

OBTURATOR FOR PALATAL RESECTION – A CASE SEQUELA

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Abstract

Congenital malformations, tumors, traumatic injuries or surgical interventions may result defects in maxilla creating a communication between the oral and nasal cavities. This produces difficulties in speaking, swallowing, nasal reflux and an unesthetic appearance causing adverse effects on psychosocial well being of the patients. Patients with defects in maxilla can be rehabilitated with several techniques ranging from surgical to prosthetic reconstruction.

This case report deals with the fabrication of a surgical, temporary and definitive obturator as the treatment for resected maxilla because of mucoepidermoid carcinoma.

Key words- Hollow bulb, Palatal resection, Malignant Tumors.

Introduction

1-5% of soft tissue and hard tissue neoplasms are found to be malignant in the oral cavity. These carcinomas are usually diagnosed late after the invasion to the underlying bone,¹ therefore surgical excision is the primary treatment choice for malignant tumors affecting the maxilla, and the resulting maxillary defect is commonly repaired with obturator prosthesis.² An obturator (Latin: obturare, 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

The obturator fulfils many functions like feeding, it may be used to keep the wound or defective area clean, and it enhances the healing of traumatic or post-surgical defects, helps to reshape and reconstruct the palatal contour and/or soft palate, improves speech and esthetics, helps in deglutition and mastication and reduces the flow of exudates into the mouth and most importantly boost the morale of patients.⁴

This article deals with a case report of a patient who was delivered Surgical, Temporary and Definitive obturator.

Case Report

A 34 year male patient was referred to the department of Prosthodontics with the diagnosis of mucoepidermoid carcinoma. Clinical examination revealed an intra-oral swelling in mid palatine region with missing teeth 11, 12, 13,14. Fig 1a The treatment plan included delivering of surgical obturator surgery followed by intermediate and definitive obturator after 2 months and 6 months respectively depending on the clinical evaluation and healing process.

Stage I- Surgical Obturator

It is a base plate type of appliance which is constructed from the pre-operative impression cast and inserted at the time of resection of the maxilla at the time of surgery.⁴

Procedure - Upper and lower primary impressions were made with Alginate (irreversible hydrocolloid) and the Impressions were poured with dental stone (Type III Gypsum) and the cast was obtained. Surgical obturator was fabricated on the diagnostic cast after the mock up was

done. An Adam's clasp was planned w.r.t 26 and C- clasp w.r.t 21 for retention of the prosthesis. A clear acrylic surgical obturator was fabricated Fig-1b. At the time of surgery, it was planned to include 21 & 22 in the resection. Holes were drilled at the peripheral borders of the obturator and ligature wire was used for the retention of the obturator. Patient was recalled after 24 hours for the checkup and subsequently after 3 days for two weeks.



Fig 1a- Intra oral Pre-operative

Fig 1b- Surgical Obturator

Stage II - Temporary Obturator

The Temporary obturator is constructed from the postsurgical impression cast which has a false palate and false ridge and generally has no teeth. The closed bulb extending into the defect area is hollow. The patient is usually seen every 2 weeks because of the rapid soft tissue changes that occur within the defect during organization and healing of the wound.⁴

Procedure – Patient was recalled after 2 months of surgery, on clinical assessment the defect was categorised under Aramany Class IV Maxillectomy defect⁵ with teeth present 23, 24, 25, 26 & 27.

The gauze was used to block the undercuts of the defect intraorally and the rubber base impression material (Putty Consistency) was used to make the maxillary impression in three parts and those parts were approximated after retrieval. Fig-2a. The impression was poured with Type III Gypsum. The undercuts on the cast were blocked with modelling wax. Two C- clasps were planned on 23 & 27 and Adams' clasp was planned on 26. A layer of self-cure

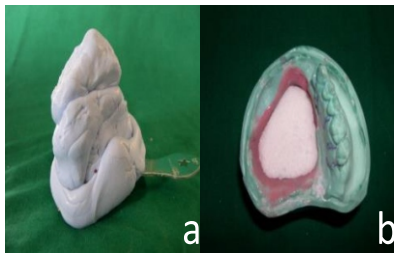


Fig- 2a – Rubber base Impression for temporary Obturator
Fig 2b- Incorporation of salt in a defect

acrylic resin was coated on the walls and floor of the defect. After polymerisation was complete the defect was filled with table salt Fig- 2b and a layer of modelling wax was used to cover the salt. Again self-cure acrylic resin was used adapted on the modelling wax. After polymerisation was completed the obturator was retrieved from the cast. 1 mm holes were made in the bulb area to flush out the salt by injection hot water. After finishing and polishing insertion of temporary obturator was done Fig 3



Fig 3 - Hollow Bulb obturator In Situ

Regular check-ups after 24 hours and after a week followed by subsequent check-ups fortnightly were carried out and modifications were performed according to the healing of the defect.

