HEMI-MAXILLECTOMY RESTORED WITH HOLLOW BULB CAST PARTIAL OBTURATOR

-A case report

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ABSTRACT-

Throughout recorded history, it is evident that man has found a need to attempt to restore or replace the eyes and facial parts of those who were either unfortunate enough to have congenital deformities, or to have suffered from trauma or disease.

The definition is quite broad. It could include such important dental specialties as fixed and removable prosthodontics, since these specialties also deal with replacing missing tissues. Yet, the term is used to imply only those intraoral, para oral or extraoral areas that are not within the scope of these other dental specialties.

Many phases of maxillofacial prosthetics are merely logical extensions of prosthodontics to those areas that are part of them. The basic material and techniques used in both fields are also similar. The success, like in prosthodontics depends on full cognizance of the principles that underlie facial harmony, color matching, anchorage and retention, weight bearing and leverage, durability and strength of materials used, tissue compressibility and tissue tolerance.

INTRODUCTION

The most common of intra oral defects are in the form of cleft or opening in the palate. These defects may be acquired or congenital. Acquired is due to injuries or surgical excision of tumor. Congenital is due to malformation.

A definite restoration involving fixed or removable prosthesis is required to replace the missing teeth, to stabilize and align the arch segment, restore the occlusal function, provide facial support and help in speech.

All this is usually aided with the help of an OBTURATOR.DEFINITION

The name obturator is derived from the latin verb "*obturare"* which means close or to shut off.

According to the glossary of prosthodontic terms obturator is defined as "Prosthesis used to close a congenital or a acquired tissue opening, primarily of hard palate and or contigious alveolar structures".

Acquired Defects are [1] :-

1. Advanced stage of syphilis.
2. Surgery of malignant tumours.
3. Tuberculosis
4. Necrosis caused by extensive inflammation of dental origin.
5. Extensive fractures.
6. Gun shot wounds.
7. Accidents

CASE REPORT

A 55 year old patient reported to the clinic with a chief complaint of ill fitting maxillary prosthesis and difficuly in mastication and speech since few months (fig 1).

On examination it was found that patient had undergone left side partial maxillectomy a year back due to history of carcinoma in upper left region (fig.2). The defect could be classified according to Aramany M.A as-

Class I

Resesction performed along the midline of the maxilla, teeth are maintained on one side of the arch.

Patient was alredy using an obturator prosthesis since last few months. He complaint that prosthesis was ill fitting and was too heavy. He gave history of relining of the old prosthesis at some other dentist as it was loose but since then it was more ill-fitting and caused ulcers in his mouth. So he stopped using it and he was presently using a simple acrylic plate to cover the defect (fig.3). Due to oro-nasal commiunication patient had severe difficulty in mastication and swallowing food. Lower arch had a long span ceramo metal prosthesis from 45 to 36. 16 was absent. There was a metal crown on 17 with embedded guiding plane and rest seat for the previous cast partial denture. Remaining teeth present in maxillary arch were 12,13,14,15. Patient did not want to replace the metal crown and desired similar properly fitting new cast partial obturator with less weight.Entire procedure was explained to the patient and a hollow bulb obturator was planned to reduce the bulk of the obturator.

PROCEDURE

Primary impression was made in irreversible hydrocolloid. The model was surveyed to plan the rest seat and guiding planes for new cast partial obturator. Special tray was fabricated on the diagnostic cast covering and extending to the defect area and adequate extensions in dentulous area. Undercuts in teeth were blocked on the cast before fabrication of special tray.

Class I design was planned which is tripodal. Support was derived from the most anterior and the most posterior abutment tooth. In a tripodal design,direct retention is obtained either from the labial surface of the anterior teeth with I bar clasp or circumferential clasp on the distal most abutment.

