

A TWO PIECE HOLLOW BULB-HOLLOW DENTURE MAGNETIC OBTURATOR PROSTHESIS - AN INNOVATIVE TECHNIQUE

Dental Science

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ABSTRACT

This case report describes an innovative technique to rehabilitate a patient with a large palatal defect and excessive vertical height. The challenges in such cases are the increased height and weight of the prosthesis resulting into loss of retention and difficulty in insertion if made in the conventional method of one piece hollow bulb obturator prosthesis. To overcome this, a two piece hollow bulb with hollow denture prosthesis attached by magnets at the junction of bulb with denture base and occlusal part was fabricated.

KEYWORDS

Hollow Bulb, Magnets, Hollow Denture

INTRODUCTION

Hollow bulb definitive obturator is the common treatment option for large palatal defects to reduce the weight of the prosthesis. However, in situations where the vertical height is excessive, the denture base also becomes thicker and heavier and adds on to the overall weight and height of the prosthesis. The increased height of the prosthesis makes the insertion and removal of the prosthesis also a challenge. The presenting case had excessive height and was managed innovatively by fabricating a two piece hollow obturator-hollow denture prosthesis attached by magnets.

A 57 year old male patient who was surgically treated for squamous cell carcinoma of the left maxilla, reported for a definitive obturator. Patient presented with a huge defect, flat ridge, small maxillary arch and two teeth. The defect area was well defined but produced disfigurement, loss of function and an oro-antral communication (Fig: 1). He had periodontally compromised full complement of mandibular dentition. Masticatory and phonetic functions of the patient were adversely impaired. The patient was diagnostically classified as PDI Class IV clinical situation.[1] A definitive prosthetic rehabilitation was planned with a closed hollow bulb obturator prosthesis retained by an intracoronal attachment (rhein 83 attachment) in the upper lateral incisor and extracoronal attachment in upper third molar. Patient also presented with an excessive vertical height. A two piece hollow bulb-hollow denture prosthesis attached by magnets was planned for this.



Figure1: Intraoral view

PROCEDURE

Diagnostic impressions were made using irreversible hydrocolloid. The defect area was recorded using admix technique (Fig: 2). Post space preparation in 12 and tooth preparation for full crown in 18 was done. The copings with attachments were checked intraorally for fit. After placement of copings intraorally, border molding and final impressions were made using elastomeric impression material. Metal framework for cast partial denture was fabricated and checked for fit. Hollow bulb was fabricated by the lost salt technique (Fig: 3, 4). The excessive vertical height was innovatively managed by separating the denture base and the teeth so that the insertion could be done in two

pieces. A silver foil was used for the easy separation during processing. To reduce the weight, a hollow denture using cotton rolls shaped by a putty index during the processing was fabricated (Fig: 5, 6). After processing, both parts were joined by 6 pairs of neodymium magnets located at equidistant (Fig: 7). The two pieces of the prosthesis were inserted sequentially (Fig: 8, 9).



Figure2: Primary impressions

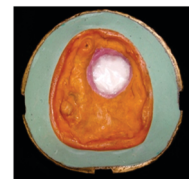


Figure3: Fabrication of bulb with cast partial denture base using lost salt technique



Figure 4: Cast partial denture base along with hollow bulb



Figure5: Placement of cotton roll as filler which will be covered by heat cure denture base resin

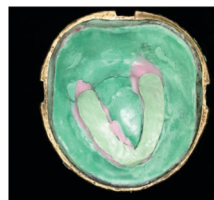


Figure6: Removal of wax sheet layer and replaced by heat cure acrylic. Putty index seated over it to maintain



Figure7: Occlusal part with magnets

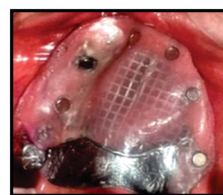


Figure 8: Intraoral view depicting fit



Figure 9: Final prosthesis

DISCUSSION:

The primary goal of the treatment of any maxillectomy defect is to give a prosthetic obturation which not only closes the defect and separates the oral cavity from the sino-nasal cavities[2] but also provides a positive impact in their life . When the remaining teeth are located unilaterally, the intra coronal retainers provide some benefit in minimizing the amount of vertical movement of prostheses within the defect.[3]

Due to the extension of the prosthesis into the huge defect, the weight of the obturator increases drastically which further compromises the retention of the prosthesis. Several methods have been described to overcome the difficulty with fabrication of hollow bulb obturators.[4-8] Matalon and LaFuente[5] described the technique of addition of sugar during processing of the obturator. El Mahdy et al.[6] described the two flask technique . Separate flasking of the two halves and joining them with autopolymerizing acrylic resin has been done by few authors.[9] The opening can also be filled by using a non-detachable screw cap. Iramaneerat et al.[10] described the technique of injecting argon gas into the bulb to reduce the weight of the obturator. The lost salt technique was used in the presenting case because of ease in handling and economical. A hollow denture can be fabricated by using a solid 3-dimensional spacer, including dental stone, cellophane wrapped asbestos, silicone putty or modelling clay [11] during processing to exclude denture base material from the planned hollow cavity of the prosthesis. The disadvantage of these techniques is the junction created between the two polymerized portions will increase the risk of seepage. The putty index-cotton roll technique eliminates this disadvantage as it is processed as a one step.

Magnets have been used in order to overcome the problems associated with mechanical attachments. Small size and strong attractive forces has increased their popularity. Few advantages includes ease of oral hygiene, ease of placement for both dentist and patient. However, magnets have a poor corrosive resistance.[12]

CONCLUSION :

Fabrication of a two piece prosthesis : a closed hollow bulb along with denture base retained using semi-precision attachments and hollow denture with cotton roll , attached using magnets for a case with increased inter ridge space decreased the weight and also makes it easy to insert and remove.

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Nil.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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