



Enhancing Facial Esthetics With Cheek Plumper Denture - Two Case Report

KEYWORDS

cheek plumper, Complete Denture, sunken cheeks, rehabilitation, customized attachment.

DR. AMAN SACHDEVA

DR. SUGANDHA GUPTA

Dr.Aakanksha Bhardwaj

MDS PROSTHODONTICS

MDS PROSTHODONTICS

MDS PERIODONTOLOGY

ABSTRACT *Purpose:* Fabrication of two different types of cheek plumper prosthesis in patients with poor facial esthetics associated with edentulism and sunken cheeks. Based on patient's needs, a hollow complete denture with plumper extensions was made and a detachable custom made attachment retained plumper prosthesis was fabricated.

Discussion : Complete Denture with cheek plumper is a special prosthesis fabricated to enhance the support of sunken cheeks in geriatric patients thus providing better esthetics along with function. There are various types of cheek plumpers that can be fabricated, which include attachment retained, and single piece hollow cheek plumper. As magnetic attachments based cheek plumper prosthesis are associated with various disadvantages such as corrosion, reduced retention with time and high cost involved. Therefore to overcome these drawbacks a hollow cheek plumper and a customized attachment retained plumper prosthesis were made.

Introduction

Cheeks are an important part of human facial esthetics due to their prominent visibility. The support provided by the teeth, the ridges or the dentures determine the form of the cheeks. Factors like extraction of molars, thinning of tissues due to aging, facial paralysis or mid-facial injuries may lead to hollowing of the cheeks. This can make a person appear prematurely older and hence have a negative psychological impact on the patient(1). Though, there are many techniques like reconstructive plastic surgery with facial implants, or malar augmentation with injectable materials. But, prosthetic rehabilitation is a preferred treatment option, when due to medical or other reasons a surgical approach is contraindicated(2,3).

As age progresses, in edentulous patients the bony mid-face dramatically collapses. The involution of midface skeleton become more pronounced by the sixth decade of life(4). Bony involution of maxilla may also be related to resorption of alveolar bone caused by loss of teeth(5). Alternatively, absence of trophic factors related to reduced vascular supply to dentition may result in decreased metabolic demand and decreased osteoblastic activity(6). Central midfacial retrusion results from the lack of projection of the maxilla. It produces a flat facial feature, creating the illusion of protuberance of the lower jaw and chin area. Patients presents as a flat or sunken anterior cheek and a hypoplastic poorly projected upper jaw(7,8).

Outline of the Case

A 50-year-old edentulous male patient with history of mandibular fracture 2 years back presented to the Department of Prosthodontics, Manav Rachna Dental College, Faridabad. Clinical examination revealed a marked deformity on the right side, with fat atrophy in the anteriomedial mala and submalar cheek. The patient had prominent mid-facial creases, which was contributing to perception of facial ageing. Orthopantomographic examination revealed bone plating lateral to mid symphysis region of mandible. On intraoral examination an uneven maxillary ridge was seen and no vestibule space present in the anterior mandibular region. Patient was demoralized due to poor esthetic problem associated with edentulism and sunken cheeks.

Based on patient's needs complete denture was planned with buccal extensions to provide adequate support to cheeks.

Primary impressions were made in impression compounds and final impressions were made using special trays following selective pressure technique with zinc oxide eugenol paste. Jaw relations was recorded and then transferred to semi adjustable articulator using facebow transfer. At the try in stage, cheek plumper was made in wax and added to the buccal flanges of the maxillary denture. Modeling wax was added on the buccal flanges in incremental manner till the facial esthetics was found to be satisfactory. Extra wax from the sulcular border of the flange was removed so as to retain the retentive properties of denture.

Laboratory Procedure

After indexing of the land area of the cast. The trial denture is seated to the final cast and duplicated using reversible hydrocolloid and the impression is poured in dental stone.

A clear template of the stone cast is made with the help of a 0.5mm thick thermoplastic sheet and trial denture is flaked following standard manner till the wax elimination stage.

