



## CASE REPORT

### Journal Section

# Rehabilitation of lateral maxillary defect with intact ridge using obturator with hollow bulb extension technique

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#### Abstract

Acquired defects in the maxilla lead to oro-antral communication with the nasopharyngeal complex. In recent times, post-Covid necrosis of maxilla due to mucormycosis leads to rapid invasion of surrounding tissues resulting into a maxillofacial defect. The surgically resected maxilla can have a devastating impact on the life style, esthetics, speech and function of the patient. Obturators provide a hollow extension into the defect that seals the oro-antral defect and stops any communication between oral cavity and nasal complex. This case report describes the prosthodontic rehabilitation of a maxillary defect involving the left lateral hard palate and left posterior buccal mucosa with intact ridge over the defect area using a hollow bulb obturator. The lost wax technique used for fabrication of the obturator is an easy, cost-effective technique which is simple to execute from available resources. It provides hollowness to the prosthesis and reduces weight of the prosthesis thereby aiding in retention and stability of the denture.

#### KEYWORDS

Acquired maxillary defect; Obturator; Hollow bulb; Post-Covid Mucormycosis

## 1 | INTRODUCTION

Acquired maxillary defects in the oral cavity may occur due to trauma, pathological changes or after surgical resection of oral malignant tumours.<sup>1</sup> These defects affect the quality of life of the patient significantly as they

alter the esthetics, phonetics and oral function of the patient. In recent times, cases of mucormycosis occurring as a post-Covid complication have been seen on the rise. It is a highly lethal, secondary, fungal infection especially in critically ill patients who are subjected to inva-

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sive emergency procedures, prolonged hospital stays, mechanical ventilation and breaches in asepsis. The fungus invades the arteries which leads to thrombosis that subsequently causes necrosis of hard and soft tissues. Treatment involves surgical debridement and/or resection of the infected bone.<sup>2</sup> The present case report describes the prosthodontic rehabilitation procedure of a partially edentulous intact maxillary ridge with acquired lateral maxillary defect caused due to post- Covid mucormycosis.

## 2 | CASE REPORT

A 56- year old male patient reported to the Department of Prosthodontics with a large defect in the left maxillary lateral region and partially edentulous arch. His chief complaint was difficulty in eating food due to passage of food and fluids from the mouth through the defect into his nasal cavity. Past medical history revealed that he had undergone surgical excision 3 months ago. The patient was not willing for any surgical procedure; hence it was decided to fabricate a maxillary hollow bulb obturator extending into the defect.

The margins of the defect area were evaluated and defined during the clinical examination. The defect was seen to extend into the left lateral hard palate and left posterior buccal mucosa with intact maxillary ridge over the defect area. (Figure 1A) After blocking the defect with wet gauze pieces, primary impression was made with alginate (Plastagin, SeptodontCedex, France) and primary cast was poured using dental plaster.

A custom tray with extension in the defect was fabricated on the primary cast using self-cure acrylic resin. Next, border molding was done using green stick impression compound material. Wash impression was made using addition silicone elastomeric impression material (Aquasil Ultra Monophase, Dentsply) following which a pickup impression was made using alginate to record the existing dentition on the right side of maxillary arch (Figure 1B). The impression was poured in dental stone (Neelkanth Minechem, Mumbai) to obtain a secondary cast. Record base and occlusal rim were fabricated on the secondary cast with self-cure acrylic resin (Pyrex Polykem, Roorkee) and modelling wax respectively. Jaw relation was recorded. Teeth arrangement and try- in was done.

After try-in, the denture was invested and acrylised in a denture-curing flask to fabricate a hollow bulb obturator using lost salt technique (Figure 1C and 1D).<sup>3</sup> After acrylisation, the embedded salt was flushed out and removed by injecting water through a small opening over the bulb. This step ensured that the entire weight of the prosthesis decreased as the bulb was rendered hollow from inside after the salt removal. Self-cure acrylic resin was used to close the small opening over the bulb. Finishing and polishing of the denture was done. (Figure 2A) Denture insertion was done (Figure 2B) and post-insertion instructions were given to the patient regarding usage and care of the obturator prosthesis.

## 3 | DISCUSSION

Mucormycosis is a highly lethal, fungal disease which has come into the forefront in recent times as a complication affecting post-Covid patients. It is characterized by ischemia of arterial blood flow and thrombosis followed by necrosis of hard and soft tissues.<sup>2,4</sup> A rapid invasion of surrounding tissues occurs which results into a large maxillofacial defect.<sup>5,6</sup> An edentulous intact ridge with a maxillofacial defect on left lateral hard palate and left buccal mucosa as a combination is challenging for the dentist to rehabilitate. Making the obturator bulb extension hollow reduces the weight and therefore aids in the retention and stability of the denture.<sup>7,8</sup>

There are many techniques for fabricating hollow bulb obturators which use sugar, salt, or alum while packing in the defect area. Matalon and LaFuente made use of sugar during the processing of the obturator, which was removed by drilling a hole. Iramaneerat et al injected argon gas into the obturator bulb. Asher et al utilized a plaster index matrix to fabricate a hollow obturator. The two-flask technique was described by El Mahdy et. al. to process the obturator and the tooth portion separately. Buzayan et al used a rigid thermoplastic splint to fabricate a hollow bulb obturator. Mc Andrew et. al. fabricated the obturator in two halves and sealed them using self-cure resin. Few authors suggested the use of polyurethane foam and acrylic resin shim while packing.<sup>9,10</sup> Various spacers such as putty<sup>11,12</sup>, modeling clay<sup>13</sup>, dental stone<sup>14</sup>, cellophane-wrapped asbestos<sup>15</sup>

have been used over the years to make the denture light-weight. O'Sullivan et. al. showed use of putty as a spacer material.<sup>16</sup> Ahmed et. al. used thermacol for making hollow maxillary denture.<sup>17</sup> Out of all these, the lost salt technique as demonstrated by Agarwal et. al. and Karia et. al. is easy, cost-effective and does not require any special equipments.<sup>7,8</sup> Hence, a simple economical lost salt technique was chosen and utilized to fabricate a removable obturator prosthesis with hollow bulb extension.

## 4 | CONCLUSION

The technique describes fabrication of a removable obturator prosthesis with hollow bulb extension that seals the oro-antral defect and restores the lost residual ridge thereby satisfying the patient's need. The lost wax technique is an easy, cost-effective technique which is simple to execute from available resources. It provides hollowness to the prosthesis and reduces weight of the prosthesis thereby aiding in retention and stability of the denture.

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## Conflict of interest

The authors have no conflicts of interest to declare

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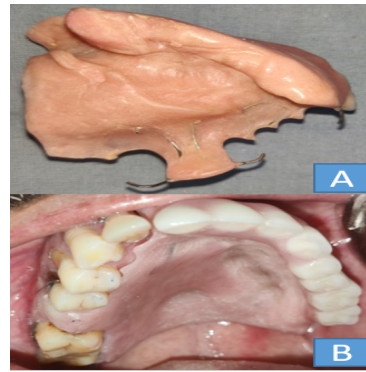
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**FIGURE 1** (A) Intraoral examination. (B) Final pick-up impression. (C& D) Lost salt technique



**FIGURE 2** (A) Acrylized hollow bulb obturator (B) Obturator inserted sealing the defect.