

# A Simple Flask Extension Technique for Processing of Obturators: Clinical Technique

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## ABSTRACT

Obturators are prostheses that are used to rehabilitate maxillary defects. The lateral wall height of the obturator is an important aspect that affords the prosthesis with retention and stability. To overcome the difficulty faced with the use of readymade denture flasks in accommodating this height during processing, a simple flask extension technique using self-cure acrylic resin is described here. This procedure is reversible, does not require any special equipment, and can be used routinely in dental laboratories.

**Keywords:** Acrylic resins, Maxillofacial prostheses, Palatal obturator, Prosthesis retention.

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## INTRODUCTION

Maxillary defects resulting from trauma, pathology, surgery, and congenital or developmental causes can lead to functional and aesthetic deficits in patients. These mainly include hypernasality of speech, nasal regurgitation, and poor masticatory ability due to the loss of anatomical boundaries.<sup>1</sup> Prosthetic rehabilitation in these situations involves the fabrication of obturator prostheses that reestablish the anatomical demarcations and tissue contours necessary for normal function and esthetics. Obturators can be classified as immediate surgical, delayed surgical, interim, and definitive based on the phase of treatment.<sup>1-3</sup> Obturators usually involve a bulb portion which may or may not be hollowed out. This portion can further be left open or closed each with its own advantages and shortcomings.<sup>1-3</sup> Although newer digitally aided fabrication methods are available, these prostheses are commonly fabricated in heat cure acrylic by the compression molding technique.

The height of the lateral wall of the prosthesis designed to buttress against the superior-lateral portion of the defect is an important feature that substantially improves retention by reducing the amount of vertical displacement.<sup>4</sup> The denture flasks sometimes may not have sufficient height to accommodate the master cast and wax pattern during processing. The technique described here involves a simple procedure to increase the height of the flask to enable laboratory processing of obturators.

## TECHNIQUE REPORT

Maxillectomy cases reported to the Department of Prosthodontics were evaluated clinically and treatment planning was done. Depending on the case the obturator design was different for each patient. The clinical steps of impressions, jaw relations, and wax trial were carried out in the conventional manner. The obturators which did not fit into the denture flask due to the increased height of the bulb were processed by using the modified flask as described below.

The master cast with the wax pattern was trimmed laterally to ensure fit into the flask. The height of the same was evaluated by assembling the parts of the flask (Varsity flask, Jabbar and Company, India) together leaving the lid off. The amount of height increase

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necessary to accommodate the cast, the waxed-up pattern, and space for the investment medium was noted. The cope part of the flask was coated with a thin layer of petroleum jelly over the lower rim. Self-cure acrylic (DPI RR Cold Cure, DPI, and India) was mixed in a porcelain jar and allowed to reach the dough stage. It was then finger-moulded and placed over the rim of the drag part of the flask ensuring an approximately even height all around the circumference and an extension of 2-3 mm along the sides of the drag. The material flowed around the rim to form a mechanical seal with the drag as it set. While the material is still in the dough stage, the cope part ensuring parallelism with the drag was placed over the setting acrylic to obtain an imprint of 2-3 mm depth necessary to reposition the parts. The new height was checked at this stage after the acrylic was set. The acrylic becomes a part of the drag and affords the increased height necessary. Processing was carried out in a conventional manner using the extended flask height with the cast and wax pattern occupying the first pour in the drag. The cope was assembled on top and the second pour was made. The lid was placed on top and the assembly was placed in the clamp. A double flask clamp may be necessary to accommodate the increased height. Cross-section of the flask is shown in [Figure 1](#). Dewaxing, packing, and curing proceeded as usual. A few obturators processed by this method are shown in [Figures 2 to 4](#). Post-processing finishing, and polishing were carried out before obturator insertion. The patients were satisfied with their prosthesis and instructed on its use and maintenance.

## DISCUSSION

One of the important modes of retention and stability in obturators is the selective engagement of anatomical undercuts and the height of the lateral wall.<sup>1-3</sup> The lateral height also provides support to the extra-oral and peri-oral musculature.<sup>3</sup> However, it must be kept in mind that this height should not be so much as to interfere with prosthesis insertion and removal.<sup>3</sup> This lateral wall height can

cause difficulty in processing when using routine denture flasks which are only available in a few standard sizes. Although custom-manufactured flasks for maxillofacial prosthodontic use can be procured, the method described here offers a simple solution for this issue. Also, this process is reversible as the acrylic extension can be broken off. This technique can be applied irrespective of whether open bulb, closed bulb or hollow bulb design is used.

