Acta Scientific Dental Sciences

Volume 10 Issue 6 June 2026

Case Report

Black Mustard Seeds as a Spacer for Hollow Obturator Fabrication

Kumari Deepika[1]*, Kriti Bansal[2], Shubhra Gill[3] and Rekha Gupta[4]

[1]Assistant Professor, Department of Prosthodontics and Crown Bridge, AIIMS-CAPFIMS, Maidan Garhi, New Delhi, India

[2]Private Practitioner (Prosthodontist), Tohana, Haryana, India

[3]Professor, Department of Prosthodontics and Crown Bridge, Maulana Azad Institute of Dental Sciences, New Delhi, India

[4]Professor and Head, Department of Prosthodontics and Crown Bridge, Maulana Azad Institute of Dental Sciences, New Delhi, India

***Corresponding Author:** Kumari Deepika, Assistant Professor, Department of Prosthodontics and Crown Bridge, AIIMS-CAPFIMS, Maidan Garhi, New Delhi, India.

DOI: 10.31080/ASDS.2026.10.2119

Received: April 27, 2026

Published: May 31, 2026

Abstract

This report describes a simplified and innovative technique for fabricating a hollow obturator using Indian black mustard seeds as a space-maintaining medium to reduce prosthesis weight and enhance patient comfort and function. A patient requiring maxillofacial rehabilitation was treated with a modified flasking approach in which mustard seeds were incorporated to establish the internal hollow cavity. Their biocompatibility, ease of retrieval, and ready availability enabled efficient hollowing without the drawbacks associated with conventional space maintainers. The resulting obturator demonstrated substantial weight reduction, contributing to improved retention, stability, and comfort while maintaining optimal functional performance.

This technique is cost-effective, clinically feasible, and easily reproducible, offering a practical alternative to traditional hollowing methods in obturator fabrication and representing a valuable addition to the prosthodontic armamentarium.

Keywords: Hollow Obturator; Black Mustard Seeds; Maxillectomy; Hollow Prosthesis

Introduction

Maxillary defects may be either congenital or acquired. Congenital defects such as cleft palate present early in life, whereas acquired defects most commonly arise as a consequence of surgical intervention for trauma, infection, or malignancy. Such defects can significantly compromise a patient's quality of life by causing facial disfigurement, impaired phonation, and nasal regurgitation during swallowing, difficulty in mastication, and oroantral communication [1,2]. The rehabilitation of these patients is therefore essential, not only for restoring essential oral functions but also for improving psychological well-being and social interaction.

Obturator prosthesis is widely regarded as the most practical and effective treatment modality for patients who have undergone partial or total maxillectomy [3]. It serves to restore communication between the oral and nasal cavities, thereby improving speech intelligibility, swallowing efficiency, and overall function. However, one of the major challenges encountered in the fabrication of obturator prostheses, particularly in cases involving extensive

defects, is the excessive weight of the prosthesis. Increased prosthesis weight can reduce retention and stability, making it difficult for patients to adapt to the appliance and compromising its long-term success. To overcome this limitation, several methods of hollowing obturators have been described in the literature. These include the use of different spacer or hollowing materials such as silicone putty, salt, sugar, or modeling wax [4-8]. While each technique has been reported to reduce the overall weight of the prosthesis, drawbacks such as technique sensitivity, cost, difficulty in retrieving the spacer material, or risk of leaving remnants within the prosthesis have limited their universal application. The technique presented in this report introduces the use of black mustard seeds as a novel space-maintaining medium during the fabrication of a hollow obturator. Black mustard seeds were selected because of their small, uniform size, natural availability, cost-effectiveness, and ease of elimination during the hollowing process. The following section describes the clinical and laboratory steps employed in this technique.

Case Report

A 52-year-old male patient reported to the Department of Prosthodontics seeking replacement of his missing teeth. Medical and dental history revealed that the patient had undergone a partial maxillectomy (alveolectomy) for the management of mucormycosis, which resulted in an Aramany Class IV defect (Figure 1). Various treatment options were discussed with the patient; however, due to financial constraints, he expressed a preference for a removable prosthesis. Following informed consent, a definitive removable acrylic obturator was planned. Primary impressions were made using the conventional method (Figure 2), and diagnostic casts were prepared. Subsequent procedures were carried out following standard prosthodontic protocols. The specific modifications and steps adopted for the fabrication of a hollow obturator are described below.

