

Prosthodontic Rehabilitation Following Maxillectomy: Case Series

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Abstract : Very often, the treatment of carcinoma of palate /maxillary antrum involves surgical excision. However, the extent of resection is dependent on the size, location and potential behaviour of the tumour. Post-surgical maxillary defects predispose the patient to hyper nasal speech, fluid regurgitation into the nasal cavity and impaired masticatory function. Rehabilitation is important because functional impairments have a detrimental effect on the quality of life and self esteem of the victims. Prosthetic rehabilitation of two dentate patients with acquired palatal defect is described. Prosthetic treatment could restore function, aesthetics and confidence, thereby improving the quality of life of the patient.

Keywords: Maxillectomy, Definitive Obturator

I. Introduction

A defect in orofacial region affects the appearance, mastication and speech, which in turn affects the social well being of the patient.¹⁻⁵ Rehabilitation of the maxillary or palatal defects is challenging and requires a team approach involving oral surgeon, prosthodontist, speech therapist and psychologist⁶. Obturator is a prosthesis used to close a congenital or acquired tissue opening, primarily of the hard palate and/or contiguous alveolar structures. The term obturator is derived from a Latin word "obturare" which means to shut off⁷. The prosthesis facilitates speech and deglutition by replacing those tissues lost due to diseases and thereby reduce regurgitation and hyper nasal speech; improve articulation, deglutition and mastication. An obturator is classified as surgical, interim or definitive based on the timing of the maxillofacial rehabilitation of the patient⁷. A definitive obturator is made when it is deemed that further tissue changes or recurrence of tumour are unlikely and a more permanent prosthetic rehabilitation can be achieved; it is usually intended as a long-term prosthesis.⁷ In this case series prosthetic management of two dentate patients who underwent partial maxillectomy for the treatment of carcinoma of palate are discussed.

II. Case Report 1

A 52 year old female patient was referred to the Department of Prosthodontics, Government Dental College Thiruvananthapuram from Regional Cancer Centre, Thiruvananthapuram. Her chief complaints were illegible speech and nasal regurgitation of food and fluids while eating. Her past medical history revealed that she underwent right partial maxillectomy nine months back as a treatment for epidermoid carcinoma, antrum. On extra oral examination the patient was having a facial asymmetry, with a lack of support for the lips and cheek on right side (Fig 1). Temporomandibular joint was normal on palpation and mouth opening was slightly restricted. Intraoral examination revealed an Aramany type 1 palatal defect involving right half of the arch and adjacent palatal shelf⁸ (Fig .2). The defect was lined with healthy mucosa. Teeth present in the upper arch were 22, 23, 24, 25, 26 and 27. In the lower arch all teeth except 47 and 48 were present. Her tongue function was normal and salivation was adequate. Her speech was defective and hyper nasal.

1.1 Treatment Plan

A definitive obturator was planned to close the palatal defect. Considering stability, retention, load distribution and suprastructure longevity, the decision was made to rehabilitate the patient with a hollow bulb obturator with the cast metal framework⁹. Embrasure clasps on 24, 25 and 26, 27 and a proximal plate on mesial aspect of 22 was planned for optimum retention and stability of the prosthesis. It was decided not to replace lower 47, 48 in order to reduce the occlusal stresses in the area of defect.

1.2 Procedure

Diagnostic impressions were made in irreversible hydrocolloid impression material (Zelgan Alginate, Dentsply) after blocking out the undercuts of the defect with petrolatum laden cotton. Diagnostic casts were poured and defect was outlined and the cast was surveyed for designing of the metal framework. A special tray covering the defect and the remaining teeth was fabricated using auto polymerizing acrylic resin (DPI Acrylic) with a uniform 2mm wax spacer (Rolex Modelling Wax, Bensons, India).