The limitation of this technique is that if not meticulously done there can be a lack of proper seal between the segments and resultant porosities in the prosthesis. Although porosities in denture base resins are of a multifactorial nature, improper seal between the parts may play a role in it due to water seepage and improper pressure distribution in the flask.<sup>5</sup> This can be further evaluated by laboratory and clinical studies. Another error to look out for is the alteration of vertical dimension due to the dimensional stability of the two acrylic resins used in the process, and processing changes in tooth position.<sup>6,7</sup> Remounting procedures may help in reducing these errors during insertion.

Recent rapid prototyping innovations in maxillofacial prosthetics, have made life easier by eliminating the conventional processing steps that generally have a slow learning curve and are technique-sensitive.<sup>8</sup> However, these technologies are

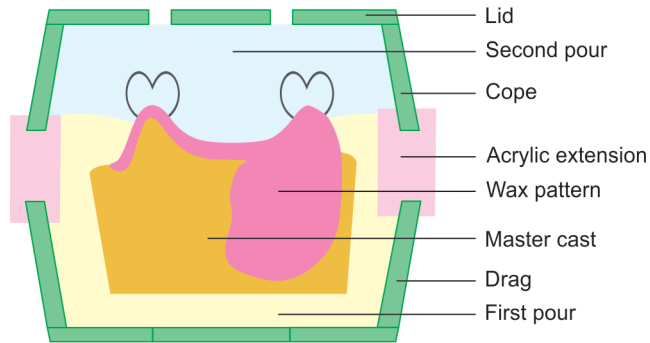
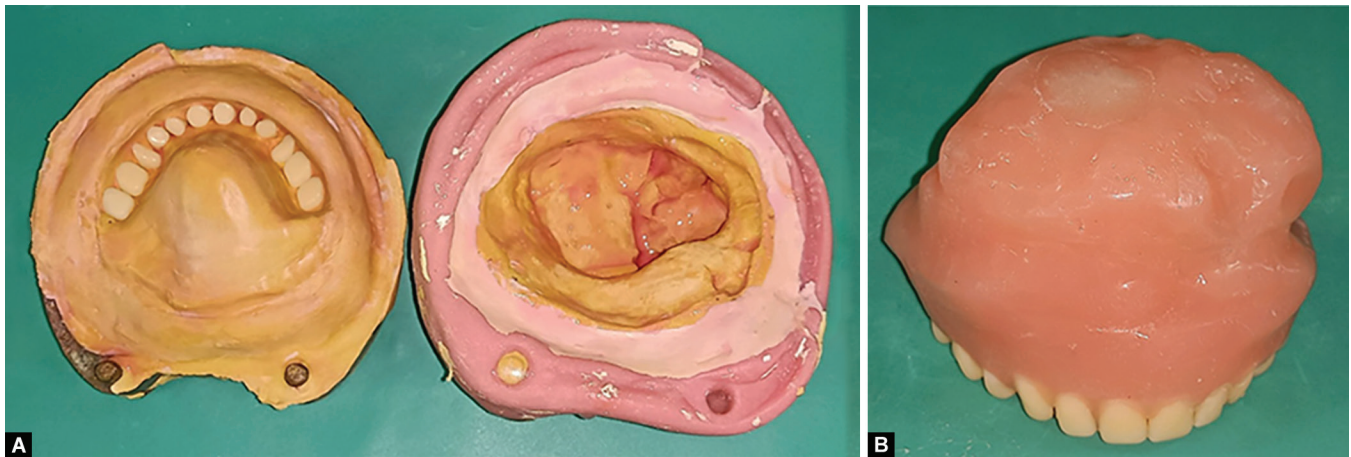
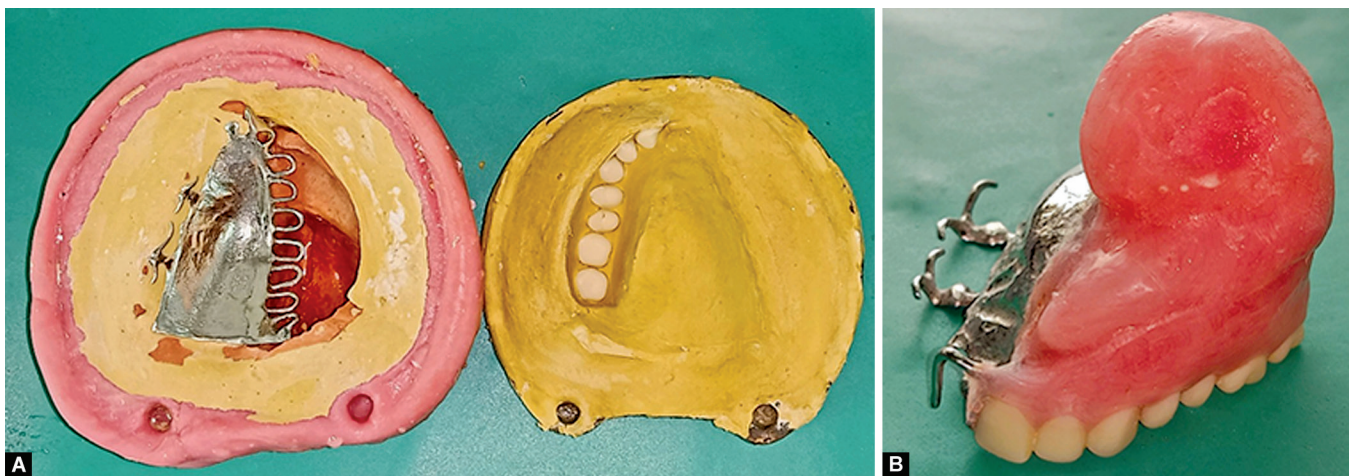


