Case Report

University J Dent Scie 2024; Vol. 10, Issue 1

Surgical Obturator to Rehab Patient with Hemimaxillectomy: A Case Report.

Abstract:

Congenital malformation, trauma and surgical treatment of benign or malignant neoplasms create maxillary defects. The size and location of the defects play an important role about the degree of impairment and difficulty in prosthetic rehabilitation. Maxillectomy patients suffer from lack of support, retention, and stability of prosthesis. An obturator is a prosthesis used to close a palatal defect in a dentate or edentulous mouth. The surgical maxillary obturator prosthesis helps in the restoration of normal speech and eating habits of the patient. It also prevents the soft tissue collapse on the affected side. Thus, the facial symmetry will be preserved. It also helps to retain the space for future interim and definitive prostheses. Thus, it improves the mental well-being of the patient considerably. This clinical report describes the prosthetic rehabilitation of a maxillary defects with a surgical obturator which was given immediately following surgery.

Key-words: Maxillectomy, maxillary defect, prosthetic rehabilitation, surgical obturator.

Introduction:

Maxillary defects may be divided into two types, congenital defects and the acquired defects (resulting from surgery for oral neoplasms or trauma). The opening maybe small or it may include any portion of the hard and soft palate, the alveolar ridges, and the floor of the nasal cavity.[1,2,3] Hyper nasal speech, fluid leakage into the nasal cavity, and impaired masticatory functions are the various difficulties caused by post surgical maxillary defects. The maxillofacial-prosthodontist has two primary objectives during rehabilitation of such defects i.e: to restore the masticatory functions, deglutition, and speech and to achieve normal oro-facial appearance. The prostheses need to repair the defect is termed as a maxillary obturator. An obturator (Latin: obturate, to stop up) 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 the maxilla for a tumour mass[3] Prosthodontic rehabilitation for patients with acquired surgical defects of maxilla can be divided into three phases of treatment with each phase having different objectives[2]. The surgical obturator, temporary or interim obturator and definitive obturator are the three types. Surgical obturator is a base plate type appliance which is constructed from the pre-operative impression cast and inserted at the time of resection of the maxilla in the operation the atre. An surgical obturator may also be used to act as a framework over which tissues may be shaped by the surgeon, to serve as a temporary prosthesis during the period of surgical correction It can be used to restore a patient's cosmetic appearance rapidly for social contacts; when cosmetic surgical primary closure is contra-indicated(i.ewhen the patient's age contraindicates further surgery; when the size and extent of the deformity contraindicates surgery; when the local avascular condition of

Access this article online

Website: www.ujds.in

Quick Response Code

DOI: https://doi.org/10.21276/ujds.2024.10.1.11

[1]MANDIRA GHOSH, [2]BAISAKHI MALLICK
[1-2]Department of prosthetic Dentistry,
Dr. R. Ahmed Dental College and Hospita, Kolkata

Address for Correspondence: Dr. Baisakhi Mallick
Assistant Professor
Department of Prosthetic Dentistry,
Dr. R. Ahmed Dental College and Hospital, Kolkata
Email- mallickbaisakhi2@gmail.com

Received : 6, Sep. 2023, **Published :** 15 May, 2024

How to cite this article: Baisakhi, B. M. (2024). Surgical obturator to rehab patient with hemimaxillectomy-a case report. UNIVERSITY JOURNAL OF DENTAL SCIENCES, 10(1).

the tissues contraindicates surgery; when the patient is susceptible to recurrence of the original lesion[4]. The surgical obturator also provides a matrix on which the surgical packing can be placed It reduces oral contamination of the wound during the immediate post-surgical period and may thus reduces the incidence of local infection. It enables the patient to speak more effectively by reproducing normal palatal contours and by covering the defect. It permits deglutition; thus, the nasogastric tube may be removed at an earlier date. It lessens the psychological impact of surgery by making the post-operative course easier to tolerate. The patient is reassured that rehabilitation has begun. It may reduce the period of hospitalization. If desired, artificial anterior teeth may be added for aesthetics, so that when the patient recovers from the operation, the teeth and facial appearance are psychologically comfortable. Thus, it boosts up the mental well-being of the patient[5].

There are several principles relative to the design of surgical obturators[2].The majority of maxillary defects can be rehabilitated with a conventional simple obturator prosthesis that uses various clasps as retention components[1,6]. The obturator should terminate short of the skin graft-mucosal junction. It should be kept simple, lightweight and inexpensive. For dentate patients it may be perforated at the interproximal extensions with a small dental bur to allow the obturator to be wired to the teeth at the time of surgery. Normal palatal contours should be reproduced to facilitate post operative speech and deglutition. Posterior occlusion should not be established on the defect side until the surgical wound is well healed. In some patients, the existing complete or partial denture may be adapted for use as an immediatesurgical obturator. In edentulous patients, the existing prosthesis should be inspected carefully to ensure that it will adequately obturate the surgical defect. Often it is necessary to extend the prosthesis with auto polymerizing acrylic resin to cover the margin of resection on the soft palate. After the prosthesis is adjusted, it is relined with an intermediate reline material. It is then wired or pinned to the alveolar ridge or zygomatic arches and/or anterior nasal spine and sometimes circumzygomatic and frontal wiring is employed to support the affected side. Clear acrylic resin is used so that the extensions and possible pressure areas can be more easily visualized during surgery.

