive obturator.

## CASE REPORT

A 45-year-old female patient came to the Prosthodontics Department of Ramaiah Dental College, Bangalore with a chief complaint of missing left side upper jaw and wanted the replacement for the same. Patient had a history of squamous cell carcinoma of maxilla which was treated 1 year ago (Fig.1). Teeth were present on the right side of maxilla from canine to the third molar. Mouth opening of the patient was in average range of 38 mm. Patient had a problem with mastication as well as deglutition of the food because of nasal impulse of the food and also complained of nasal speech.

## PROCEDURE (INTERIM OBTURATOR)

With the help of stainless-steel perforated stock tray, a primary impression made with polyvinyl siloxane putty consistency (Aquasil™ soft putty, DENTSPLY, DE Trey) for easy retrieval from the

Undercuts (Fig.1B). Impression was poured with type III gypsum (fig.1C). Undercuts were blocked out with modeling wax and spacer of 2mm thickness was adapted for the fabrication of custom tray with self-cure polymethylmethacrylate (DPI RR Cold Cure™; Dental Products of India Ltd.) (Fig. 2A). Border molding was done with the help of low fusing green stick material followed by final impression with the help of polyvinyl siloxane light body consistency (Aquasil™ UltraLV, Dentsply, caulk) (Fig.2B,2C). Final impression was poured with type III gypsum, and jaw relation was recorded. Teeth arrangement was done followed by teeth trial for the evaluation of speech, aesthetics and function. Teeth trial was shown to the patient as well as patient's relative upon satisfaction, processing procedure was carried out, interim denture was fabricated with heat cure polymethylmethacrylate resin and soft relining material was applied. In order to reduce the weight open bulb obturator was made which is then delivered to the patient for 6 months (Fig. 3)

#### **PROCEDURE (DEFINITIVE OBTURATOR)**

After 6 months of interim obturator patient was recalled for definitive obturator. Intraoral examination was done for the evaluation of hard and soft tissues. Tooth preparation was done with respect to 13 and 14 for ceramic facing crowns (Fig.4A). Supra gingival margins were given, and impression was made with putty- light body single step technique. Metal trial of splinted crowns with stud attachment extending over the hard palate was done and pick up impression was made with putty-light body single step technique (Fig.4B,4C). Crowns were cemented and cast partial denture framework trial with embrasure clasp between two premolars and between two molars and one occlusal rest with circumferential clasp was given on distal aspect of 3<sup>rd</sup> molar (Fig.5A). Intraoral bite registration was made with the help of alu wax (Fig.5B). Teeth trial was shown to the patient as well as the patient's relative, upon satisfaction, processing procedure was carried out. In order to reduce the weight of the denture a hollow bulb definitive obturator was

given to the patient and post-operative instructions was given (Fig.6A, B, and C)

#### **DISCUSSION**

Oral cancer is the 6<sup>th</sup> most common malignancy in the world and major concern in South East Asia. In India, 40 % of detected malignancy cases are diagnosed to be oral cancers<sup>16</sup>. It is a well-known fact that majority of tumors of maxilla requires total or partial maxillectomy in order to prevent the recurrence. Because of this reason prosthetic rehabilitation of such defects became challenging as there is a lack of hard and soft tissues to support the prosthesis in place. The main objective of a maxillofacial prosthesis is to restore the form, function and provide aesthetics. The size and extent of defect, remaining teeth, remaining alveolar bone quality plays a key role in determining the success of prosthesis<sup>17</sup>. Studies have shown that surgical obturation of such defects provides better results as reported by Triana et al where free flap reconstruction of maxilla was done to separate oral and sinonasal cavities<sup>18</sup>. However, literary research also shows obturator to provide superior cosmetics and function<sup>19-21</sup>. In this case, after insertion of the obturator speech as well as hyper nasality, the disorder was fully recovered. During the one and a half year follow up period, patient did not report with any complaints of seepage of liquid from the mouth to the nasal cavity and vice versa. In this case, rehabilitation of defect was relatively easier because of good support from the remaining teeth and hard palate. Support was achieved from teeth by splinting two teeth together with crowns, and stud attachment was also given mesial to the canine to enhance stability as well as retention. Movement to the obturator depends mainly on the nature of defect, this can lead to the soreness and discomfort to the patient. These problems were treated in the subsequent follow up periods.