Fig. 1: Cross-section of the flask

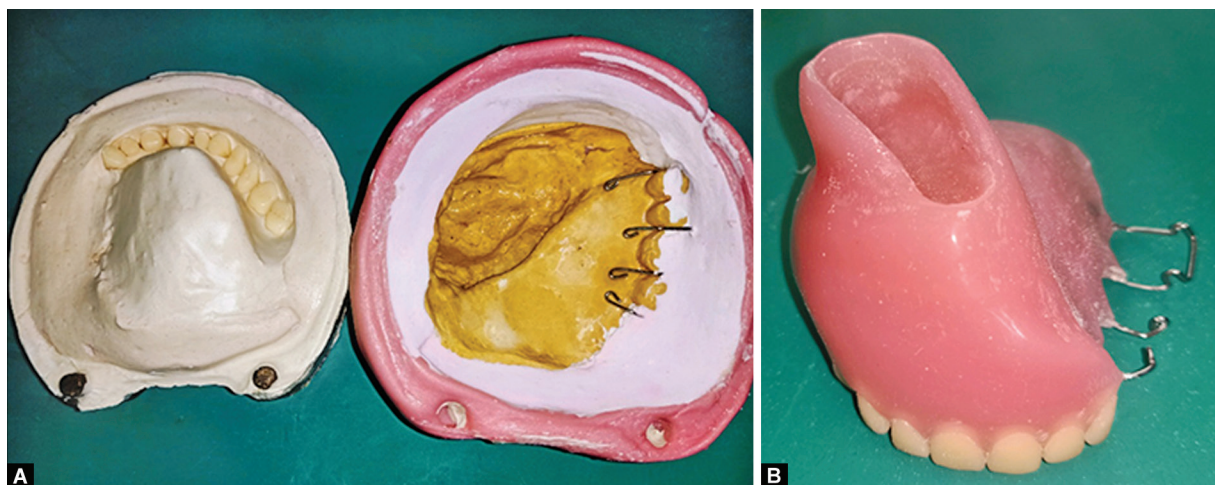


Figs 2A and B: (A) Flask portions after dewaxing; (B) Processed hollow closed bulb obturator for a bilateral maxillary defect



Figs 3A and B: (A) Flask portions after dewaxing; (B) Processed hollow closed bulb obturator with cast metal framework for a unilateral maxillary defect





**Figs 4A and B:** (A) Flask portions after dewaxing; (B) Processed open bulb obturator for a unilateral maxillary defect

not cost-effective on a small scale and may not be commonly accessible, especially in the public health sector. In these scenarios, improvisation of the available equipment goes a long way in providing quality prosthetic care to these patients.

## CONCLUSION

This technique can be used for the processing of obturators that do not fit into the readymade denture flasks by a slight modification of the same. It does not require any special equipment and provides a good prosthetic outcome. This can serve as a boon in maxillofacial prosthodontic specialty clinics and their laboratories that are regularly involved in the processing of obturators.

## Clinical Significance

This simple technique can be routinely used for obturator processing when there is a height restriction in the readymade denture flasks.

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