Rest seat was refined on the distal aspect of 45 intraorally. The tray was checked intraorally and overextensions were reduced. A customized final impression technique was used for this case. First, the defect area was recorded in putty (fig.4). Then a wash impression of the dentulous area as well as defect area was made using light body impression material (fig5). After the final cast was retrieved (fig.6) the defect area was temporarily blocked with wax and wax pattern for cast partial denture was fabricated on the cast. After casting,the cast partial framework was retrieved from the investment material and carefully trimmed & polished. It was adjusted on the cast for fit. The fit was checked intraorally.Wax occlusal rim was fabricated on the metal framework in edentulous area. Bite registration was done (fig.7). After mounting the upper and lower cast,teeth setting was done from 11 to 27. Try in was done to check the occlusion (fig.8,9). Acrylisation of the cast partial was done (fig 9,10) and a Hollow Bulb obturator was fabricated(Tanaka et al) [2].Prosthesis was tried in mouth for fit (fig 11,12). Occlusion was adjusted. Patient was given post denture insertion instructions and how to maintain hygiene. The patient was recalled after a week.

DISCUSSION

BASIC OBJECTIVES OF AN OBTURATOR[3]

•It should be comfortable.

•Should restore adequate speech, deglutition, and mastication

•Should be acceptable cosmetically.

To achieve all these objectives, the obturator should have adequate **support, retention and stability.**

FUNCTIONS OF AN OBTURATOR

The obturator fulfills many functions:

1.It can be used to keep the wound or defective area clean, and it can enhance the healing of traumatic or post surgical defects.

2.It can help to reshape or reconstruct the defect.

3.It also improves or in some instances makes speech possible.

4.In important area of esthetics the obturator can be used to correct lip an cheek position.

5.It can benefit the morale of patients with maxillary defects.

6.When deglutition and mastication are impaired, it can be used to improve functions.

7.It reduces the flow of exudates into the mouth.

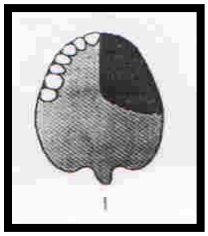
8.The obturator can be used as a stent to hold dressing or packs post surgically.

CLASSIFICATION OF OBTURATORS

According to Aramany M.A : he has proposed that partially edentulous maxillectomy dental arches be classified into six groups

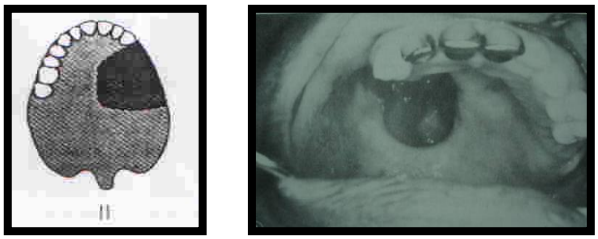
Class I

Resesction in this group is performed along the midline of the maxilla, teeth are maintained on one side of the arch.



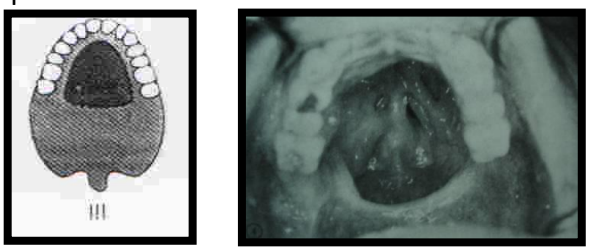
Class II

Defect is unilateral, retaining the anterior teeth on the contra lateral side



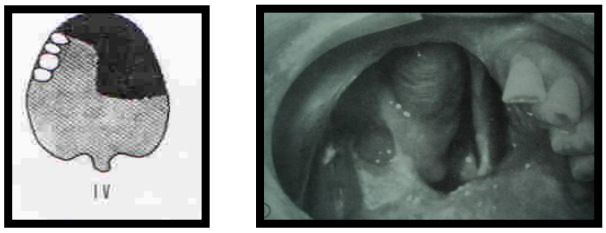
Class III

Palatal defect occurring on the central portion of the hard palate and may involve part of the soft palate. Dentition is preserved.



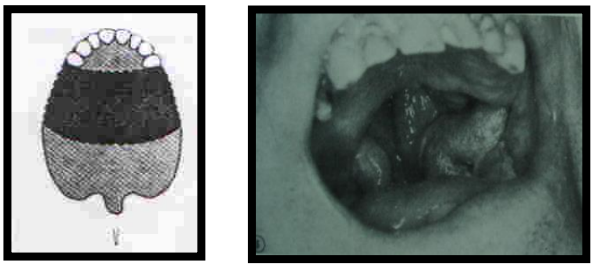
Class IV

Defect crosses the midline and involves both sides of the maxilla. Few teeth remain which lie in the straight line.



