REHABILITATION OF HEMIMAXILLECTOMY DEFECT WITH A TWO PIECE MAGNET RETAINED OBTURATOR: A Case Report

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ABSTRACT

Patients with partial maxillectomies have a unilateral defect and remaining teeth are located on one side of arch. Large maxillary defects with reduced mouth opening present a challenging situation for rehabilitation. A different approach is used comprising of mutiple components of prosthesis. This clinical report describes rehabilitation of such defect with sectional obturator retained with the use of magnets.

INTRODUCTION

Rehabilitation of maxillectomy defect has been well defined for prosthodontist, with the primary goal of prosthetic obturation being closure of defect and separation of oral cavity from the sino-nasal cavities. An unfavorable situation occurs when the defect is large and the mouth opening is markedly reduced. Present article explains a technique of rehabilitating a patient with large maxillary defect using a 2 component obturator retained with the help of magnets.

CASE REPORT

A 52 year old male patient reported with the chief complaint of inability to eat and nasal regurgitation. He also complained of hyper nasal speech. Patient had undergone a surgery involving maxillary resection on the right side for the tumors around 5 months ago. He took radiation therapy for 2 months after surgery.

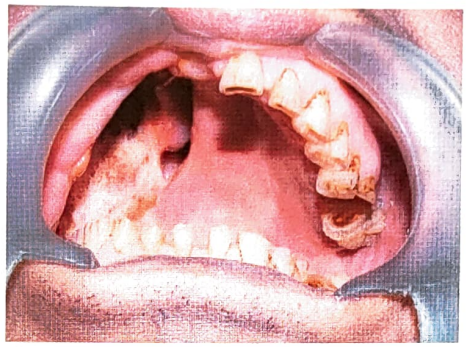

Fig 1: showing intraoral maxillary defect

Fig 2: impression of the defect in rubber base elastomer; putty consistency

Fig 3: bulb was beaded, boxed on both sides followed by pouring turn wise

Fig 4: stone replicas of all the surfaces of bulb

On examination, interincisal mouth opening was reduced. On the unresected side of maxilla natural teeth were present from left central incisor to second molar. Because of trismus, complete view of defect was difficult **(Fig 1)**. Hence mouth openi ng exercises and physiotherapy for the same was suggested for some period of time.

Later, when the mouth opening improved, treatment was started with impression making.

TREATMENT PROCEDURES:

Treatment was carried out in following steps:

STEP I: Impression making.

Since the mouth opening was limited, single impression of the defect and the remaining palate along with dentition was not possible. Hence it was decided to register the two areas in a two step procedure ; i.e. a 2 piece obturator was planned with following parts: [i] bulb [ii] palatal part covering remaining palate & palatal surface of bulb.

Firstly, an impression of the defect was made with rubber base putty **(Fig 2)**. The palatal side of the bulb was sculpted to a concave surface which will be engaged by the intaglio surface of the palatal part.

STEP 2: Fabrication of bulb portion.

Putty bulb was beaded, and boxed on both the sides to obtain all the surfaces of bulb **(Fig 3)**. Stone replicas of both the surfaces were kept atop each other, sealed at the margin with modelling wax **(Fig 4)**. The entire assembly was flasked, dewaxed and acrylised in heat cure acrylic resin. A lost salt technique was used to make it hollow. A try in of the acrylised bulb was done , necessary adjustments made, and then a rare earth magnet system was selected **(Fig 5)**. The ferromagnetic keeper of the system was embedded on surface of the bulb facing oral cavity. Two pairs were selected; one was placed anteriorly and the other posteriorly.

STEP 3: Fabrication of the palatal portion

With the bulb in position, another impression of the maxilla was made **(Fig 6)**. Cast was poured, jaw relations recorded, try-in done **(Fig 7)**. It was then processed in heat cure acrylic resin. Palatal part was extended posteriorly to cover the defect and establish seal between the oral and pharyngeal musculature. This helped in improving speech and deglutition. In the intaglio surface of this portion, magnet was embedded in the area corresponding to the keeper in the bulb **(Fig 8)**. These magnets helped in joining/uniting the bulb and palatal portion on the defect side **(Fig 9)**. Besides it also contributed in the retention of the palatal portion of the prosthesis. On the dentulous side, retention for the prosthesis was achieved through wrought wire c clasp and pin head.

STEP 4: Insertion

Obturator was delivered to the patient. Post-insertion instructions was given to the patient. Patient was kept on recall visits and follow-up was done.

