

CASE REPORT

Magnet Retained Detachable Cheek Plumper: Innovation Personified - A Case Report

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Abstract

The success of prosthetic treatment not only is predicted by dentist ability but also on the ability to relate to patients and to understand their needs. There are many esthetic consequences of edentulism, among which facial disfigurement due to sunken appearance of cheeks and lips has a greater negative psychological impact on the individual. This clinical report highlights a technique for fabrication of an intraoral detachable magnet retained cheek plumpers using stainless steel coated close field magnets. The use of these detachable magnet retained cheek plumping appliance is a modification from conventional technique of supporting the slumped tissue.

Keywords: cheek lifting appliance, masticatory function, magnet retained cheek plumpers

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Introduction

In current arena esthetics play a very important role in person's professional and social life. Cheeks due to their extreme visibility are an important factor in determining facial esthetics. Slumped or hollow cheeks can add years to a person's age and hence have a detrimental psychological effect on the patient.¹

The natural dentition and dental ridges or dentures provides support which is accountable for the external form of the lips and cheeks. If the lips and cheeks are unsupported, muscles become weak and do not function properly which leads to wrinkling of skin and sagging of lips and cheeks. Although denture flange do provide support to the circum-oral muscles but adequate support by cheek lifting appliance is needed to improve the appearance of the patient by reducing the sagging of cheeks and improve muscle tone in some cases.^{2,3}

Cheek plumper, also known as the cheek lifting appliance is basically prosthesis for supporting and lifting the cheek to provide required support and esthetic that will increase the self-esteem of the patient. A conventional cheek plumper is a single unit prosthesis with extensions on either side in the region of the polished buccal surfaces of the denture and are continuous with the rest of the denture. Demerits of such design are:

- Excessive weight which could hamper retention of the maxillary complete denture
- Can result in muscle fatigue.
- Can destabilize the maxillary denture
- Could interfere with masseter muscle and coronoid process of the mandible
- Difficult to insert the denture due to excessive weight.
- Can't be used in patients with limited mouth opening.^{4,5}

This problem can be solved with the fabrication of denture with detachable cheek plumper creating dentures that are in harmony and dignity with the aging individual, which will not eradicate but compliment the stigma of aging in them.

Case report

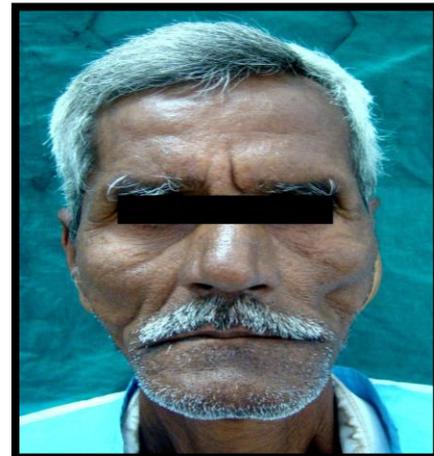
A sixty five year old male completely edentulous patient reported to the Department of Prosthodontics in Darshan Dental College and Hospital, Udaipur with the chief complaint of replacement of existing ill-fitting dentures and very poor esthetics. It was noticed that the patient was socially demoralized and unhappy due to esthetic problems of sunken and sagging of cheeks. History revealed that he was patient was edentulous for the past ten years and was wearing complete denture prosthesis since then. The general health status of the patient was quite satisfactory with history of systemic disorders.

On clinical examination, one of the major finding was poor esthetics, unsupported oral musculature, sunken and slumped cheeks. On intra oral examination, the ridge was low well rounded in maxillary arch and uneven mandibular ridge is seen with sufficient inter arch space with average mouth opening. The old existing dentures were compromised retention and stability due to under extended borders with severe occlusal wear. Therefore, new complete denture was planned with magnet retained cheek plumpers to provide the adequate support on both side of the cheeks to lift the sunken cheeks to enhance facial esthetics and appearance (Figure 1).

Clinical Procedure

Preliminary impressions were made with impression compound using metal stock tray. Casts were prepared and self-cure acrylic resin custom trays were constructed. The tray was border-molded with modeling

plastic (DPI Tracing stick, Dental products of India, Mumbai, India), taking care to avoid overextension. Final impressions were made with zinc oxide impression paste. Master casts were poured with Type III dental stone (Kalabhai, Mumbai, India). Stabilized record bases were made with self-cure acrylic (DPI, Mumbai, India) using the sprinkle-on technique. Wax rims were adjusted until a tentative occlusal vertical dimension was established. Maxillary and mandibular jaw relations were established and recorded. Teeth were arranged in the usual manner. A wax set-up was tried in the mouth and was checked for esthetics, phonetics, occlusal vertical dimension, and occlusion.