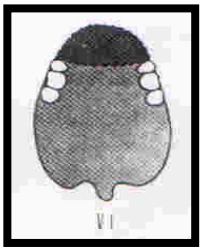
Class V

Surgical defect in this case is bilateral and lies posterior to the remaining abutment teeth.



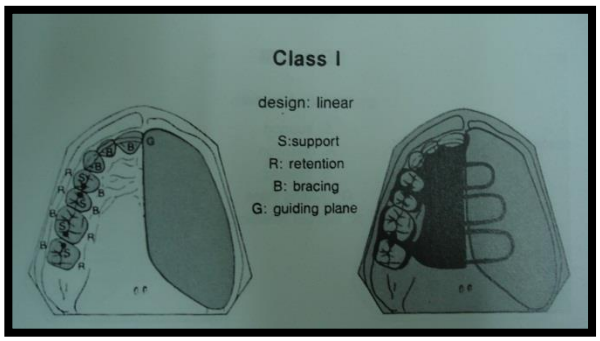
Class VI

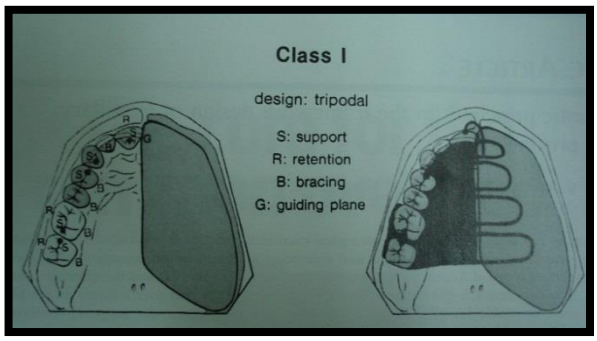
It is rare to have maxillary defect anterior to the remaining abutment teeth. This occurs mostly in trauma or congenital defects rather than in planned surgical intervention.




DESIGN OF OBTURATORS [4,5,6] :-

Class I design:



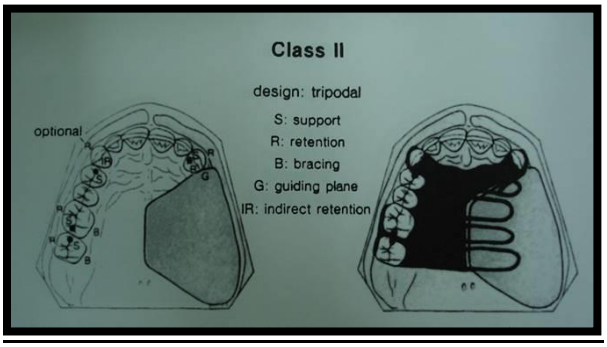


Design can be either linear or tripodal

Two or three anterior teeth are splinted whenever possible, and support is derived from the central incisor and the most posterior abutment tooth. If the dental arch is curved the principle of effective indirect retention is utilized by the location of the rest on the canine or on the distal surface of the 1st premolar in a tripodal design. Direct retention is obtained either from the labial surface of the anterior teeth with I bar on the central incisor.

If the anterior teeth are not included in the design the linear design is recommended. Miller (1972) stated that unilateral design required bi-lateral retention and stabilization on the same abutment teeth. A diagonally opposed retention and stabilization system can be utilized. Retention is located in the buccal surface of the premolar and palatal surface of the molar. Stabilizing components are placed on the palatal surface of the premolar and buccal surface of the molar.

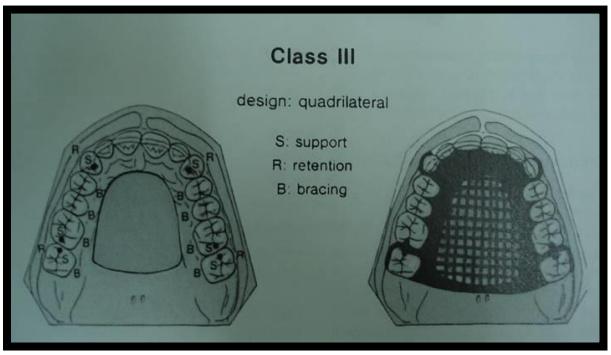
Class II



Design is linear.