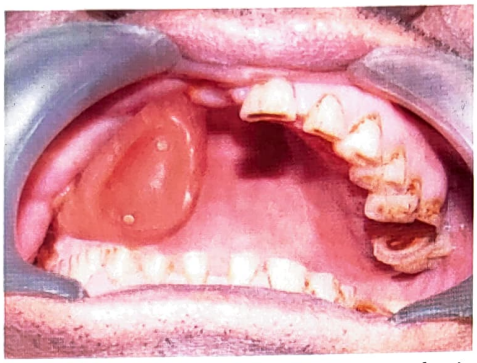

Fig 5: processed heat cure hollow bulb in patient's mouth.

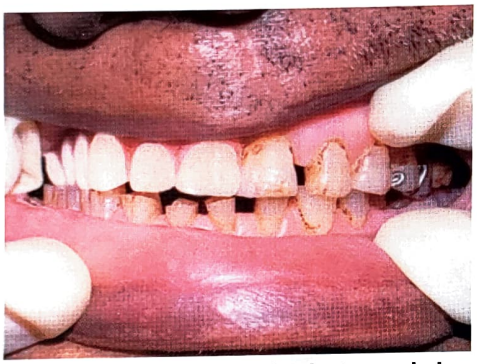

Fig 7: try-in of waxed-up partial denture replacing teeth on defect side.

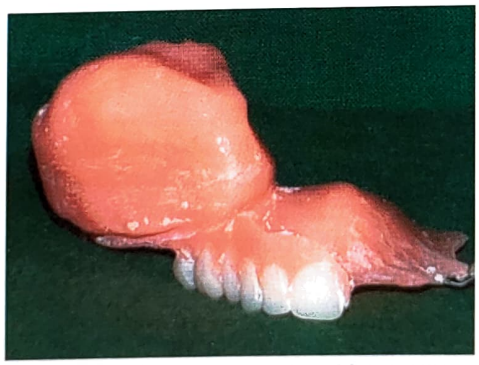

Fig 9: extraoral view of obturator with 2 components: bulb &palatal denture

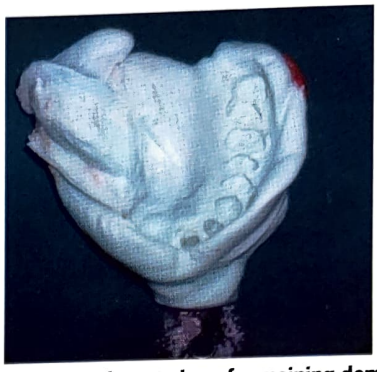

Fig 6: over impression of remaining dentition & palate with acrylic bulb placed intraorally

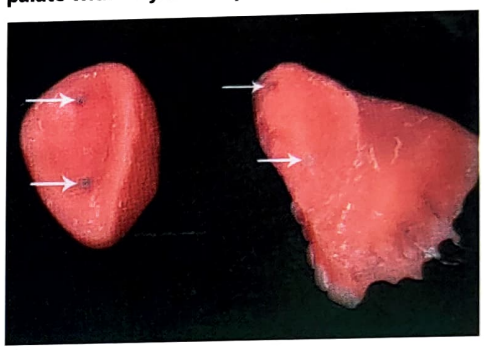

Fig 8: 2 pairs of rare earth magnets with the keepers embedded corresponding positions in the bulb and intaglio surface of palatal segment

The bulb portion required necessary adjustments due to rapid changes in the defect area.

DISCUSSION

Large maxillary defects, following carcinoma surgery can result in serious functional impairment of the speech ,mastication and swallowing. Besides, this also leaves a significant psychological impact on the patient1. Such cases accompanied by trismus become even more challenging. Trismus is a common complication in the patients who have had head and neck cancer surgery followed by irradiation therapy2,3.Trismus can be a serious problem while making intraoral impressions and to accommodate huge size of single piece obturator becomes cumbersome for the patient while insertion and removal of the prosthesis.

Hence it requires an alternate method of approach to fabricate and design such prosthesis. Multicomponent prosthesis is suggested in these patients4.A two piece obturator retained by magnets was designed. The two components system facilitates impression procedure and denture insertion and removal.

The gravitational pull on the maxillary prosthesis effect the retention of

the prosthesis5.Therefore every efforts should be made to minimize the weight of the obturator. In the past, a hollow bulb obturator has been suggested by many researches to reduce the weight of the prosthesis6,7.Bulb was fabricated as a single piece hollow closed structure processed entirely with heat cure acrylic resin.

Magnets have generated a great interest with in dentistry and there applications are numerous. The two main areas of their application are in orthodontics and removable prosthodontics. The reason for their use is related to their small size and strong attractive forces8.The main magnetic material is the rare earth material9,10.

Use of these magnets provided good retention between the the two components of the prosthesis.

SUMMARY

The prosthetic rehabilitation of a hemimaxillectomy patient having trismus has been presented.A hollow two component obturator that had a single piece closed bulb was designed and two components of obturator were retained with the help of magnets. Ability to speak, swallow, chew improved considerably

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