

Prosthetic management in patient with maxillectomy using a hollow bulb obturator - A case report.

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ABSTRACT

Introduction: Maxillectomy abnormalities can lead to oroantral communication, which can affect speech, create facial deformities, and make it difficult to chew and digest food. With the use of obturators, the prosthodontist is crucial in the rehabilitation of these deformities. The primary functions of chewing, phonation, and swallowing are restored by these prostheses. Additionally, they give the patient a good aesthetic appearance. This essay describes a practical instance of creating a reliable hollow bulb obturator. This study set intended to describe the numerous clinical and laboratory procedures involved in prosthetic rehabilitation of an acquired maxillary defect following squamous cell carcinoma dissection.

Case description: A 24 years male patient reported the department of Prosthodontics with an upper midface deformity caused by the surgical excision of a lesion. He had difficulty in speaking and eating. The abnormality, which extended to the floor of the orbit and was identified as Aramany's class I, was also accompanied by a depressed cheek, a receding nasolabial fold, and decreased lip support. For the same, a hollow bulb obturator was created.

Discussion: Literature describes the use a hollow bulb obturator in cases with maxillofacial deformity including soft palate. This obturator being hollow and light weighted is been accepted by the patient for their sole purpose.

Keywords: Hollow bulb, maxillectomy, maxillofacial prosthesis, Obturator, oro-nasal communication.

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Introduction

The jaw's morphology plays a functional and attractive purpose. The palate divides the nasal fossa from the oral cavity. The maxillary bone has an aesthetic purpose in the anatomy of the nose, cheeks, and hemi-face. When it comes to the link between form and function, a maxillary-palatal deficiency may have substantial effects, including difficulty swallowing and chewing, phonation problems, and significant psychological repercussions.^[1] For appropriate sealing, tissue anomalies that

are inherited or acquired of the palate and/or adjacent tissues require a specific prosthesis. An obturator is described as "a maxillofacial prosthesis used to close a congenital or acquired tissue opening, primarily of the hard palate and/or contiguous alveolar/soft tissue structures". Most of the carcinomas are discovered after they have already invaded the bone. Today, aggressive surgical excision is used to treat malignant neoplasms of the hard palate after a thorough assessment of the lesion's location and extent, histotype, patient

age, and overall health. Alveolectomy and palatotomy are the ideal treatments for removing small-sized (T1N0) carcinomas of the hard palate and upper maxilla. These procedures leave a modest deficit that can be repaired with straightforward surgery and a pedicled flap locally. Invasive procedures like type I partial maxillectomy (resection of one wall), type II subtotal maxillectomy (resection of five or fewer walls), type IIIA total maxillectomy (resection of all six walls with preservation of the contents of the orbit), type IIIB total maxillectomy (resection of all six walls with exenteration of the orbit), etc. are required for stage T2-T4 carcinomas. Type IV orbito-maxillectomy (preserving the hard palate while removing five walls from the orbit). This causes a significant maxillary-palatal deficit, and the surgeon must choose from a variety of reconstructive surgical approaches even during the clinical pre-surgery evaluation.^[2] Maxillary defect rehabilitation using the obturator has been defined as exclusive therapy to obtain the greatest peaks in enhancing post-treatment lifestyle quality. Obturators with hollow bulbs are designed to make prosthetics lighter. According to Wu and Schaaf, hollowing the obturator significantly reduces prosthesis weight from 6.55% to 33.06%, depending on the severity of the defect.^[3] In this paper, a more straightforward method for creating thermoplastic resin-based closed hollow bulb obturators is presented.

Case Report

An upper midface deformity caused by the surgical excision of a lesion and difficulties eating and speaking led a 24-year-old male patient to be sent to the prosthodontics

department. The patient had previously undergone a hemi-maxillectomy on the same side for squamous cell carcinoma on the left maxilla. The deformity was discovered to be Aramany's class I, lacking lip support, extending to the floor of the orbit, and being accompanied by a sunken cheek, nasolabial fold, and decreased lip support. The objective was to create a hollow bulb obturator prosthetic because the patient refused to undergo any surgical treatments.

Observation

The remaining natural teeth (11, 12, 13, 14, 15, 16, 17, 21, 22, and 23) in the maxilla were found during an intraoral examination. These teeth were extremely important and displayed widespread physiological attrition.

A surgical maxillary defect that had sufficiently healed was found in the hard palate on the left side. This flaw was the link between the nasal and maxillary sinuses and the mouth cavity (Fig. 1). Additionally, two somewhat deep anterior and posterior undercuts were visible. Maximum Intercuspid Occlusion (MIO) and Occlusal Vertical Dimension (OVD) were not preserved during occlusion examination.

