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CASE STUDY

PALATAL OBTURATOR PROSTHESIS

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ABSTRACT

Management of the patient with congenital or acquired defect of palate is a new era in prosthodontics. Rehablitation with lighter obturator is a burning topic of research and practice as well. Depending on their origin, two groups for such defects can be congenital and acquired, which may result due to some injury or surgery. Such defects vary as far as etiology, location, and size are concerned. The size of the defect may vary from small to large, which may include parts of the hard and soft palate, alveolar bone, floor of the nasal cavity, maxillary sinus and may extend up to floor of the orbit and zygomatic complex. In general, such defects can be prosthodontically rehabilitated by prosthesis called obturator. The obturator is a disc or plate, natural or artificial, which closes an opening or defect of the maxilla as a result of a cleft palate or partial or total removal of maxilla for tumor mass. The obturator can be of different types and designs depending on the defect to be restored. This article reviews various aspects related to obturator prosthesis and elaborates the procedure of making an obturator as well.

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INTRODUCTION

Treatment for cancers in the head and neck region commonly involves a surgical stage. When the disease affects the upper jaw, the surgical treatment (partial or total maxillectomy) often results in communications between the oral cavity and nasal/sinus cavities. Patients with oral-nasal/sinus communication face several problems, including fluid reflux through nasal cavity as well as difficulty in chewing, eating up and speaking, with an immediate reduction in the quality of life. (Machado *et al*., 2016) Maxillary defects diminish patient's quality of life significantly. In these cases, obturator prosthesis is often the preferred treatment option because of difficulty in surgical reconstruction. Maxillofacial prosthesis is still indicated in most maxillectomy patients, after surgical reconstruction.The most important purpose of prosthetic rehabilitation is the preservation of residual teeth and tissues and separation of nasal and oral cavities. (Baharami and Falahchai, 2017) The name obturator is derived from the Latin verb "obturare" which means close or to shut off. The obturator fulfills many purposes. It can keep the defect area clean.It can help to reshape and reconstruct the palatal contour and/or soft palate. It also improves speech or, in some instances, makes speech possible. Hollowing of the obturator lightens the prosthesis and makes it more comfortable for use. (Kharade *et al*., 2014) This case report describes a technique for assembly of a hollow bulb obturator prosthesis for a vivid appearance of the prosthesis for a maxillectomy patient.

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Case report

A 52 year old male patient reported with the principal complaint of difficulty in having food and drinking water due to the post operative defect in his maxilla on the left side. The patient was suffering from Squamous Cell Carcinoma 5 years backward and got operated for the same. After clinical examination it was decided to fabricate definitive obturator. The defect was more like Aramany class IV compromised by the absence of Teeth left quardant. The soft palate was not affected by resection.Treatment plan included fabrication of a hollow bulb obturator.

Procedure

A perforated stock tray was selected for making the primary impression. The stock tray was modified using impression compound corresponding to the area of the defects. (Fig. 1) The upper impressions were made using irreversible hydrocolloid taking care to block out defect undercuts with petrolatum laden gauge. The impressions were poured using ADA Type 4 die stone) and diagnostic casts were obtained (Fig. 2). A special custom tray covering the defect and the remaining teeth was fabricated using auto polymerizing acrylic resin and a uniform spacer was given. The defect site was border molded using high and low fusing compound and retentive holes were

prepared for the final impression material. Final impression was made with irreversible hydrocolloid (Fig. 3). The impression was poured in die stone. A master cast was obtained and blocked out with plaster to ensure retention from lateral and posterolateral undercuts. Occlusal rims was fabricated on the temporary record bases. A jaw relation record was taken with the help of modelling and soft carding wax. The master cast was mounted on a three point articulator. (Fig. 4) After teeth arrangement, try in was done. And the patient was satisfied with the appearance (Fig. 5). (Kharade *et al*., 2014) Characterization was done using different stains before the final heat cure resin packing of the obturator for life like appearance of the prosthesis. Different colored tabs were prepared by the addition of pigments for shade toning of the resin with the related marginal and attached gingiva. Heat cure resin was then packed and flasks were closed properly and clamped. This unit was subjected to the regular curing cycle. Following deflasking procedures, the prosthesis was trimmed, finished, polished. Remaining bulb portion was filled with salt to make it hollow. It was inserted into the patient's mouth and minor adjustments were done. The prosthesis was checked for proper seating of the components (Fig. 6, 7). Post insertion follow-up and patient care were carried out for a period of one year, which revealed that the patient was thoroughly satisfied and extremely comfortable with the functioning and the aesthetics.