Stage III - Definitive Obturator

Approximately 6 months after surgery construction of definitive obturator prostheses was carried out.⁴

Procedure – Patient was recalled after 6 months and clinical examination was done.

Fig- 4. The gauze was used to block the undercuts of the defects intraorally for maxillary arch and maxillary and mandibular primary impression were made with Alginate (irreversible hydrocolloid) and the impressions were poured in Dental stone (Type III Gypsum). The surveying of the maxillary cast was carried out to locate undercuts, rest seats and guiding planes. Occlusal Rest seat were prepared on distal of 24 and mesial of 25 and guiding plane was established on 13. After locating undercuts Circumferential clasps were planned on 23 & 27.

Rubber base impression material (Putty Consistency) was the material of choice for making the final impression of maxillary arch. The impression was poured with dental stone (Type III Gypsum) and the cast was retrieved.



Fig 4- Intra oral Maxillary defect

Surveying of the master cast was carried out and parallel blockout was done in a pre-determined path of insertion. Master cast was duplicated with silicone duplicated material and the refractory cast was obtained, on the same cast waxup was done for the framework Fig-5a.

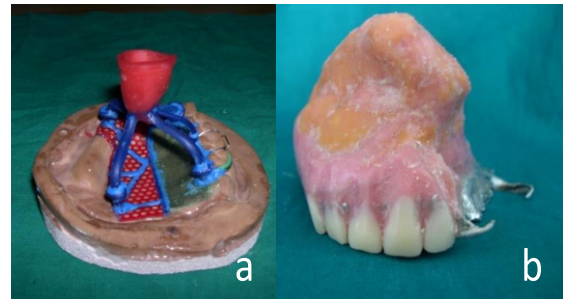


Fig 5a- Wax pattern on the Refractory cast

Fig 5b- Hollow Bulb Definitive Obturator

The wax-up cast was invested and a Co-Cr base metal alloy was used for the framework. Try in was done of the finished and polished framework. Temporary recorded base was made with self-cure acrylic resin on the framework and modelling was used to make the occlusal rim. Jaw relation was recorded and master cast were articulated. Teeth arrangement was done and patient was recalled for try in. A thin layer of self-cure acrylic resin was applied on the walls and floor of the defect to fabricate a hollow bulb. Margins were made 2 mm short after the bulb was retrieved from the cast. After the trial denture was sealed onto the cast flasking and dewaxing was carried out. The hollow bulb was placed into the defect and glued at the opening of the defect. Salt was used to fill into the defect and packing was carried out after applying separating medium, 1 mm holes were made in the bulb area to flush out the salt by injecting hot water. Definitive obturator insertion was done Fig-5b. Nasal oral resonance was checked. Speech was evaluated for hyper and hypo- nasality. Further recalls were carried out.

Discussion

The present case report describes the fabrication of Surgical, Temporary and Definitive obturator. Surgical obturator was given immediately after the surgery to close oro-nasal communication and it acts as a matrix to stabilise the surgical packing. Holes were drilled at the peripheral border of the obturator to secure it in the position with the help of the ligature wires. Clear acrylic resin was the

material of choice to visualise the extensions and pressure areas.

Temporary obturator was planned after 2 months of surgery. The hollow bulb type of obturator was planned at this stage as it reduces the weight of an obturator and add resonance to the voice. Artificial teeth were not incorporated in this obturator to avoid masticatory load which can interfere with the healing process.

Definitive obturator was fabricated after 6 months of surgery and as it was Aramany Class IV which involved the surgical removal of pre-maxilla leaving a bilateral defect anterior and a lateral defect posteriorly. In such situations posterior teeth are located in relatively straight line creating a unilateral linear design problem, where leverage cannot be used to an effective degree. Support was provided by channel rest on the premolars. The defect was also engaged to as much as possible for providing the support.

Retention was gained by mixture of buccal and palatal extensions on premolar and molar respectively. Further, retention was achieved by decreasing the size and number of teeth posteriorly when in occlusion.

Conclusion

Rehabilitation of the missing oral and extra oral structures is one of the main aim of prosthodontics. Each patient has a different types of defect that presents with its own limitations and difficulties for successful rehabilitation. Factors that affect the prosthetic prognosis for these patients are the size of defect, number of remaining teeth, amount of remaining bony structure, quality of existing mucosa, radiation therapy, and patients own ability to adapt to the prosthesis.⁶

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