

**DETACHABLE CHEEK PLUMPER FOR ENHANCING COMPLETE DENTURE  
ESTHETICS- CLINICAL REPORTS****<sup>1</sup>Dr. Ashmi Sebastian, <sup>2</sup>Dr. Sanjayagouda B. Patil, <sup>3</sup>Dr. S. Anantha Narayanan and <sup>4</sup>Dr. Nivea T. Francis**<sup>1</sup>PG Student, Department of Prosthodontics, Sri Hasanamba Dental College and Hospital, Vidyanagar, Hassan-573202  
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Article Received on 02/09/2019

Article Revised on 22/09/2019

Article Accepted on 12/10/2019

**ABSTRACT**

Prosthetic Rehabilitation of edentulous patients should never be restricted to replacement of missing tooth alone. The ultimate aim of complete denture treatment should be restoration of full range of oral function and esthetics. Impairment of masticatory function due to loss of teeth and facial disfigurement due to sunken cheek appearance can have a negative psychological impact on the individual. To combat this, in addition to the regular method of positioning the tooth to obtain lip support, excellent denture esthetics can be achieved by providing cheek plumpers or cheek lifting appliance for additional support to slumped cheeks. This clinical report describes a simple, effective, noninvasive and detachable acrylic cheek plumper with two different types of attachment mechanism to improve the facial appearance in a completely edentulous patient with sunken cheeks.

**KEYWORDS:** Cheek plumper, Complete dentures, Magnets, Die pin and sleeves.**INTRODUCTION**

Facial esthetics plays an important role in a person's professional and social life.<sup>[1]</sup> The appearance of the lower half of the face is determined by the contour of jaw bone, the teeth and the surrounding soft tissues and muscles. The edentulous state is associated with resorbed residual alveolar ridges, reduced muscle tonicity and slumped cheeks.<sup>[2]</sup> Cheeks due to their extreme visibility are an important factor in determining facial esthetics that is determined by the support provided by internal structures. Extraction of molars, tissue thinning due to aging or weight loss can cause concavities below the malar bone leading to slumped cheeks. Slumped cheeks can add years to a person's age and hence have detrimental psychological and social effects.<sup>[1]</sup>

It is easy for a dentist to become focused and absorbed in the replacement of missing teeth and forget the face; however, we should remember that the face is viewed constantly while teeth are displayed occasionally. The loss of oral structures primarily affects the appearance of the lower half of the face but the reconstruction must be executed in harmony with the upper half of the face for complete esthetics. As age progresses the loss of subcutaneous fat and elasticity of tissues causes the cheeks to become slumped.<sup>[3]</sup> In cases where the patient has sunken cheeks, additional support to the dentures

may be provided using cheek plumper or cheek lifting appliances. Cheek plumper is a prosthesis to enhance the support to sunken cheeks providing better esthetics. Use of plumper prosthesis in maxillofacial prosthodontics has been well documented. It is also been used in patients with Bell's palsy.<sup>[4-6]</sup>

A conventional cheek plumper is a single unit prosthesis with extensions near the premolar-molar area that provides support to the cheek.<sup>[6]</sup> But this design is reported to have the following disadvantages:-

- The external contour of cheek plumper is not contoured to function in harmony with muscular activity leading to frequent dislodgement of denture during speech.
- Extra bulk of acrylic may increase the weight of prosthesis.<sup>[7]</sup>

Thus, detachable cheek plumpers came into practice. Many attachments have been used for connecting the cheek plumper to dentures (e.g. Magnets, customized Co-Cr attachments etc.). Magnets are small and have automatic reseating<sup>[8]</sup> and are easy to remove and clean but have poor corrosion resistance and lose their magnetic property over time.<sup>[9]</sup> If NdFeB magnets are used, these magnets have close fitting magnetic field but their effects on pacemaker and intraoral tissue are still to

be documented.<sup>[7]</sup> Customized Co-Cr frameworks with attachments are used since Co-Cr is biocompatible, rarely produces allergic reaction and is resistant to corrosion but increases weight and labor for fabricating the prosthesis.<sup>[8]</sup>

This clinical report illustrates innovative techniques of plumping using detachable cheek plumper which are attached to Complete dentures using magnets and die pins.