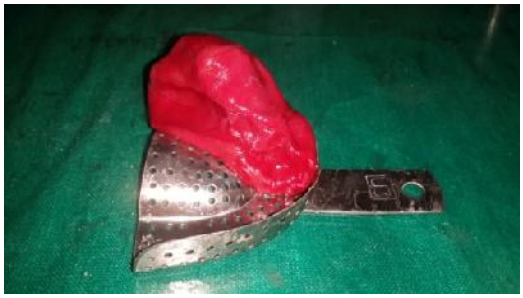

Fig. 1. Modified stock tray for primary impression

Fig. 2. Diagnostic cast

Fig. 3. Border moulding & secondary imprssion made

Fig. 4. Jaw relation

Fig. 5. Try in

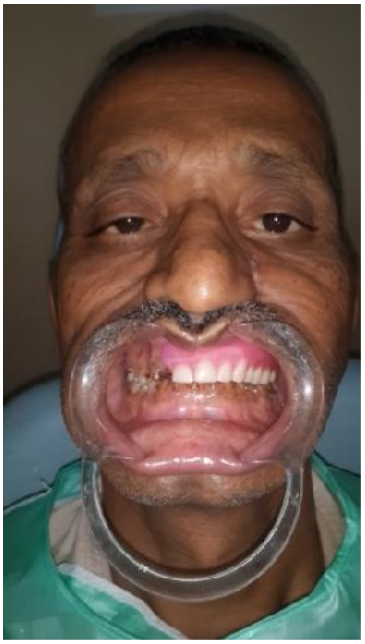

Fig. 6. Denture insertion intra-orally

Fig. 7. Final denture

DISCUSSION

Maxillectomy patients suffer from functional as well as facial deformity so role of a prosthodontist comes into play to restore function and esthetics. The primary goal of the treatment of maxillectomy defect is to give a prosthetic obturation which closes the defect and separates the oral cavity from the sinonasal cavities. (Rani *et al*., 2017) Desjardins, reported the problems faced by the patient immediately following maxillary resection such as inability to speak, difficulty in deglutition, nasal reflux, aesthetic impairment, psychologic disturbance. (Nazir *et al*., 2013) Patients with intraoral disability resulting from maxillectomy complain about swallowing difficulties and fluids reflux through the nasal cavity accompanied by speech/communication difficulties. (Machado *et al*., 2016) Successful reconstruction of speech and swallowing after maxillectomy relies on using maxillary obturator. Favorable rehabilitation should be planned at the time of tumor surgery in order to design the obturator ideally. Mobility of conventional obturator results in disability in function. In dentate patients, these requirements are achieved by using the remaining teeth, their retentive undercuts, and supportive area of defect. However, fabrication of conventional maxillary obturator may be more challenging in edentulous patients, because the obturator may display different amounts of movement depending on the amount and contour of residual palatal shelf, height of residual alveolar ridge, size of defect, and existing undercuts. (Baharami and Falahchai, 2017) Closed-hollow-bulb-design was selected for this patient. This has some advantages including decreasing weight, preventing retention of nasal secretion, and foods in the bulb and reducing air space in defect. An ideal obturator should be comfortable, solve speech difficulty, prevent nasal reflux, restore masticatory function, and provide esthetic. In order to provide speech ability and adequate resonance, an appropriate peripheral seal is essential and obturator should prevent air escape from maxillary defect (Baharami and Falahchai, 2017). Functional impression method was used in the presented case in order to achieve these goals.

Conclusion

Living with such a defect causes a lot of psychological trauma to the patients due to impaired aesthetics and functions. Hence, we as prosthodontists must try to restore the lost form and function of the oral and peri-oral structures that will enable the patient to live a normal human life. Prosthetic rehabilitation not only restores aesthetics and functions but also boosts patients morale. In the present case, this closed hollow bulb obturator restores the functions like speech, mastication and deglutition. It also improves the resonance of sound with subsequent improvement in quality of speech.

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