Figure 1: Intraoral view-Maxillary and Mandibular arch (a) Aramany Class IV Defect (b) Mandibular arch.

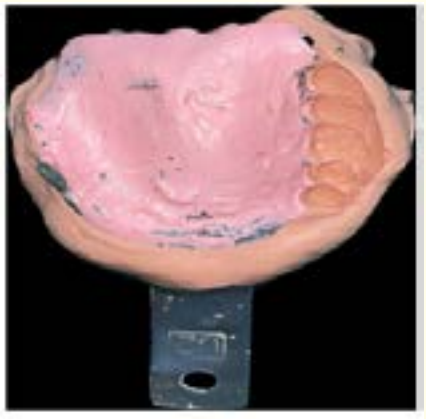

Figure 2: Final dual impression.

Technique

- Following the try-in procedure, wax-up was completed, and denture flasking and dewaxing were carried out in the conventional manner.
- During the packing stage, half of the mixed heat-cure polymethyl methacrylate (PMMA) resin in the dough stage (PYRAX; Heat Cure Denture Base Material) was placed carefully into the dewaxed mold. Black mustard seeds (Catch; Rai Whole), wrapped in a thin plastic sheet, and were then positioned over the resin to serve as a space maintainer for hollowing.
- The remaining heat-cure resin was subsequently packed over the seeds, and curing was performed in the conventional manner.
- After bench cooling, the cured denture obturator was retrieved from the flask. A small hole was created at the site where the black mustard seeds were placed, which was identifiable due to the translucency of the acrylic (Figure 3). The seeds were softened but not sticky as a result of the curing heat, thereby facilitating their easy removal.

Figure 3: Use of black mustard seeds for hollowing (a) Black mustard seeds were packed during acrylization (b) One large hole was made in the denture to retrieve seeds.

- All residual seeds and the plastic wrap were removed by maneuvering an instrument through the hole. The escape hole was then sealed with autopolymerizing resin (RR Cold Cure; DPI). The translucency of the acrylic confirmed the presence of the hollow cavity within the prosthesis, and both cameo and intaglio surfaces were finished and polished (Figure 4).

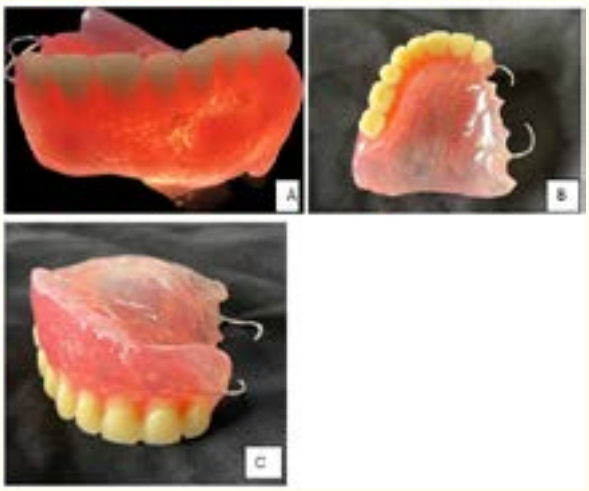

Figure 4: Hollow prosthesis (a) Light transmitting through hollow portion (b) Cameo surface (c) Intaglio surface-maxillary obturator.

- To verify the seal of the hollow cavity, the obturator was immersed in water. The absence of air bubbles confirmed adequate sealing. The final prosthesis was then inserted intraorally, and both intraoral and extraoral views are shown in Figure 5.

Figure 5: Final prosthesis (definitive obturator) (a) Intraoral view (b) Pre-op Extraoral view (c) Post-op Extraoral view.

Results

The patient expressed satisfaction with the prosthesis, and no adverse effects were reported during a follow-up period of six months.