Two layers of baseplate wax is adapted on to the final cast in the drag, for the purpose of making heat cure denture base and a second flask is used to invest the baseplate wax. Complete wax elimination, packing and processing is done so as to obtain heat-polymerized acrylic resin denture base. The clear matrix is placed on the definitive cast using the indices in the land area as seating guides. With help of an endodontic file with a rubber stop, space between the matrix and the processed resin is measured.

Vinyl polysiloxane putty is mixed and adapted over the bur-roughened surface of denture base. Silicone putty is adapted in such a way near the vicinity of cheek plumper extensions so as to create a hollow bulb in that area only.

Polymerized putty is placed and shaped with a bur to

leave 2-3 mm of space between the putty and matrix. With an additional 1-mm space over the tooth portion of the denture. Putty is fixed to the acrylic resin using cyanoacrylate.

The original cope is then resealed on the drag (point 3) and verified for complete closure of the flask.

Trial closure is performed using heat polymerizing denture base resins so as to verify the thickness of resin.

Processing is done in the usual manner. Two opening are made into the denture base distal to the most posterior teeth. These opening are made to assist removal of the silicone putty by scraping with a sharp instrument.

After removal of the putty, the holes are sealed using autopolymerizing resin.

Lastly denture is immersed in water so as to check the seal of autopolymerizing resin. If no bubbles are evident, an adequate seal is confirmed.(Fig.1)

In the second case, 70 year old completely edentulous male reported to department of prosthodontics, MRDC. One of the major findings on examination was hollowing of cheek, and patient had a desire of a prosthesis which would make his face look fuller and healthier. In this case it was decided to give patient a complete denture with detachable plumpers for maxillary denture.

Fabrication/ lab procedure

All the steps were followed as explained above till the cheek plumper was made in wax and evaluated in patient's mouth. Then wax plumper was separated from wax denture and complete denture was acrylized.

Attachments consist of flat rectangular thin base connected by neck to two balls of approximately 3 mm diameter were made in wax. These attachments were made slightly short of plumper prosthesis and casted using chrome cobalt alloys. The waxed plumper prosthesis is adjusted over the attachments, detached and acrylized with heat polymerizing resins.(Fig 2)

These attachments were separated from plumper prosthesis and placed at the desired site of plumper prosthesis and secured with autopolymerizing resins.

The acrylized plumper is now tried in the complete denture with chrome cobalt attachments. Adjustements were made in plumper part to receive orthodontic separators, which were placed with help of autopolymerising resins to get snap fit. (Fig.3)

The patients were instructed on the use of complete denture with plumper prosthesis and recall appointments were scheduled after 3 days, one week, one month and every 6 months.(Fig 4)

Discussion

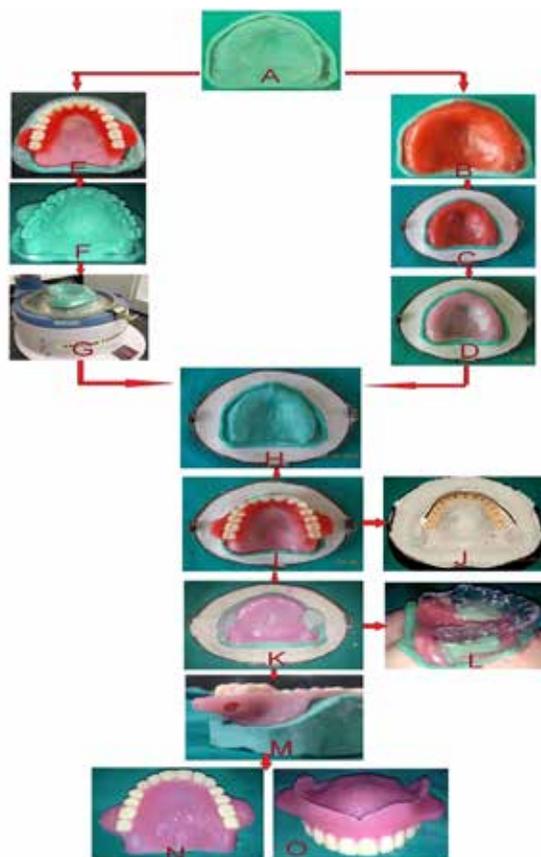
Correction of slumping cheeks to enhance esthetics is one of many challenges faced by prosthodontist. With regard to cheek plumper denture, loss of retention and stability is an issue due to mediolateral width of plumper or increased weight both of which can lead to muscle fatigue because of the strain acting on muscle but most of these problems can be overcome by utilizing light weight cheek plumper denture (Fig 5). Although, there are other meth-

