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## Prosthetic Rehabilitation of an Acquired Palatopharyngeal Defect with a Definitive Obturator A Case Report

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<sup>1</sup>*Dr. Foram Sutaria, M.D.S.,* <sup>2</sup>*Dr. Jenish Solanki, M.D.S.* <sup>3</sup>*Dr. Disha Shah, M.D.S.,*  
<sup>4</sup>*Dr. Meha Thaker, M.D.S. &* <sup>5</sup>*Dr. Avani Patel, M.D.S.*

<sup>1</sup>Senior Lecturer, Department of Prosthodontics and Crown & Bridge, Narsinhbhai Patel Dental college & Hospital, Visnagar, Gujarat, India.

<sup>2</sup>Senior Lecturer, Department of Prosthodontics and Crown & Bridge, Ahmedabad Dental college & Hospital, Gandhinagar, Gujarat, India.

<sup>3</sup>Consultant oral and Maxillofacial Surgeon.

<sup>4</sup>Consultant Periodontologist.

<sup>5</sup>Reader, Department of Prosthodontics and Crown & Bridge, Narsinhbhai Patel Dental college & Hospital, Visnagar, Gujarat, India.

**Corresponding Email Id:** [drfbs10@gmail.com](mailto:drfbs10@gmail.com)

### Abstract


**Patient:** A 39 years old male patient had undergone surgical intervention of squamous cell carcinoma of palate before one and half year which resulted into incomplete closure of the palatopharyngeal sphincter. It led to devastating effects on vital functions like mastication, deglutition, phonetics and also psychological trauma. This article presents a case report in which obturator prosthesis was used to correct the acquired palatal defects successfully.

**Material and method:** Patient had explained about his present condition and treatment plan. After his consent, primary impression of defect was made with irreversible hydrocolloid and primary cast obtained. Final impression was made with polyvinyl siloxane elastomers and final cast was fabricated. Retention was achieved with wrought stainless-steel wire clasps. Acrylization with Heat cure acrylic resin performed. Certain adjustments were done, followed by application of soft liner for better tissue compatibility.

**Result:** With the regular follow ups, there was gradual improvement in the mastication, deglutition, phonetics as well as patient confidence with obturator prosthesis. An addition of soft liner resulted in reducing the discomfort of soft tissues.

**Conclusion:** A surgical excision is the most common treatment of maxillary neoplasms which leads to palatal defects as well as velopharyngeal insufficiency. In such cases rehabilitation with obturator prosthesis restores the missing structures, functions and aesthetics. It also act as a barrier between the communications among the various cavities and thus improves vital functions. Its important to select form of the obturator which is acceptable to the patient anatomical, functional, psychological and also the financial condition.

**Key Words-** Maxillary Neoplasms, Acquired Hard and Soft Palatal Defects, Velopharyngeal Insufficiency, Maxillary Obturator, Prosthetic rehabilitation.

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## **INTRODUCTION**

Maxillofacial prosthetics is the art and science of anatomical, functional and cosmetic rehabilitation of the areas of the maxilla, mandible and face, which are missing or defective because of either acquired or congenital deformities<sup>1</sup>.

Surgical resection of a neoplastic disease often results in an acquired defect that changes the soft palate's continuity, which leads to serious consequences because of the disturbances in form and function of the entire stomatognathic system. The recommended treatment for such defects depends on the aggressiveness & location of the actual lesion, its histotype, patient's age and general health status<sup>2</sup>.

Rehabilitation of these acquired maxillary defects can be achieved by means of various micro-vascularised flaps or prosthesis. Surgical reconstructions are usually considered for smaller defects. For larger defects, prosthetic rehabilitation can be a better choice, as more risks are involved for survival of the graft<sup>2</sup>.

The prosthetic restoration with an obturator (Latin word: obturare, Meaning: to shut off), provides a non-invasive method of restoring function and aesthetics by separating the nasopharynx and oropharynx during speech, deglutition and also provides appropriate seal. Thus Maxillo-facial reconstruction by prosthetic means is a valuable contribution which dentistry offers to the public<sup>3</sup>.

Despite Recent advances in dentistry, acrylic obturators are still the golden benchmarks as they are simple, non-invasive, cost-effective, easily available, familiar to all the practitioners and legitimize for periodic examination and cleaning<sup>4,5</sup>.

The objective of this clinical report is to demonstrate the prosthetic rehabilitation of an acquired palatal defect through a maxillary obturator to re-establish oronasal as well as palatopharyngeal integrity.

## **CASE REPORT:**

A 39 years old male presented with chief complain of difficulty in swallowing, drinking and speech. History revealed an acquired defect due to surgical intervention of squamous cell carcinoma of palate before one and half year, which leads to leakage of food and liquid from the oral cavity into the nasopharynx and nasal resonance during speech.

## **Clinical Examination:**

Hard and Soft palate region treated with surgery and radiotherapy was completely healed. An obvious nasal twang was observed during normal conversation. The dental status was intact except missing maxillary left first molar and tilted second molar. Limited mouth opening due to fibrosis also noticed. According to clinical examination and patient's condition, it was decided to fabricate a definitive obturator prosthesis.

**Procedure:**

Patient was explained about his present condition and the treatment plan. After consent, patient's palatal defect was cleaned and wiped thoroughly with a cotton swab, using antiseptic [Povidine-iodine]. A roll of cotton gauze was placed in the defect and secured with the thread. The maxillary and mandibular perforated stock metal trays were selected and preliminary impressions were made with the irreversible hydrocolloid [Marieflex alginate, Septodont Healthcare, India] and primary casts were fabricated.

