

Manufacturing of a maxillary interim hollow bulb obturator using lost salt technique - A case report.

Sanghasree Sarkar¹, Swetjyoti Saha¹, Tapan Kumar Giri², Dolanchanpa Dasgupta³.

¹Senior Lecturer, Department of Crown and Bridge and Prosthodontics, Kusum Devi Sunderlal Dugar Jain Dental College and Hospital, Kolkata.

²Professor and Principal, Department of Prosthodontics and Crown & Bridge, Dr. R. Ahmed Dental College & Hospital, Kolkata.

³Professor and Head, Department of Crown and Bridge and Prosthodontics, Kusum Devi Sunderlal Dugar Jain Dental College and Hospital, Kolkata.

ABSTRACT

This case study details a streamlined procedure for manufacturing a temporary hollow bulb obturator for an acquired maxillary deformity. Plaster was used to block out the master cast and irreversible hydrocolloid was used to make the final impression. The defect was then filled with table salt and covered with self-cure resin after acrylisation. A small hole was made, the table salt was cleaned out with water, and self-cure resin was poured into it. The patient's ability to speak and swallow was significantly improved. This method proved to be an easy, quick, and affordable way to create hollow bulb obturators for acquired maxillary defects.

Keywords: Interim obturator, lost salt method, maxillofacial prosthesis.

Address of correspondence: Dr. Sanghasree sarkar, Flat 2B, Tirupati Golden Arch Sasthitala Lane, Noapara, Dash Drone, near City Centre 2, Newtown, Kolkata, Pin-700157, West Bengal, India.

Email address: - dr.sanghasreesarkar@gmail.com **Phone no:** 9674900501. **DOI:** 10.5281/zenodo.10425968

Submitted: 29-Oct-2023 **Revised:** 10-Nov-2023 **Accepted:** 22-Nov-2023 **Published:** 25-Dec-2023

Bibliographic details: Journal of Orofacial Rehabilitation Vol. 3(3), Dec 2023, pp. 59-62.

Introduction

Maxillofacial abnormalities can arise from trauma or surgical treatment for benign or malignant tumors. The most difficult task is rehabilitating a patient who has an acquired or congenital maxillary deformity. Due to the regurgitation of fluids, the deficiency results in oro-antral communication, which makes speech and swallowing challenging. Patients who have facial disfigurement as a result of tissue loss experience considerable psychological impairment.^[1] As a member of the surgical team, the maxillofacial prosthodontist collaborates with the oral surgeon to develop the obturator's design from the diagnostic stage prior to surgery.

For many years, research has been conducted on the rehabilitation of such impairments with prosthesis. Early maxillofacial obturators aimed for just adequate retention and were intended to close congenital rather than acquired abnormalities. These goals were met by the early initiators' creative designs. Better and more advanced ideas eventually emerged.^[2] The main goals of prosthodontic treatment are to restore the altered physiologic functions of speech, deglutition, and mastication with a prosthesis that is comfortable and aesthetically acceptable. According to De van, the preservation of the remaining teeth and tissues is the primary goal of prosthetic rehabilitation.^[3] Applying these basic goals to the patient in need of

maxillofacial rehabilitation is crucial. A maxillary deficiency may exacerbate prosthesis design issues, making it more difficult for prosthodontists to achieve their main goals in the field. The integrity of the surviving structures and the size and position of the defect will have a significant impact on the attainment of these goals.^[4] It is essential to perform a preoperative prosthodontic evaluation on individuals before they undergo maxillary resection.

Case report

A 57-year-old man with a defect on his left side of the maxilla presented to the Department of Prosthodontics and Crown & Bridge. During the patient's intraoral examination, a maxillary defect on the left side of the palate was observed (Fig.1). The defect was visible to have extended from the canine region to the hard palate's posterior edge. The midpalate area to the left buccal mucosa was the location of the mediolateral extension (Fig. 2). The patient's mandibular arch was partially edentulous (missing 31, 32, 41, 42) while his maxillary arch was fully edentulous. For this patient, a maxillary hollow bulb obturator was proposed.

Procedure

Irreversible hydrocolloid impression material (Vignette chromatic alginate, Dentsply Sirona) was used to create diagnostic imprints of the mandibular and maxillary arches. To avoid the unintentional passage of impression material into undesirable anatomical areas, a wet gauze was inserted into the defect. Using irreversible hydrocolloid impression material, the maxillary arch, including the deformity, was imprinted. The primary impression included information about the pertinent

intraoral structures on the non-resected side as well as a portion of the resected defect. The initial casts were made by pouring the impression into dental stone.

