International Journal of Healthcare Sciences ISSN 2348-5728 (Online)
Vol. 3, Issue 2, pp: (537-540), Month: October 2015 - March 2016, Available at: www.researchpublish.com

Fabrication of a Surgical Obturator in a Patient of Squamous Cell Carcinoma with Reduced Mouth Opening

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Abstract: **Surgical defects resulting from maxillectomy vary in size from small perforations of hard and soft palate to complete removal of these structures. Squamous cell carcinoma with a exophytic growing lesion presenting with limited mouth opening further results in difficulties in rehabilitation of such patients producing functional disabilities, with compromised esthetics, mastication and deglutition. This article presents a technique for fabrication of surgical obturator for such patients by modification of impression tray, which provides support to soft tissues after surgery and minimizes scar contracture and disfigurement.**

Keywords: **Limited mouth opening , Maxillectomy, surgical obturator.**

I. INTRODUCTION

Treatment for oral neoplasms involves aggressive resection in head & neck region to obtain a better survival rate, leaving the patient with a defect that compromises functional integrity. After tumor resection, prosthodontic rehabilitation of patient by fabricating & placing a surgical obturator is complicated by limited oral opening as a result of postsurgical scarring, trismus and fibrosis of the muscles of mastication after radiation therapy, or a combination of these factors[1,2,3]. Numerous factors influence the successful long term use of obturator prosthesis by a patient. Among these are defect size, presence or absence of teeth, trismus, xerostomia, recurrent disease and patient motivation. The patient's first experience with an obturator prosthesis is usually at the time of surgery.

In the prosthodontic stage of treatment in patients with limited mouth opening, the loaded impression tray is the largest item requiring intra oral placement. During impression procedures, wide opening of the mouth is required for proper tray insertion and alignment, but this is not possible in patients with microstomia which demands for alterations and newer innovations of the standard impression procedures[4]. Threefold rationale for using maxillary surgical Obturator is Functional, Hygienic & Psychological[5]. This article describes a simple technique to fabricate a surgical Obturator in a patient with reduced mouth opening.

II. CASE REPORT

A 63 year old male patient (Fig.1) reported to department of Otorhinolaryngology IGMC Shimla with a exophytic nodular red & white growth in left maxillary palatal region & difficulty in opening his mouth. Intraoral examination (Fig.2) revealed an exophytic, nodular red & white lesion 4-5 cm anteroposteriorly & 3 cm mesio-distally on left maxillary palatal region. Clinico-pathological examination revealed T3N2M0 squamous cell carcinoma of left maxilla. The masticatory and swallowing functions were drastically affected due to cancer lesion. Surgical resection of cancer tissues was planned followed by restoration of defect with surgical obturator for which patient was referred to Department of Prosthodontics, HP Government Dental College and Hospital, Shimla. The surgical obturator was fabricated taking reduced mouth opening into consideration and delivered immediately after surgery.

A. Technique:

1. Examination of oral cancer was carefully done & a maxillary stock tray was selected, which was modified by trimming the left buccal flange and palatal raised portion of tray on left side was flattened for facilitating the impression of exophytic nodular lesion (Fig.3).

2. Pre-surgical impression of maxillary arch was made using irreversible hydrocolloid (Fig.4).

3. Impression was poured in two steps. First pour was done using Type II gypsum material on left side of impression i.e. in the region of lesion (Fig.5). A layer of petroleum jelly was applied over the first pour for facilitating the separation of lesion to create normal anatomical tissue form on the cast. Second pour was made using Type III gypsum material to obtain a working cast (Fig.6).

4. Maxillary cast was modified (in the area of lesion) to obtain normal anatomical contours by separating the exophytic area of lesion (Fig.7).

5. 21 gauge hard round stainless steel orthodontic wire was manipulated to fabricate 'C clasps' to engage buccal infrabulge retentive areas of remaining healthy teeth on non-resected side.

6. Surgical plate was fabricated incorporating the clasps with Auto-polymerising acrylic resin. Finishing & polishing of surgical plate was done (Fig.N).

7. A no.8 round bur was used to create openings for facilitation of suturing to achieve stability and retention of prosthesis at the time of surgery.

B. Figures:

Fig.1 Pre-surgical patient

Fig.2 Intraoral view

Fig.3 Modified stock tray

Fig.4 Primary impression

Fig.5 Impression after Ist pour

Fig.6 Working Cast

Fig.7 Modified maxillary cast

Fig.8 N Surgical obturator

C. Discussion:

Prosthetic rehabilitation can reestablish physical separation between oral & nasal cavities and, in soft palatal defects ,enable normal palatopharyngeal function[1].This surgical obturator prosthesis will act as a matrix for surgical dressing placed in the maxillary defect and also permits the patient to speak and swallow more normally after the anesthesia wears off[5]. This article describes a technique for fabrication of surgical obturator using modification of stock tray[4]. The advantage of surgical obturator is to prevent collapse of soft tissues on affected side, thereby preserving facial symmetry. Wire-clasps provides enhanced retention and bracing effect thereby reducing obturator movement in the horizontal plane and the same surgical obturator can later serve as an interim obturator following modification of the tissue surface[6]. Different materials like Silicone rubber, visible-light-cured resin[7,8] and heat cure resin[2] have been used to fabricate the obturators but in this technique auto-polymerising resin was used, resulting in easy and rapid fabrication considering the limited time i.e.7-10 days for which surgical obturator has to be used.

III. SUMMARY AND CONCLUSION

A surgical obturator prosthesis is needed and feasible in maxillary resection. In this article, a technique for fabrication of surgical obturator has been described in patient with limited mouth opening. After Maxillectomy, this prosthesis has become an integral part, preserving the anatomic integrity and acting as a matrix for surgical dressing. This technique offers an advantage of rehabilitating the patient despite reduced mouth opening by modification of impression tray.

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