Primary support is based on the tooth nearest the defect as well as the posterior molar on the opposite side. An indirect retainer is positioned perpendicular to the fulcrum line. Guiding planes are located at the distal surface of the anterior tooth as well as the molar tooth. Retention on all the abutment teeth is located on the buccal surface and stabilizing components are on the palatal surface.

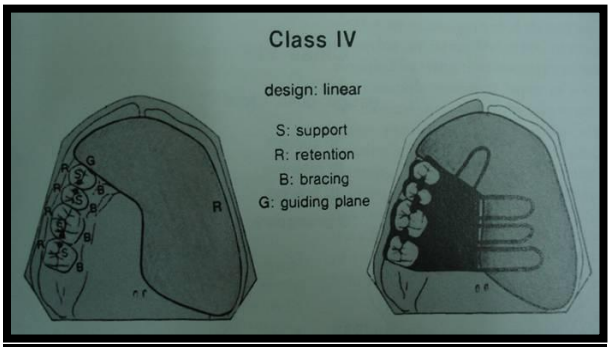
Class III



Design is quadrilateral.

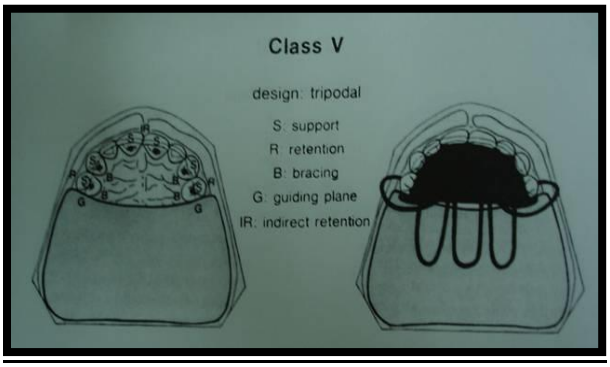
Design based on the quadrilateral configuration. Support is distributed both on premolar and molars. Retention is derived from the buccal surface and stabilization from the palatal surface.

Class IV



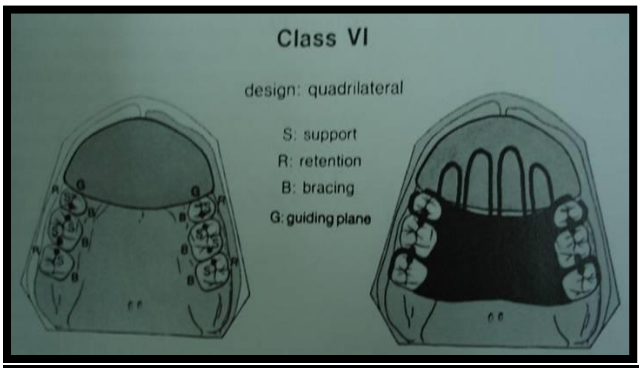
Design is linear.Support is located on the central of all the remaining teeth. Retention is located mesially on the pre molar and palatally on the molar. Stabilizing components are palatal on the premolars and buccal on the molars.

Class V



Design is tripodal..Anterior teeth are preserved and the posterior teeth, hard palate and portion of the soft palate are resected. Splinting of at least two terminal abutment teeth and I-bar clasps are placed bilaterally on the buccal surface of the most distal teeth and stabilization is located on the palatal surface.And indirect retention is located on central incisor.

Class VI



Design is Quadrilateral

Two anterior teeth are splinted bilaterally and connected by a transverse splint bar.

If the defect is large or the remaining teeth are in less than optimal condition, a quadrilateral design is followed.

DENTULOUS PATIENT WITH MAXILLECTOMY DEFECTS [7]