Discussion

The rehabilitation of maxillary defects with obturator prostheses is a well-established treatment modality that restores function, esthetics, and overall quality of life. However, the success of such prostheses is often influenced by their weight, particularly in cases involving extensive defects, where excess bulk may compromise retention, stability, and patient comfort. To address this issue, hollow obturator designs have been advocated [4-7]. It has been reported that hollowing can reduce prosthesis weight by 6.55% to 33.06%, depending on the size of the defect [8]. Various techniques have been described to achieve hollowing, including the use of sugar, salt, polyurethane foam, sponge, and gas injection with argon gas for fabricating a one-piece hollow bulb obturator [9-11]. While these methods can effectively reduce prosthesis weight, they are often technique-sensitive, time-consuming, and may require additional laboratory resources. Furthermore, certain spacer materials are difficult to retrieve completely, raising concerns regarding residual remnants within the prosthesis, which could compromise hygiene and function.

The present technique introduces the use of black mustard seeds as a novel space-maintaining medium during flasking and packing. Their small, spherical, and uniform size allows for even distribution within the mold. In addition, black mustard seeds are

inexpensive, readily available, and easily retrievable after curing, as they soften but do not become sticky under heat. Wrapping the seeds in a thin plastic sheet further facilitates complete removal and prevents any residue from remaining within the prosthesis. This approach offers several advantages: it is simple, economical, and requires no specialized equipment or materials beyond those routinely available in a dental laboratory. The resultant prosthesis is significantly lighter, thereby enhancing retention, stability, and patient comfort. In this case, the seal of the hollow cavity was successfully verified using water immersion, confirming the integrity of the prosthesis. The clinical outcome was favourable, with the patient reporting satisfaction in terms of comfort, function, and esthetics. No adverse effects were observed during six months of follow-up, suggesting that this method provides a reliable and practical alternative to more complex or costly hollowing techniques.

Conclusions

From the present technique, it can be concluded that commonly available household granulated seeds, such as black mustard seeds, may serve as an effective space-maintaining medium for the fabrication of hollow obturators. These materials are inexpensive, readily available, and easy to retrieve, making the technique simple, economical, and reproducible in routine dental practice. Nevertheless, further long-term clinical studies are warranted to validate the efficacy of this technique and its potential for wider application.

Conflict of Interest

There is no conflict of interest of any of the authors about its publication.

Disclosure

AI Technology was used here for improving the English language of the manuscript.

Patient Consent

"Written informed consent was obtained from the patient prior starting the case".

Data Availability Statement

Data cannot be shared for confidentiality/ethical reasons.

Funding Declaration

The authors declare that there was no financial support for this case report.

Bibliography

1. Chigurupati R., *et al*. "Quality of life after maxillectomy and prosthetic obturator rehabilitation". *Journal of Oral Maxillofacial Surgery* 71 (2013): 1471-1478.

2. Corsalini M., *et al*. "Obturator Prosthesis Rehabilitation after Maxillectomy: Functional and Aesthetical Analysis in 25 Patients". *International Journal of Environmental Research Public Health* 18 (2021): 12524.

3. Mallick R., *et al*. "A systematic approach to rehabilitation for hemimaxillectomy patient". *Journal of the International Clinical Dental Research* 12 (2020): 72-77.

4. Matalon V and LaFuente H. "A simplified method for making a hollow obturator". *Journal of Prosthetic Dentistry* 36 (1976): 580-582.

5. Parel SM and LaFuente H. "Single-visit hollow obturators for edentulous patients". *Journal of Prosthetic Dentistry* 40 (1978): 426-429.

6. Chalian VA and Barnett MO. "A new technique for constructing a one-piece hollow obturator after partial maxillectomy". *Journal of Prosthetic Dentistry* 28 (1972): 448–453.

7. Aggarwal H., *et al*. "Lost salt technique for severely resorbed alveolar ridges: An innovative approach". *Contemporary Clinical Dentistry* 3 (2012): 352-355.

8. Haroub AO., *et al*. "Techniques of hollow maxillary dentures: a literature review". *International Journal of Community Medical Public Health* 8 (2024): 4111-4115.

9. Wu YL and Schaaf NG. "Comparison of weight reduction in different designs of solid and hollow obturator prostheses". *Journal of Prosthetic Dentistry* 62 (1989): 214-217.

10. Sridevi JR., *et al*. "Techniques for fabricating hollow obturator: Two case reports". *SRM Journal of Research in Dental Sciences* 5 (2014): 143-146.

11. Banik A., *et al*. "Fabrication of Hollow Maxillofacial Prosthesis Using Three Different Methods-A Case Series". *International Journal of Medical Science and Current Research* 4 (2021): 485-489.