

A Modified Technique for Fabrication of Magnetic Retained Cheek Plumper in Completely Edentulous Patient with Sunken Cheeks – A Case Report

Kaligotla Apoorva Vasundhara¹, Haragopal Surapaneni², Kadiyala Krishna Kishore³,
Muvva Suresh Babu⁴, Kavalipurapu Venkata Teja⁵

^{1, 2, 3, 4} Department of Prosthodontics and Implantology, Sibar Institute of Dental Sciences, Guntur, Andhra Pradesh, India. ⁵Department of Conservative Dentistry and Endodontics, Saveetha Dental College, Chennai, Tamil Nadu, India.

INTRODUCTION

Current concept of complete denture rehabilitation is more concentrated on the harmonization between the artificial and natural tissues. In certain cases with sunken cheeks, patients need extra support to the dentures. Sunken cheeks are best restored using cheek plumper or cheek lifting appliances. Conventional cheek plumper appliances have issues such as increased weight, hampering the denture retention and muscle fatigue in patients. So, to overcome all these difficulties, literature reported various modifications in fabrication and designing of a cheek plumper prosthesis. The present case report describes the outcomes of a modified cheek plumper appliance in a completely edentulous patient with sunken cheeks.

Cheeks play a crucial role in facial aesthetics due to their extreme visibility.¹ the form of the cheeks is determined by the teeth, ridges and contour of the dentures, especially when restoring a completely edentulous patient. During the due course of life, patients experience concaving and hollowing of the cheeks due to extraction of posterior teeth, thinning of tissues due to ageing or weight loss.¹ Prosthodontic rehabilitation should not only aim at restoring and replacing the missing teeth, but also restore the facial support. Conventional procedures fulfill the requirements in most of the cases. But, in cases with sunken cheeks, patients need extra support to the dentures. Sunken cheeks are best restored using cheek plumper or cheek lifting appliances. Use of cheek plumper prosthesis in maxillofacial prosthodontics is well documented in the previous literature.^{2, 3, and 4}

Usually denture flanges provide support to the perioral musculature but they fail to mimic the fullness of the cheeks. So, cheek plumper helps in providing a necessary support to the cheeks and thereby enhancing the aesthetics. Usually, cheek plumpers can be un-detachable or conventional type and detachable cheek plumpers.⁵ A conventional one is single unit prosthesis with a supporting extension near premolar or molar region. The major disadvantages with un-detachable cheek plumpers are increased weight hampering the retention, difficulty during denture insertion, muscle fatigue and cannot be used in patients with limited mouth opening.⁶

To overcome the above mentioned problems, the cheek plumper used in the present case was innovated in two aspects. One was the usage of magnet retained attachments for the flanges and the other was to decrease the overall weight of the denture by hollowing the cheek plumper, increasing the retention. The present case report is innovative as compared to the previous literature. None of the case reports have used the hollowing technique for plumpers which attributes to additional decrease in the weight of the denture. The present case report highlights the outcome of a modified cheek plumper appliance in a completely edentulous patient with sunken cheeks.

Corresponding Author:

Kaligotla Apoorva Vasundhara,
Department of Prosthodontics and
Implantology, Sibar
Institute of Dental Sciences, Guntur,
Andhra Pradesh, India.
E-mail: apoorvakgtla@gmail.com

DOI: 10.14260/jemds/2021/139

How to Cite This Article:

Vasundhara KA, Surapaneni H, Kishore KK,
et al. A modified technique for fabrication of
magnetic retained cheek plumper in
completely edentulous patient with sunken
cheeks - a case report. J Evolution Med Dent
Sci 2021; 10(09):652-655, DOI:
10.14260/jemds/2021/139

Submission 18-11-2020,
Peer Review 01-01-2021,
Acceptance 07-01-2021,
Published 01-03-2021.

