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Research Paper

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A Single Piece Hollow Bulb Obturator for Completely Edentulous Hemi-Maxillectomy Case

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ABSTRACT

Maxillectomy defects result in the formation of an opening between the oral cavity and the antrum and/or the nasopharynx. These defects are tremendously inconvenient to the patient because of the loss of oronasal separation which substantially interferes with the important functions such as speech, swallowing, deglutition and mastication. A comfortable, cosmetically acceptable obturator prosthesis that restores the impaired physiologic activities is a basic objective of prosthodontic care. In most cases, after a maxillary resection (hemi-maxillectomy), it is a desirable option to prepare an obturator over the affected area. As the weight of the obturator can cause a problem in retention of the prosthesis, it must therefore be as light as possible. This case report demonstrates the steps including clinical and lab procedures involved in fabricating hollow bulb obturator of heat-cure acrylic and cold-cure acrylic shim without the use of special flasks.

INTRODUCTION

The successful prosthetic rehabilitation of the edentulous post maxillectomy patient is a challenge for the prosthodontist1. Maxillary resection surgery results in an unusual morphology of the remaining maxillary arch, where significant parts of the denture foundation are missing and a communication between the oral and nasal cavities exists[1,2]. Without the assistance of the natural teeth or implants, fabricating a stable and retentive obturator with proper support is particularly difficult[3].

Maxillofacial defects result in facial disfigurement, thus leading to psychological problems. This in turn, create great difficulty in facing and accepting the social consequences. Basic prosthodontic principles are followed during the fabrication of an obturator prosthesis, while taking extreme care of the more resilient and unsupported tissues. Some principles need to be modified according to the defect, the condition and the position of the remaining structures. The defect, in conjunction with the remaining structures, must be used to provide support, retention, and stability to the prosthesis[8].

It is more difficult to treat the acquired palatal defects in edentulous patients, as no natural teeth are present to take support from. As per Aramony[4], the partially edentulous palatal defect patients are classified as per Kennedy's classification and are treated successfully by taking support from the remaining natural teeth[4]. In fully edentulous patients where the support is taken only from the remaining bone[7]& mucosal tissues, it is always mandatory to take care of what is remaining, while keeping in mind what is lost.

A simple technique of the fabrication of the one piece closed hollow bulb obturator prosthesis to rehabilitate a unilateral palatal defect, is illustrated here.

CASE REPORT

A male patient aged 72 years, who had undergone surgery for a maxillary tumour on the left side of the maxilla(fig1), reported to the Department of Prosthodontics for the restoration of the palatal defect. The defect extended from the buccal mucosa to the midpalatine region, medially and anteriorly from the central incisor region to the posterior extent of the hard palate, involving some part of the soft palate(fig2).

The patient presented with an obvious and typical nasal twang and he was experiencing difficulty in speech and deglutition. Besides, the patient needed a denture to restore his lost teeth and an obturator which would overcome his defect and make things easier for him in terms of mastication and communication.

On examination, it was found that the left half of the patient's face was disfigured, thereby stretching the left labial and the nasal regions. It was clearly evident that the oral tissues, the palatal bone and the remaining residual ridge were incapable of supporting the prosthesis. Owing to such unfavourable conditions, it was necessary to plan a prosthesis that would be light and easy to wear. The weight of the prosthesis could jeopardize the retention & stability, health of the tissues and compromise the function of the prosthesis. So a single piece hollow bulb obturator was planed with an autopolymerizing resin shim[5] incorporated in it to make it light weight. The method is illustrated bellow.

METHODS

After medical and dental examination, irreversible hydrocolloid impressions (fig3,4) were made for both upper and lower arch and primary cast were prepared. Then on primary casts special tray were made and final wash impressions was made, upper arch with elastomer and for lower arch with zinc oxide eugeonal impression paste. (fig5,6).

Then master cast were prepared with type-III dental stone (fig7). Then temporary denture base was constructed on each arch and jaw relation was obtained with face bow transfer and mounting was done. Teeth arrangement was done with taking esthetics an phonetics as criteria. Try in was done (fig8).

Then demounting of cast from articulator was done and flasking was done in as usual manner (fig9). The flask was kept in boiling water and dewaxing was done(fig10). Blocking out of the defect of the cast was done(fig11). The entire defect was relived with one thickness of modeling wax (fig12). Three tissue stops were made of 3mmx3mm which should be deep enough to reach the stone of the cast(fig12). One layer of modeling wax was placed on opposite half of flask that will form the rough of shim, that will provide space for the heat cure resin to form the palatal part of denture. Self cure resin was packed in the defect in dough stage and the flask was closed and kept for curing. After completion of curing the flask was opened and the wax is flushed out with hot water. The shim was retrieved and finishing and polishing was done(fig13). The finished shim was tried in the defect for fitting and necessary adjustments were done(fig14). The heat cure resin was mixed and packed in defect with shim in between them. Curing was done in usual manner. The finished denture was retrieved, finishing and polishing was done (fig15) and tried in oral cavity(fig16).

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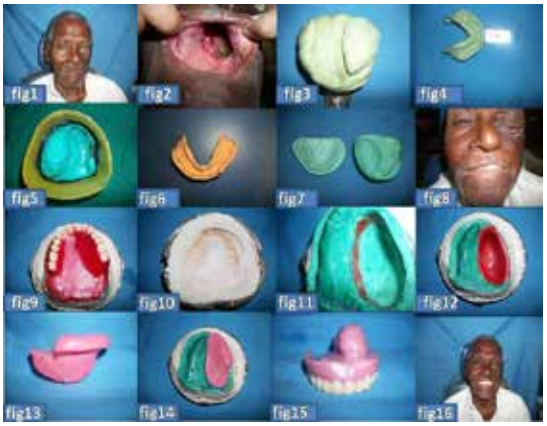
Figure attach here.



DISCUSION

The single piece hollow bulb obturator has advantages over the other treatment modalities like-

- The weight of prosthesis is reduced.
- There is no line of demarcation between the bulb and denture so chances of fracture and staining is low.
- The bulb of the obturator can be adjusted as there is sufficient thickness of acrylic material.

As with all procedures it has also few disadvantages like

- This procedure can be used when there is absence of sever undercuts in defect.
- Complicated procedure compared to solid bulb obturator procedure.

CONCLUSION

Though it is diffcult to improve the quality of life for hemimaxillectomy patients compared with patients with conventional prostheses, this can be achieved with skill, knowledge and experience of specialists. The problem experienced by hemimaxillectomy patients are reduced if a team approach is adopted and specialists are careful to apply skill and experience at all stages and keep the patient under regular review6.Finally when the patient received and inserted the obturator, his aesthetic appearance and self-confidence improved dramatically.

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