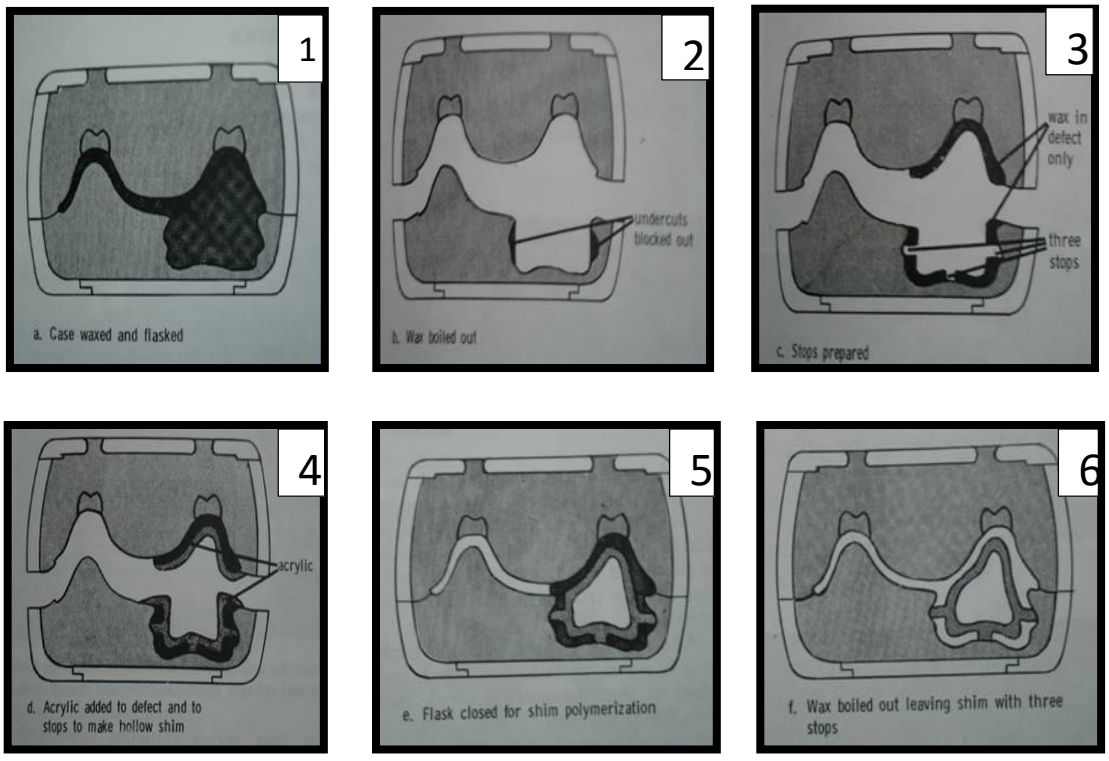
The prognosis improves with the availability of teeth to assist with the retention, support and stability of the prosthesis.

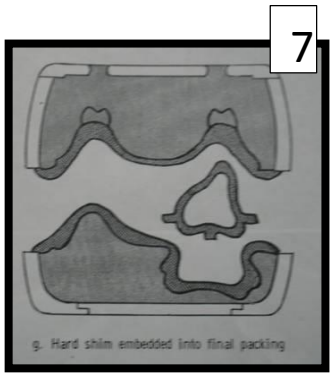
In dentulous patient with partial maxillectomy defects impression and cast is made and surveying is done for class and partial frame work design. Frame work is seated on the master cast, and desirable undercuts are blocked and acrylic baseplate is constructed on the defect side. The frame work is placed in the mouth and try the extension of the tray and modeling plastic is added to the tray material until the desired extension have been achieved and secondary impression is made and processing the denture in usual manner.

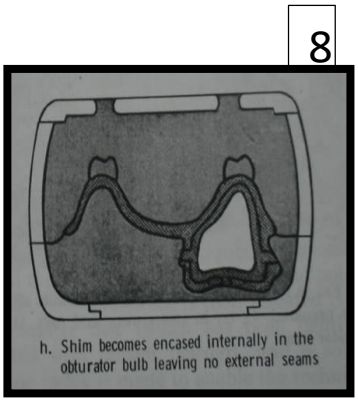
Dentulous patient with partial maxillectomy the fulcrum line is dependent on the placement of the occlusal rest. As more teeth are retained on the defect site the fulcrum line shift posteriorly. As the fulcrum line shifts posteriorly the disto lateral extension of the obturator should be lengthened as this area offers the greatest mechanical advantage. Indirect retainer should be placed anteriorly as possible from the fulcrum lin

PROCEDURE FOR ONE PIECE HOLLOW OBTURATOR [8]

A Simplified Method For Fabrication Of **Hollow Bulb Obturator**







CONCLUSION:

Treatment of patient with oral defects is among the most challenging in dentistry. Defects are highly individual and require the clinician to call upon all knowledge and experience to fabricate a useable prosthesis (obturator). The basic principles and concepts described throughout will help to successfully design obturators.

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