Rest seats were prepared on disto-occlusal of 24, mesio-occlusal of 25, disto-occlusal of 26 and mesio-occlusal of 27 to receive rests of embrasure clasps. Guide plane was prepared on mesial of 22. After completion of the mouth preparation, the defect site was border moulded using poly vinyl siloxane putty in an incremental manner, and final impression was made with Poly Vinyl Siloxane light body material (Aquasil, Dentsply) (Fig.3). A master cast was obtained and the design was transferred (Fig. 4). The master cast was blocked out properly, duplication was done using reversible hydrocolloid and then a refractory cast was made. A wax pattern of the frame work was made on to the refractory cast (Rolex Inlay wax). (Fig. 5) The wax pattern was cast in Co-Cr alloy and the metal frame work was obtained (Fig. 6). After finishing and polishing a try-in of the metal framework was done in patient's mouth. A jaw relation record was taken using wax (Rolex, Bensons, India) and the master cast was mounted on a three point articulator. A try in of the prosthesis was done after setting the teeth (Acri-Rock). Prosthesis was then acrilized (Brident, US) keeping the bulb hollow to reduce the weight of the obturator. A shim was fabricated in a duplicated cast using heat cure acrylic and was attached to metal frame work by lost wax method. After finishing and polishing, prosthesis was inserted (Fig. 7). The patient was reviewed after two weeks for evaluation of the prosthesis.

The patient had showed remarkable improvement in maintaining the patency of oro- naso -pharynx during food and fluid intake. She showed considerable improvement in phonation as well. Post insertion check-up was done at two weeks, one month, and three month's interval and the patient was very much satisfied with the prosthesis. The prosthesis has helped her to overcome the social stigma which she suffered in the post-surgical period (Fig.8, 9).

III. Case report 2

A 72 year old male patient reported to Department of Prosthodontics, Government Dental College, Thiruvananthapuram with a palatal defect (Fig. 10). His chief complaint was loose and ill fitting obturator. Medical history revealed that he had undergone maxillary resection (left side) along with ipsilateral hemimandibulectomy 8 years back due to carcinoma antrum. He has been using the obturator since then. Intra oral examination revealed Aramany type I palatal defect on the left side. Teeth present in maxilla were 23, 22, 21, 11, 12, 13, 14,

15, 16, 17 and all upper teeth were restored by jacket crowns. Mandible was resected on the left side and teeth present on lower arch were 41, 42, 43, 44, 45, 46 and 47. There were rest seats already prepared on jacket crowns of 14, 15, 16, 17 and guiding plane on distal aspect of 23.

Fabrication of a new prosthesis was planned. An embrasure clasp was designed on 15, 16 and a circumferential clasp on 17. An I bar clasp was planned on 23. Impression was made in irreversible hydrocolloid (Zelgan Alginate) and diagnostic cast was obtained. Final impression was made in polyvinyl siloxane of putty and light body consistency using putty wash technique (Fig. 11). Wax pattern of the framework was made. Framework was casted in Cr-Co alloy and the prosthesis was acrylicised as mentioned in case report 1. (Fig. 12, 13).

IV. Discussion

Palatal defects affect many vital functions like respiration, mastication, deglutition, phonation, and aesthetics. A definitive obturator should meet the physiologic, anatomic, functional, and cosmetic requirements of the patient⁷. Obturators for maxillary defects or combined maxillary and mandibular defects are frequently associated with problems that result from lack of retention and stability. In dentate patients, primary retention, support, and stability of an obturator depend on the number and distribution of remaining teeth⁵. Advent of newer elastomeric materials has made the impression procedures more easy and accurate. For edentulous patients adequate retention and support is obtained by providing clasps and rests to maximum number of abutments. All the basic principles of designing of obturator must be observed. Post insertion instructions should include instructions for frequent removal and cleaning of the prosthesis and proper oral hygiene maintenance.

V. Conclusion

Facial deformity and unintelligible speech due to maxillary and palatal defects may affect one's self esteem, personality, interpersonal relationship and social participation¹⁰. Prosthetic rehabilitation of a patient undergone maxillectomy is a lengthy and skilful process. However, if attention is paid to the proper sequencing and details of the treatment, it can be one of the most satisfying treatment procedures in prosthodontics. If proper diagnosis, meticulous treatment planning, and a team approach are instituted, the prognosis is favorable and it can help the patients to lead a normal life with self confidence and respect.

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