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PRESENTATION OF CASE

A 54-year-old male patient reported to department of prosthodontics, Sibar Institute of Dental Sciences, Guntur, India, requesting replacement of his missing teeth. On intraoral examination, the patient had completely edentulous maxillary and mandibular arches. He had lost his teeth over a period of 4 years because of periodontal problems and was edentulous for the past 3 years. The patient was conscious about his sunken cheeks and desired a prosthesis that would make his face look full and healthier (Figure 1). Treatment plan was formulated, keeping the patient's demand in mind.



Figure 1.
Frontal View of Patient
Showing Sunken Cheeks



Figure 2.
Wax Try in along with
Cheek Plumpers
Fabricated Using
Modelling Wax



Figure 3.
Putty (Blue in Color)
Adapted Over the Heat
Cure Acrylic Material to
Create Mold Space For
Hollowing



Figure 4.
Reduced Weight of the
Prosthesis



Figure 5.
Top Picture Showing
Magnets Attached to
Plumpers; In Bottom
Picture, Plumpers
Attached to the
Denture



Figure 6.
Postoperative
Photograph of
the Patient

DISCUSSION OF MANAGEMENT

Primary impressions of maxillary and mandibular arches were made using impression compound and mandibular impression was made using McCord's technique to improve the retention. Custom trays were made using autopolymerizing acrylic resin. Border moulding was done using low fusing impression compound and wash impression was made with medium body addition silicone impression material. Jaw relations were recorded. In the try-in appointment waxed denture was first tried for occlusion and aesthetics. At the same appointment, cheek plumpers made with wax were attached to the upper waxed-up denture (Figure 2). Wax was added to restore the patient's cheeks to near normal. A drastic change in the appearance with and without wax-up cheek plumper was observed and patient's acceptance was taken. To reduce the weight of the prosthesis hollowing of the cheek plumpers was planned. Flasking and dewaxing were done in a conventional method, silicone putty was mixed and made in the form of rope and adapted over the mould space of 2 mm thickness (Figure 3). Flask molds were

closed and checked to ensure proper approximation. This silicone putty forms an index for hollow space of plumper.

Heat polymerized acrylic resin is mixed and placed over the mould space and trial closure is done along with the putty index. The putty index is removed after trial closure which provides a proper reservoir, salt was packed into the hollow space and the two halves of the flask were closed followed by curing cycle.

Two small openings were made with a bur in the middle third of cheek plumper. Salt was then removed by irrigation with water using a 2 mm syringe through the access holes created and was cleaned and disinfected, the weight of the plumpers was reduced from 4.5 grams to 3 grams (Figure 4). These holes were enlarged to accommodate the diameter of the magnets.

A pair of commercially available magnets (cobalt-samarium, 5 mm in diameter and 1.5 mm in thickness) were employed to retain the cheek plumper with final prosthesis (Figure 5). Provision for placement of magnets in the flange of the final prosthesis and in the cheek, plumper was made and positioned with the help of autopolymerizing resin. Complete polymerization was ensured by placing in a pressure pot and finishing and polishing was then carried out. The prosthesis along with the plumper was then checked in the patient's mouth for comfort, function and aesthetics (Figure 6).

The patient was educated about the positioning of the plumper to the prosthesis. The patient was highly satisfied with the outcome. He was called for regular checkup to evaluate any soreness or looseness of dentures.

DISCUSSION

Currently aesthetics in complete denture rehabilitation is not confined to teeth selection, gender and personality of the patient but also depends on preservation of the remaining tissues and restoring the lost and establish harmony between artificial and natural tissues.^{7,8} Generally, the loss of teeth in posterior region, leads to the loss of cheek support as the cheeks tend to move medially to meet the laterally expanding tongue. Loss of the teeth in anterior region leads to changes in cheek contour, which is inherently a result of vertical dimension loss. Especially in patients with sunken cheeks, the apparent loss of subcutaneous fat, buccal pad of fat and the elasticity of the connective tissue produces sunken appearance in cheeks.⁹

Other modalities of treatment to restore drooping cheeks include reconstructive plastic surgeries, injecting the botulinum toxin (BOTOX) in the facial musculature and usage of different types of prosthesis to enhance the cheeks.^{2, 3, 9, 10, and 11} so, the cheek plumper prosthesis is a non-invasive and cost effective modality for obtaining the aesthetics in patients with drooping cheeks. Recent literature reported on the various types of detachable attachments cheek plumper prosthesis including pins, button clips and magnets.^{5, 12, 13, 14,15,16,17}

The present case report employed the usage of detachable prosthesis using magnets. The innovative modification in the present design was hollowing the plumper during processing to decrease the overall weight of the denture, which was not reported in any of the case reports till date. The patient was monitored periodically during the recall visits and reviewed.