An open bulb obturator was fabricated for interim obturator and closed bulb hollow for definitive obturator. Both open as well as close bulb have their advantages and disadvantages, so to choose between two is controversial. Open bulb obturator is easy to fabricate but patient has to maintain it more often as it allows the secretions

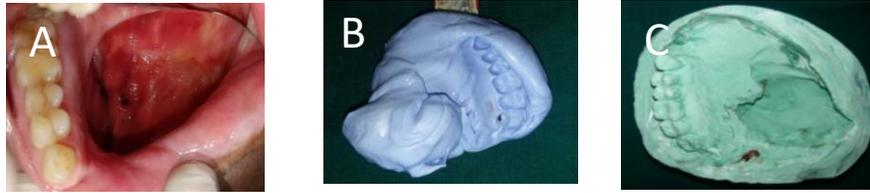


Fig 1A: Post-surgical intraoral view, B: Primary impression on stainless steel stock tray, C: Primary cast

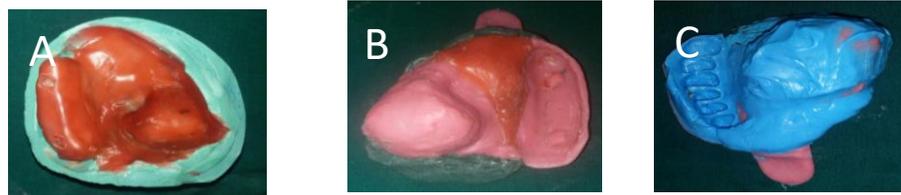


Fig 2A: spacer adaptation, B: border molding with low fusing green stick material, C: Final Impression

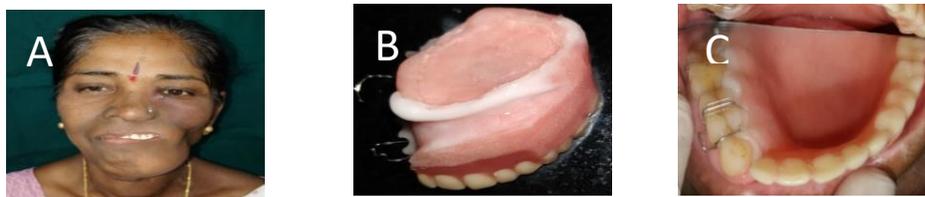


Fig. 3: Interim prosthesis with open bulb



Fig. 4A: Prepared first premolar and canine, B: Metal trial, C: Pick up impression

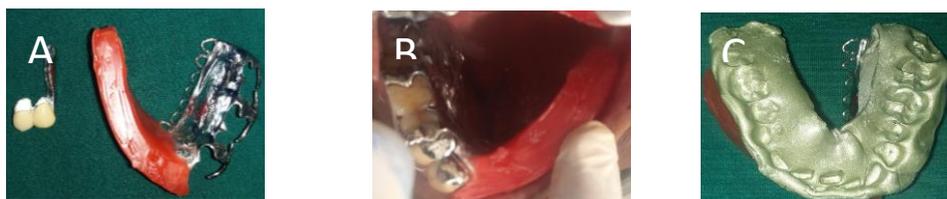


Fig. 5A: CPD framework with wax rim and Splinted crowns with attachment, B: Framework trial C: Bite registration with Alu wax



Fig. 6A: Definitive obturation insertion, B: Intraoral view, C: weighing obturator

And food particle to accumulate over the bulb <sup>22</sup>. Whereas, close bulb hollow obturator will not allow the secretion and food particles to accumulate over the bulb, but secretion can pass through the micro porosities present in the acrylic seal <sup>22</sup>.

Various methods have been proposed for the fabrication of bulb obturator like trimming the excess after acrylization <sup>23</sup>, two-piece Obturator where one part is fabricated using visible-light-cured resin material which is then combined with the other part of the obturator <sup>24-25</sup>.

In this case report, a Dalabona attachment was given instead of giving a clasp on canine in order to improve the esthetic. Ball attachments are proven to be effectively improve the retention and stability of the removable dentures. They are economical, easy to use and easily available <sup>26</sup>. Shanti Varghese and T. V. Padmanabhan published a case report where they concluded by saying that precision attachments can be successfully used to enhance aesthetic and retention of the removable denture <sup>27</sup>.

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