Case report:

A 51 yearsold women came to the Department of Prosthodontics and crown and bridge with a palatal swelling in the right side of her hardand soft palate.Her pathological reports were showing that she was diagnosed with a squamous cell carcinoma. She also informed that she would undergone surgery one week later. After the history taking and primary examination of her oral cavity an alginate impression was taken for her upper and lower arches and diagnostic cast was made with dental stone. Then her surgeon was consulted and he marked the surgical site over the cast (Fig1).Then mock surgery was performed over the cast(Fig 2).Then wax pattern was made over the prepared cast. C clasp was given to the tooth adjacent to the operating site. Then the wax pattern was made over the cast and teeth setting was done .Only anterior and few posterior teeth were given as not much masticatory load was given over the unhealed operating site. After that flasking, dewaxing was done. After acrylization with heat cure acrylic resin, obturator was retrieved from the flask by deflasking procedure. Then finishing and polishing of the prosthesis was done. Then some retentive loops were made with stainless steel wire and they were insertedon the intaglio surface of the obturator with cold cure acrylic resin. These retentive loops not only provide retention but also, they help to retain surgical pack within the defect immediately following surgery((Fig 3,4).During the day of hemi maxillectomy surgery after the lesion was excised(Fig 5) the surgical obturator was inserted immediately into the patient's mouth(Fig 6)after doing certain modifications of the prosthesis. For accurate adaptation these modifications was doneusingauto polymerizing acrylic resin and soft dental reliners. During discharge of the patient(Fig 7), she was instructed to come for periodic check-up.

Fig 1:Marking of the surgical site over the cast

Fig 2:Mock surgery performed over the cast

Fig 3:Cameo surface of surgical obturator

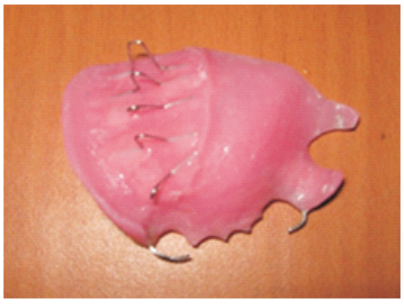

Fig 4:Intaglio surface of surgical obturator

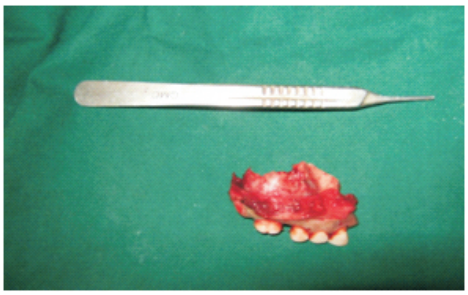

Fig 5: Intaglio surface of surgical obturator

Fig 6: Intaglio surface of surgical obturator

Fig 7: Intaglio surface of surgical obturator

Discussion:

The goals of prosthetic rehabilitation for total and partial maxillectomy patients include separation of oral and nasal cavities to allow adequate deglutition and articulation, possible support of the orbital contents to prevent enophthalmos and diplopia, support of the soft tissue to restore the midfacial contour, and an acceptable aesthetic result[7].The conventional removable obturator framework design uses various clasps as retention components[1,8]. Increasing retention often requires deepening the dental undercut or increasing the supra bulge[9,10]. The residual maxillary form (i.e, amount and contour of the remaining palatal shelf, height of the residual alveolar ridge, configuration and size of the defect, availability of undercuts) affects the degree of obturator movement. The position and periodontal status of abutment teeth are very important factors that contribute to the absorption of stress generated by functional movement of the obturator prosthesis and play an essential role in retaining and stabilizing the prosthesis[11].This prosthesis is effective in providing an artificial palate separating the oral and nasal cavities and it also helps the patient to take food orally as opposed to enteral feeding when an oronasal communication exists.

Conclusion:

The maxillofacial prosthodontist restores the function and aesthetics in the patients with gross defects of the maxilla by providing valuable and often dramatic service. Patient with hemi maxillectomy demonstrate a unilateral defect, which is to be restored with obturator to aid in speech, esthetics and for normal function. Success of the prosthesis is greatly dependent on its ability to withstand the various forces acting on it. The residual tissues of the defect area help in counteracting these displacing forces, in addition to the properly designed components of the prosthesis. Depending on the amount and nature of the residual tissues, the retention and stability achieved in prosthesis could vary from optimum to maximum. In the present case, the above-mentionedmethods have been utilized to its mmaximum, in restoring a partial maxillectomy defect. This improved retention and stability of the prosthesis will serve the patient for many years. However, clasps have a low capacity for retention, and plastic deformation caused by cycles of insertion or removal may also lead to a rapid loss in retention that results in air and liquid leakages between operating site and prosthesis. This also produces discomfort to the patient[11].So a definitive prosthesis is required to achieve optimum results in future. Though it is difficult to improve the quality of life for hemi maxillectomy patients compared with

patients with conventional prostheses, this can be achieved with skill, knowledge and experience of prosthodontists. The problem experienced by hemi maxillectomy patients are reduced if a team approach including surgeon, prosthodontists, periodontists, psychiatrists is adopted and specialists are careful to apply skill and experience at all stages. The periodic recall of the patient also plays a crucial role for the success of the prosthesis.

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