CONCLUSIONS

Magnetic retained cheek plumper with hollowing of the denture proved to be a cost effective and efficient treatment option for completely edentulous patients with sunken cheeks.

Financial or other competing interests: None.

Disclosure forms provided by the authors are available with the full text of this article at jemds.com.

REFERENCES

- [1] Bains JW, Elia JP. The role of facial skeletal augmentation and dental restoration in facial rejuvenation. *Aesthetic Plast Surg* 1994;18(3):243-6.
- [2] Lazzari JB. Intraoral splints for support of lips in Bells Palsy. *J Prosthet Dent* 1995;5(4):579-81.
- [3] Larsen SJ, Carter JF, Abrahamian HA. Prosthetic support for unilateral facial paralysis. *J Prosthet Dent* 1976;35(2):192-201.
- [4] Mukohyama H, Kadota C, Ohyama T, et al. Lip plumper prosthesis for a patient with a marginal mandibulectomy: a clinical report. *J Prosthet Dent* 2004;92(1):23-6.
- [5] Aggarwal P, Gupta MR, Pawah S, et al. An innovative technique to improve complete denture aesthetics using cheek plumper appliance: a case report. *Int J Oral Health Med Res* 2016;3(2):51-4.
- [6] Verma N, Chitre V, Aras M. Enhancing appearance in complete dentures using magnetic retained cheek plumpers. *J Indian Prosthodont Soc* 2004;4(2):35-8.
- [7] Picard CF. Complete denture esthetics. *The Journal of Prosthetic Dentistry* 1958;8(2):252-9.
- [8] Waliszewski M. Restoring dentate appearance: a literature review for modern complete denture esthetics. *J Prosthet Dent* 2005;93(4):386-94.
- [9] Martone AL. Effects of complete dentures on facial esthetics. *J Prosthet Dent* 1964;14(2):231-55.
- [10] Riley MA, Walmsley AD, Harris IR. Magnets in prosthetic dentistry. *J Prosthet Dent* 2001;86(2):137-42.
- [11] Kumar P, Khattar A, Goel R, et al. Role of botox in efficient muscle relaxation and treatment outcome: an overview. *Ann Med Health Sci Res* 2013;3(1):131.
- [12] Kuriakose EM, Swamy RKN. An innovative technique using a plastic button clip retained cheek plumper in complete denture esthetics: a case report. *International Journal of Medical Science and Diagnosis Research* 2019;3(7):8-11.
- [13] Bharathi B, Poovani S, Shetty G. Complete dentures with detachable cheek plumper - a case report. *Int J Sci Res* 2020;8(12):44-6.
- [14] Rewari A, Dabas N, Sanan R, et al. Esthetic rehabilitation using magnet-retained cheek plumper prosthesis. *Case Rep Dent* 2020;2020:2769873.
- [15] Tripathi J, Singh M, Tripathi N. An innovative approach to enhance facial aesthetics using detachable cheek plumper - a case report. *European Journal of Pharmaceutical and Medical Research* 2020;7(4):531-3.
- [16] Venkatachalapathy SR, Chander GN, Gnanam P. A magnetically retained cheek plumper in a maxillary single complete denture: a clinical report. *Journal of Interdisciplinary Dentistry* 2019;9(1):25-30.

[17] Pudi S, Kota S, Karthik KVG, et al. An innovative technique using a stainless steel double die pin retained cheek

plumper in complete denture esthetics: a case report. Cureus 2019;11(11):e6197.