A self-cure acrylic resin maxillary custom tray, with pharyngeal extension was fabricated. Polyvinyl siloxane elastomers (Addition Silicone, Zhermack Elite P & P) were used to record the final impression. First, putty impression material was mixed and loaded onto the tray, regarding the area of interest. The patient was instructed to move head from one side to another in a circular motion and extend as far forward as possible. He was further asked to speak and swallow to activate palatopharyngeal musculature in order to mould the impression. Light body material was then mixed and applied to the moulded area for wash impression [Fig 1-A] to achieve peripheral seal. The above-mentioned movements were repeated several times to record all the fine details of the surrounding tissues and pick up impression was made with perforated metal tray, using putty material [Fig 1-B] and poured with type III Dental stone. Master cast was obtained, blocked out and 19-gauge wrought stainless steel clasps were adapted on teeth for retention.

Conventional acrylization was done with polymethyl metha-acrylate heat cure resin. After acrylization, final prosthesis was trimmed, polished [Fig 2-A] and checked intra-orally for adequate palatal contour, peripheral seal and occlusion.

Chair side cold cure soft liner [Mollosil, DETAX] was applied onto prosthesis [Fig 2-B], and was placed in the patient's mouth. All the above-mentioned movements were made. Any difficulty, during drinking or breathing, was corrected.

A change in pronunciation and swallowing ability was observed with final prosthesis [Fig 3]. Patient was educated about the use, removal-insertion, maintenance of the prosthesis and oral hygiene. However, long-term follow-up is mandatory to observe the functioning of the obturator prosthesis.

**DISCUSSION:**

Prosthetic rehabilitation of the patients suffering from velopharyngeal insufficiency differs according to location as well as nature of the defect<sup>6</sup>. Velopharyngeal sphincter, a muscular valve, formed by soft palate, lateral walls and posterior pharyngeal wall is responsible for controlling the passage of air during phonation. Lack of tissues causes impaired movement of this valve and leads to velopharyngeal insufficiency which results in oronasal communication, difficulty in speech and deglutition<sup>7</sup>.

The aims of obturation are to provide the control of nasal effusion and undesirable nasal resonance during speech and to prevent the slip away of food into the nasal passage during swallowing<sup>6</sup>. In an

acquired palatal defect, an obturator is preferred over surgical repair for several reasons as implants may provide significant benefits regarding retention, but their use for support and stability may be risky and not preferable for financial reasons for all patient groups<sup>8</sup>.

In Maxillectomy patients, accurate reproduction of undercut areas of the defect is must to obtain an adequate retention and stability<sup>9,10,11</sup>. Additional retention can be achieved by wrought wire clasping of the existing dentition<sup>11,12</sup>.

Prosthetic management with an obturator requires close cooperation between the prosthodontist and a phonetician<sup>13</sup>. Moreover the defect size, obturator's weight, patient's comfort and force of the obturator on the teeth should be evaluated, prior to fabrication as different oral cancer patients present with different challenging defect<sup>14</sup>.

### **CONCLUSION:**

Rehabilitation of surgical defects is always a challenging scenario. Dentulous patients with a reasonable distribution of dentition and favourable defects of the palate are very effectively restored with an obturator prosthesis conventionally. A multidisciplinary team approach, thorough investigation, long term follow up, proper counselling and sympathetic attitude may aid patients to live quality life.

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### **Conflicts of interest**

There are no conflicts of interest.

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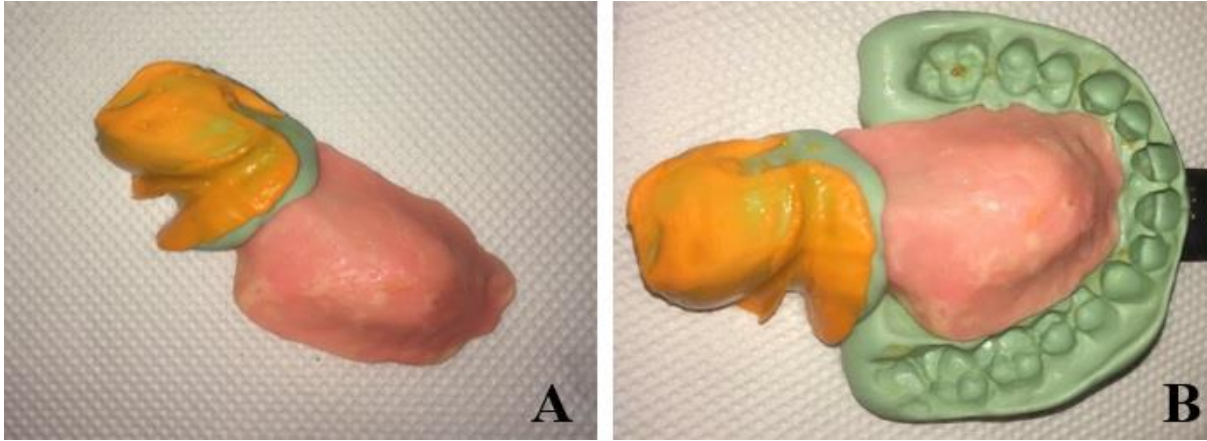
### **Figure Legends**

**Figure 1:** [A] Final impression of the maxillary defect using putty and light body  
[B] Pick up Impression

**Figure 2:** [A] A definitive maxillary obturator prosthesis  
[B] Final prosthesis with soft liner application

**Figure 3:** [A] Pre-treatment  
[B] Post- treatment

**FIGURES**



**FIGURE: 1**



**FIGURE:2**



**FIGURE:3**