Case Report

International Journal of Dental and Health Sciences
Volume 02, Issue 01

MAXILLARY DEFECT- FLANGED OBTURATOR: A CASE REPORT

Mohammed Zahid[1], Vidya K Shenoy[2], Mayur Hegde[3], Bharath Prabhu[3]

1. Post Graduate Student, Department of Prosthodontics, A.J. Institute of Dental Sciences.
2. Professor, Department of Prosthodontics, A.J. Institute of Dental Sciences.
3. Reader, Department of Prosthodontics, A.J. Institute of Dental Sciences.

ABSTRACT:

In large defects lacking palatal support, the obturator is aggressively extended vertically to engage the surgical defect and horizontally to the lateral aspect of the orbital floor, at the expense of its size and weight. A hollow maxillary obturator reduces the weight of the prosthesis, which is important when the obturator prosthesis is suspended without bony or posterior tooth support on the defect side. This case report describes successful fabrication of a hollow obturator with a retentive buccal flange, for a young patient who has undergone tumor resection of the maxilla. The use a buccal flange in conjunction with hollow bulb obturator shared remarkable improvement in retention and stability.

Key words: Maxillary Defect, Hollow Obturator, Aramany Classification, Buccal Flange.

INTRODUCTION:

Facial prostheses specially those involving mid-facial defects holds many challenges in achieving appropriate retention and marginal fit[1-4]. Maxillary defects are created by surgical treatment of benign or malignant neoplasm and by trauma, the size location of the defects influence the degree of impairment and difficulty in prosthetic rehabilitation[5]. Preservation and maintenance of remaining structures is a primary goal of prosthetic rehabilitation[6].

In 1978, late Dr Mohammed Aramany presented the first published system of classification of postsurgical maxillary defects[7]. He divided all defects into six categories based on the relationship of the defect to the remaining teeth and the frequency of occurrence of the defect. However, the design objective is to select the most suitable components to resist the various forces acting on the obturator prosthesis without applying undue stress on the remaining teeth and soft tissue structures. The pattern of forces affecting the obturator prosthesis are complex because of their concurrent occurrence. These forces may be categorized as vertical dislodging force, occlusal vertical force, torque or rotational force, lateral force, and anterior-posterior force[7].

According to Spiro et al, defects can be termed as “limited” or “subtotal” on the basis of the number of maxillary walls involved in the resection.

The degree of extension into the defect varies depending upon the configuration of the defect, character of its lining tissue,

*Corresponding Author Address: Dr. Mohammed Zahid,Post Graduate Student, Department of Prosthodontics, A.J Institute Sciences, Mangalore, India E-Mail: dr.zahid02@gmail.com

and functional requirements for retention, support, and stabilization of the prosthesis[8] In large defects lacking palatal support, the obturator is aggressively extended vertically to engage the surgical defect and horizontally to the lateral aspect of the orbital floor, at the expense of its size and weight. Remaining structures are subjected to continuous stresses from such large, heavy obturators, jeopardizing the health of the tissues, and compromising patient function and comfort[9,10]. Reduction in prosthesis weight is of much importance when the obturator prosthesis is suspended without bony or posterior tooth support on the defect side, as is the case with most maxillary resection prostheses[11].

Hence to reduce the weight of the prosthesis, the bulb portion of the obturator is generally hollowed after it has been processed into acrylic resin. A hollow maxillary obturator may reduce the weight of the prosthesis by up to 33%, depending upon the size of the maxillary defect. This clinical report describes the rehabilitation of a Maxillary defect following a tumor resection.

CASE DETAIL:

A 11 year old year girl reported to the Department of Prosthodontics for prosthetic rehabilitation of Partial Maxilectomy following Odentogenic Kerato Cyst (Fig 1a). Intraoral examination showed maxillary defect crossing the midline (Fig 1b). Impressions of the maxillary arch was made using putty polyvinyl polysiloxane impression material (Coltene) due to limited mouth opening(Fig 2a). The impression was poured with type III dental stone (Kalabhai) (Fig 2b) and a custom tray using acrylic resin was fabricated.

Border molding was done using soft putty(Coltene). Defect area was build-up using impression compound (DPI, Pinnacle) and light body elastomeric impression material (Coltene) was used to record the complex contours of the surgical defect (Fig 3). The impression was poured with type IV dental stone (Kal Rock, Kalabhai) and master cast was obtained. The defect area was filled with wax and a base plate was made along with occlusal rims to record the Maxillomandibular jaw relation (Fig 4, Fig 5).