ods to fabricate cheek plumper prosthesis like detachable plumper prosthesis utilizing magnets, but they exhibit poor corrosion resistance and loss of magnetic property over the period of time(9,10). Another method is with help of CoCr ball attachments, through which detachable plumper prosthesis is made(11) and the third ways is to fabricate hollow cheek plumper denture.

Conclusion

This case series discussed different ways of fabricating plumper prosthesis, cheek plumper prosthesis were made using single piece hollow plumper technique and customized attachment retained technique. Both techniques have their advantages and disadvantages and therefore final prosthesis should be fabricated keeping in view of the needs of a edentulous patient.

Picture Legends



Flowchart Fig1: A- a definite cast is made and poured in dental stone; B,C,D- Modelling wax is adapted over the cast and flasking is done in the usual manner so as to obtain heat cured denture base; E,F,G- Before B,C,D step maxillary try in denture is sealed to the definite cast, duplicated using reversible hydrocolloid and a thermoplastic sheet is adapted over it so as to make a transparent matrix; H, I, J - cast in the drag obtained after fabrication of denture base is sealed with maxillary trail denture, it is invested in the second cope and process of wax elimination is done; K- heat cured denture base is placed on the cast in drag and silicone putty is adapted over the denture base and sealed with cyanoacrylate adhesive; L - Clear matrix of the trail denture (obtained in step E,F,G) is adapted to the indexed cast and acrylic thickness is estimated using a endodontic file with tissue stop; M - reseat the cope obtained after wax elimination of the trail denture.

Mix, pack, and polymerize acrylic resin. Make two hole in the denture obtained and remove silicone putty with the help of sharp instrument; N₂O- seal the holes with autopolymerising denture base and polish the denture in the usual manner.



Figure 2: Customized Cobalt chrome attachment



Figure 3: Maxillary Complete denture with customized attachment and Plumper prosthesis with orthodontic separator



Figure 4: cheek plumper prosthesis



Figure 5: Pre-treatment and post treatment pictures of patient

References

1. Bains JW, Elia JP. The role of facial skeletal augmentation and dental restoration in fa-cial rejuvenation. *Aesthetic Plast Surg.* 1994;18(3):243-46.
2. Taheri A, Mansoori P. Midfaical analysis and planning for midface augmentation with injectable filling materials : an anatomical approach. *JEADV* 2012; 26 :714-19.
3. Funt DK. Avoiding Malar edema during midface/ cheek augmentation with dermal fillers. *J clin aesthet dermatol* 2011; 4(12):32-36.
4. Hartstein ME, Wulc AE, Holck DE. *Midfacial rejuvenation.* Ed 16. Springer 2012.
5. Xie Q, Ainamo A, Tilvis R. Association of residual ridge resorption with systemic factors in home- living wlderly subjects. *Acta Odontol Scand.*1997; 55(5) :299-305.
6. Massrt GG, Murphy MR, Azizzadeh B. *Master techniques in Blepharoplasty and periorbital rejuvenation.* Edition 17. Spinger 2011.
7. Terino EO, Flowers RS. *The art of alloplastic facial contouring.* Mosby, st. Louis, USA, 2000.
8. Fanous N, et al. Premaxillary augmentation : adjunct to rhinoplasty. *Plast reconstr surg* 2000;106:707-12.
9. Riley MA, Walmsley AD, Harris IR. Magnets in prosthetic dentistry. *The Journal of Prosthetic Dentistry.* 2001;86(2):137-42.
10. O'Sullivan M, Hansen N, Cronin RJ, Canga DR: The hollow maxillary complete denture:A modified technique.*The Journal of Prosthetic Dentistry,* 2004; 91(6):591-594.
11. Keni NN, Aras MA, Chitre V. Customised attachments retained cheek plumper prosthesis : A case report. *J Indian Prosthodont Soc (july- sept)* 2012:198-200.