Using autopolymerizing acrylic resin on the primary cast, a special tray was fabricated. Admix material, a 3:7 ratio of impression compound to green stick (low-fusing compound), was used to make the final impression of the defect. Medium-body elastomeric impression material (Reprosil, DENSPLY) was used to improve the impression (Fig. 3).

A provisional jaw relation was taken and mounted after the master cast (BN Chemicals, India) was poured (Fig. 4). After the denture try-in (Fig. 5), the obturator was waxed up in preparation for processing. The standard procedure was followed for flaking and dewaxing. Following dewaxing, a hollow bulb obturator was created by packing the prosthesis' obturator component into two parts using the lost-salt method (Fig. 6). This was done to reduce the obturator's weight without compromising retention.

Following the curing process, a tiny escape hole was made in the prosthesis' side and a syringe was used to wash away the salt. After being polished and completed (Fig. 7), the obturator was given to the patient along with intraoral modifications (Fig. 8). The patient received instructions on how to take care of the prosthesis and schedule routine recall visits. The post-insertion follow-up was carried out after twenty-four hours, three days and one week thereafter. It is necessary to do a review every 10 to 14 days for the next two months. Both phonetics and masticatory function were reported to have improved by the patient under recall.

Discussion

The purpose of the temporary obturator prosthesis is to help the patient achieve better speech deglutition and maintain good oral hygiene while they wait for the fabrication of a permanent prosthesis. You can make an obturator hollow or solid. Since the interim obturator is unhygienic and prone to infection, it is never left partially open. It is possible to build the hollow bulb obturator in two pieces or one piece.^[5,6] An interim hollow bulb obturator has the benefit of having a larger surface area for relining and less weight, which improves retention and patient comfort. By following this easy method of creating the hollow bulb, the laboratory time is cut in half. Additionally, because the prosthesis does not cause severe muscle atrophy, its reduced weight improves physiologic function.^[7] Better phonetics were intended to be achieved using a hollow bulb.

Conclusion

Making a temporary hollow bulb obturator is a cost-effective and beneficial procedure that enhances the patient's social life. In addition to lightening the prosthesis, the hollow bulb obturator helps to create a retentive seal around the defect. Enhancing the resonance during speech is another benefit. A prosthodontist can assist in improving the quality of life of a patient with an acquired maxillary deficiency using this simple and traditional approach of prosthodontic rehabilitation.

Source of Funding

None

Conflict of interest

No conflicts of interest are disclosed by the authors.

References

1. Bhat V. A close up on obturators using magnets: Part II. *J Indian Prosthodont Soc.* 2006; 6:148-53
2. Bourne GK, Barber AJ, Wilson PH. Cast Titanium for Obturator Framework Construction in Maxillofacial Prosthodontics. *Eur J Prosthodont Restor Dent.* 2015 Dec;23(4):213-8. 2.
3. Vojvodic D, Kranjcic J. A two-step (altered cast) impression technique in the prosthetic rehabilitation of a patient after a maxillectomy: a clinical report. *J Prosthet Dent.* 2013 Sep;110(3):228-31.
4. Mawani DP, Muddugangadhar BC, Das A, Kothari V. Flasking technique with alum crystals for fabricating definitive hollow bulb obturators. *J Prosthet Dent.* 2018 Jul;120(1):144-146
5. Varoujan Joe BD. Maxillofacial prosthetics multi disciplinary practice 1st edition . William and Wilkins pub]: 139 47.
6. Shaker K-T. A silnplified technique for construction of an interim obtuator for a bilateral total maxillcetomydelZ•cl. *Inl J Proslhodonl* 2000;13: 166-68.
7. Parr GR, Tharp GE, Rahn AO. Prosthodontic principles in the framework design of maxillary obturator prostheses. *J Prosthet Dent.* 1989 Aug;62(2):205-12.

FIGURES



Figure 1



Figure 2

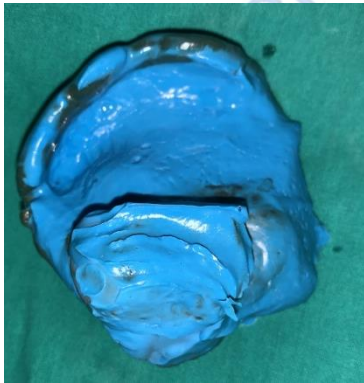


Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8