(Figure 1 Pre-operative extraoral photograph)

At the try in appointment treatment modality for the loss of buccal pad of fat in the cheek region was decided. Cotton rolls were placed in the disto-superior aspect of the maxillary buccal flanges right and left side respectively. The cotton rolls acted as template for further modeling wax addition to the sectional magnet retained wax cheek plumpers. As clinical magnets stainless steel coated close field magnets that are known for their powerful magnetic attraction. Corresponding to this buccal extension, hollowed cavities were made on the buccal surface of the denture on the right and left side approximately in the cervical region of

molars and male part of magnet was attached (Figure 2). The maxillary and mandibular trial dentures were waxed up, flaked and dewaxed. Heat cure acrylic resin was packed by taking care not to dislodge the magnets. Final finishing polishing and laboratory remounting was done.



(Figure 2 Male part of magnet on the maxillary trial denture)

At the next appointment wax cheek plumper with the female magnets was adjusted according to the desired cheek fullness & impression of tissues surface and intaglio surface was taken with light body (Figure 3 & 4). Cheek plumpers were processed separately with high strength heat cure resin (Figure 5). Final finished polished denture and the cheek plumper were inserted and any adjustments required were done by slightly re-contouring the cheek plumper along with refinishing and polishing (Figure 6 & 7).



(Figure 3 Impression of the tissue and intaglio surface of the magnet retained cheek plumper)



(Figure 4 Attached magnet retained cheek plumper before acrylicization)



(Figure 5 Dewaxed mold for separate acrylicization of cheek plumpers)

The patient was given routine post-insertion instructions and was motivated to make efforts to learn to adapt to the new dentures and the magnet retained cheek plumper. Within a week, the patient expressed satisfaction in mastication and phonetics and his esthetic dilemma was reduced with use of detachable magnet retained cheek plumper (Figure 8).

Discussion

Denture esthetics have advanced ahead than mere selection of teeth on the factors of form, shape, color, arrangement and sex, it is more of harmonization of artificial with natural^{1-3,6,7} Sequelae of



(Figure 6 Finished and polished complete denture with detachable magnet retained cheek plumpers)



(Figure 7 Intraoral view with magnet retained cheek plumper)



(Figure 8 (a) Pre operative (b) Complete denture insertion done without cheek plumpers (c) Complete denture insertion done with cheek plumpers)

advanced aging is tissue atrophy, folds and creases of face become exaggerated which is due to loss of support by the alveolar bone and teeth in particular leading to collapse of lower third of face. There is deepening of nasio labial fold, drooping of corner of mouth, loss of vermilion border, depression

of lips exaggerated wrinkling.⁸ Teeth loss in posterior region results in loss of support to cheeks, which tend to move medially to meet laterally expanding tongue. Cheek contour change as a result of loss of vertical dimension of occlusion due to anterior teeth loss. Loss of subcutaneous fat, buccal pad of fat and elasticity of connective tissue produce the slumped cheeks, seen in aged.⁹

Corrections of slumping of cheeks can be accomplished by various methods like reconstructive plastic surgery, injecting the botulinum toxin (BOTOX) in the facial muscles and different types of prosthesis.^{10,11} The plastic surgery is a traumatic procedure which leaves behind the post-surgical scar, sometimes contra-indicated in old patients suffering from systemic diseases.¹² The conventional cheek plumper has the major problem of retention and stability of maxillary denture due increased size and weight of the denture. It can also lead to muscle fatigue due to continuous use. Magnet has generated great interest within dentistry and their application are numerous. The reasons for their popularity are related to their small size and strong attractive forces. Despite their advantage, magnets have poor corrosive resistance within oral fluids and therefore require encapsulation with relatively inert alloy such as stainless steel or titanium.¹³ In this case, stainless steel were used instead of clinical magnets due to affordability of the patient. To combat the major demerits of the conventional cheek plumper this innovative intraoral detachable magnet retained cheek plumper provides multiple advantages including smaller size, easy to insert in two separate portions, easily detachable providing patient the allowance of its use which in turn reduces the chances of muscle fatigue and most importantly maintenance of the appliance becomes easier.

Conclusion:

The dentist's ability to understand and recognize the problems of edentulous patients, to select the proper course of required treatment and reassure them has proven to be greatest clinical value. This case report describes a new prosthetic aid that not only provides esthetics but also improves the psychological profile of the patient.

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