Technique

With perforated stock trays with carefully calculated diameters, alginate, an irreversible hydrocolloid, was used to make mucostatic initial impressions. (Fig. 2). The front and back depressions of the maxillary were filled with gauze before to taking the maxillary impression. Dental stone of type III (KALABHAI) was used to create the maxillary imprint (Fig. 3). A single spacer was used throughout the cast and a double spacer was used in the fault. Then, a special tray was

made using ASWIN, a self-curing acrylic resin substance.

Border molding was done with greenstick compound (PINNACLE tracing sticks). The final impression was created using light body impression material (ZERMACK) after the wax spacer was removed (Fig. 4). Type III dental stone (KALABHAI) was used to cast the master.

Jaw relation was created with proper occlusal vertical dimension and centric relationship. Then the casts were attached to the articulator, and the colour of the semi-anatomic teeth was chosen. Tooth arrangement was done and tried in the patient's mouth (Fig. 5).

Acrylization of the obturator was done. During polymerization the defect was hollowed using wax as a separator between the defect and the lid. To light the prosthesis and avoid any static instability, the external surface of the prosthesis, facing the obturator, was hollowed after it had been polymerized. After polymerization, holes were made in the palatal portion of the defect. Hot water was injected to remove the wax used inside the lid to create a hollow bulb (Fig. 6). The prosthesis was then finished and polished and finally placed in the mouth (Fig. 7 and 8).

After numerous attempts in front of a mirror, the patient was instructed to place the prosthesis. The patient was given instructions regarding when to wear and oral hygiene, and next appointments were scheduled.

Discussion

Local anatomical circumstances are changed after resection surgery. The likelihood of

successful prosthetic maintenance is influenced by each of these factors as well as complicated psychosocial circumstances.^[4] The obturator prosthesis is still used in many clinical settings where another option is unable to achieve cosmetic and functional rehabilitation. reckoned as a therapeutic choice.^[5] It is a man-made tool intended to guarantee a tight seal of a bucco-nasal and/or bucco-sinusal connection. As a result, it is viewed as an alternative to surgery and has specific prerequisites.^[6] Alginate and silicone-based elastomeric materials are the main types of materials recommended in the literature for patient impressions with oro-nasal/sinus communication.^[7] According to the impression process as described by Singh et al, a Vaseline-embedded gauze was put inside the cavity to prevent impression material extravasation inside the nose or the maxillary sinus.

The prior literature also provided a clear explanation of how the two sides of the obturator were processed separately before being joined together with an auto-polymerizing resin. A hollow obturator approach was proposed by Patil and Patil that involved placing a molded wax bolus into heat-cured material.^[8] In their presentation, Elangovan and Loibi described a technique for creating hollow bulb obturators by the use of connections.^[9] Even though the technique was straightforward, using attachments would result in significant treatment costs. While the majority of methods published in the literature used autopolymerizing resin materials, which eventually leak out, the method presented here only used heat-curable resin materials, which increased its originality.

Conclusion

Getting enough retention, stability, and support is extremely difficult when rehabilitating a patient who has had a hemimaxillectomy. The nomadic treatment of such patients requires in-depth knowledge and abilities in addition to a greater comprehension of the demands of the patients. The use of an obturator prosthesis during rehabilitation is practical, trustworthy, simple to construct, and minimally invasive.

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FIGURES



Figure 1



Figure 2



Figure 3

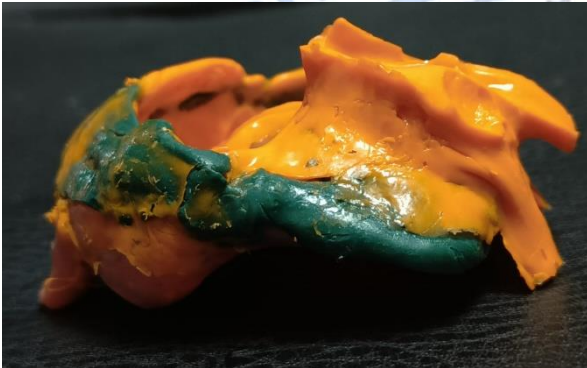


Figure 4

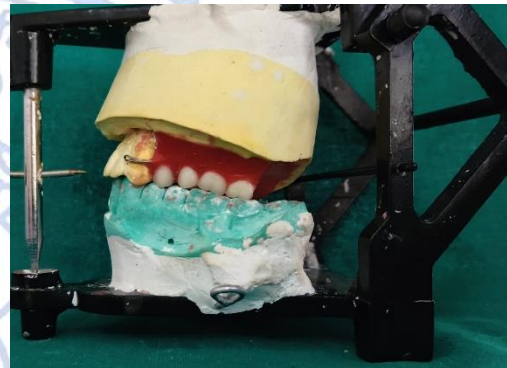


Figure 5



Figure 6



Figure 7



Figure 8