The casts were articulated using semi-adjustable articulator (Artex) and teeth arrangement was done after Facebow transfer (Fig 6). Palatal contours were optimized and wax try-in was done out to check occlusal phonation and esthetics. Prosthesis was flasked and dewaxed in conventional manner. Fabrication of Hollow bulb obturator was done according to Chalian and Barnett technique[13]. A additional buccal flange, with extended adams clasp on the dentulous side was added (Fig 7, Fig 8), and the prosthesis was finished and polished.

Obturator was inserted and instructions regarding maintenance of the prosthesis were given to the patient (Figure 9). Periodic check-up and surgical site evaluation was done.

DISCUSSION:

Following tumor resection in the maxilla, reconstructive techniques include placement of a prosthetic obturator, restoration by local and regional flaps or microvascular free flaps. The main aim of the maxillofacial prosthodontist is to achieve normal orofacial appearance and to restore masticatory function. Prosthetic rehabilitation with an obturator prosthesis is a predictable intervention to restore speech, oral food intake, and deglutition. It is obvious that maintaining health for the remaining tissues must be the primary goal of the therapist[14]. It is the prosthodontist's responsibility to incorporate the prosthesis on to healthy abutments and healthy tissues[15]. Before starting with the fabrication of the definite prosthesis, it is mandatory that the remaining soft and hard tissues must be free of diseases. An obturator is a disc or plate, natural or artificial, which closes an opening or defect of the maxilla. The basic principles of removable partial denture designing should be reviewed. In the present case a metal framework cast partial denture was not recommended because of the presence of young permanent and deciduous tooth, and hence an additional buccal flange was given for retention and support. For reduction of the weight of the prosthesis, the bulb portion of the obturator was hollowed after it has been processed into acrylic resin. Weight reduction is especially important when the obturator prosthesis is suspended without bony or posterior tooth support on the defect side, as is the case with most maxillary resection prostheses.

CONCLUSION:

This case report describes prosthethic rehabilitation of a maxillary defect following tumor resection. The technique described is cost effective, simple, time saving and provided remarkable improvement in retention and stability.

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FIGURES:

Figure 1 – (a) Forntal and (b) Intra Oral view of the Maxillary Defect.

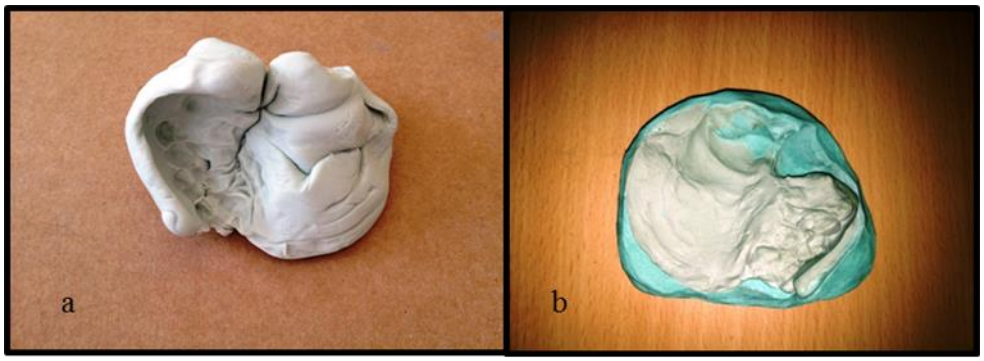

Figure 2 – (a)Primary Impression using Putty polyvinyl polysiloxane (b) Primary Cast.

Figure 3 – Secondary Impression using Impression compound and Light body Elastomeric impression material.

Figure 4 – Secondary Cast with wax blockout.

Figure 5 – Occlusal Rims of modelling wax.

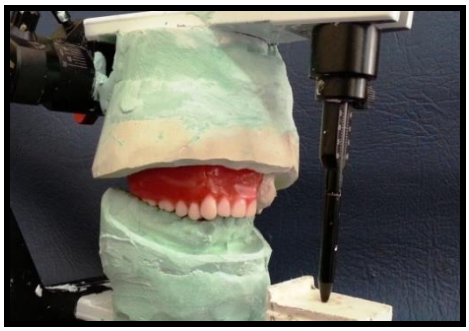

Figure 6 – Arrangement of teeth on semi-adjustable articulator (Artex)

Figure 7 – Flasking of the Prosthesis.

Figure 8 – Finished and polished prosthesis.

Figure 9 – Pre-insertion and Post-insertion