## CASE REPORTS

### Case report 1

A 45-year-old female patient with no history of medical illness reported to the Department of Prosthodontics requesting replacement of her missing teeth. Extraoral examination showed a long face with slumped cheeks and a prognathic appearance (**Fig. 1A**). The patient reported concerns about facial esthetics because of her sunken cheeks. On intraoral examination, the patient had completely edentulous maxillary and mandibular arches. She had lost her teeth over a period of two years because of periodontal problems and was edentulous for the past two years. The patient was conscious about her sunken cheeks and desired a prosthesis that would make her face look fuller and healthier. Treatment plan was formulated, keeping the patient's demand in mind. It was decided to give the patient upper and lower complete dentures with detachable cheek plumpers.

Preliminary impressions were made with modeling plastic impression compound (Pinnacle Impression Compound; Dental Products of India) and poured-in dental plaster, after which custom impression trays were fabricated with autopolymerized acrylic resin. Border molding was done with green stick modelling plastic impression compound (Pinnacle Tracing Sticks; Dental Products of India). Definitive impressions were made with zinc oxide eugenol impression paste (Impression Paste; Dental Products of India), the jaw relations were recorded, and the tooth arrangement completed and evaluated. A roll of soft putty was adapted over the buccal flanges of the maxillary denture on either side in the premolar-molar region (**Fig. 2A**). The adapted putty was inspected extra-orally for adequacy of cheek support and contour. Because the adapted putty of the maxillary cheek plumper did not provide adequate support to the cheek in the mandibular region, mandibular cheek plumpers were planned to ensure adequate fullness in the lower half of the cheek. Soft putty for the mandibular cheek plumpers were fabricated by a similar method and modified to ensure that they did not cause occlusal interference, instability of dentures, or unnecessary tensing of facial muscles. (**Fig. 3**).

The dentures and cheek plumpers were fabricated separately using heat-polymerized acrylic resin (**Fig. 4A**). In this patient, magnets (Permag Products Pvt Ltd)

were incorporated into the buccal flanges of the dentures and cheek plumpers respectively (**Fig. 5A**).

During the insertion of the dentures, adequate clearance of the cheek plumpers from the occlusal table was verified. The patient was given instructions regarding the attachment and detachment of the cheek plumpers (**Fig. 6A**) and asked to present for regular follow-up evaluations (**Fig. 7A**).

### Case report 2

An 80-year-old male patient reported to the department of Prosthodontics requesting replacement of missing teeth. On examination patient had completely edentulous upper and lower arches. Patient had lost his teeth over a period of 5 years as they were mobile and was edentulous for past 2 years. One of the major findings on extra oral examination was slumped cheeks (**Fig. 1B**). Patient was conscious of them and desired a prosthesis which would make his face look fuller and healthier. Treatment plan was formulated keeping patient's demand in mind. It was decided to give patient upper and lower complete dentures with detachable cheek plumpers.

Maxillary and mandibular preliminary impressions were made using impression compound (Pinnacle Impression Compound; Dental Products of India). Custom trays were made using autopolymerising acrylic resin. Border molding was done using low fusing impression compound (Pinnacle Tracing Sticks; Dental Products of India) and wash impressions were made with zinc oxide eugenol impression paste (Impression Paste; Dental Products of India). Jaw relations were recorded. For the try in appointment waxed dentures were first tried for occlusion and aesthetics. After that cheek plumper made in wax were attached to the maxillary denture and evaluated to give the patient a fuller appearance (**Fig. 2B**). The waxed plumper was then separated from the waxed denture. Die pin slots/channels were made using wax on the buccal flange of the complete denture. Acrylisation was done in conventional way. Upper denture was acrylised with the slots placed on the buccal surface of denture. Wax pattern of plumper was invested and acrylised (**Fig. 4B**). The acrylised plumpers were tried in the patient's mouth and die pins were placed in the plumper which corresponded to the slots in the denture to get snap fit (**Fig. 5B**). Provision for placement of die pins in the cheek plumper was made and positioned with the help of autopolymerising resin. Complete polymerization was ensured by placing in a pressure pot and finishing and polishing was then carried out. The plumper with the prosthesis was placed in the patient's mouth and evaluated for comfort, function and aesthetics (**Fig. 6B**). The patient was then instructed about the usage of the detachable cheek plumper and recalled for regular follow up (**Fig. 7B**).



Figure 1: A,B- Pre-treatment Photographs.

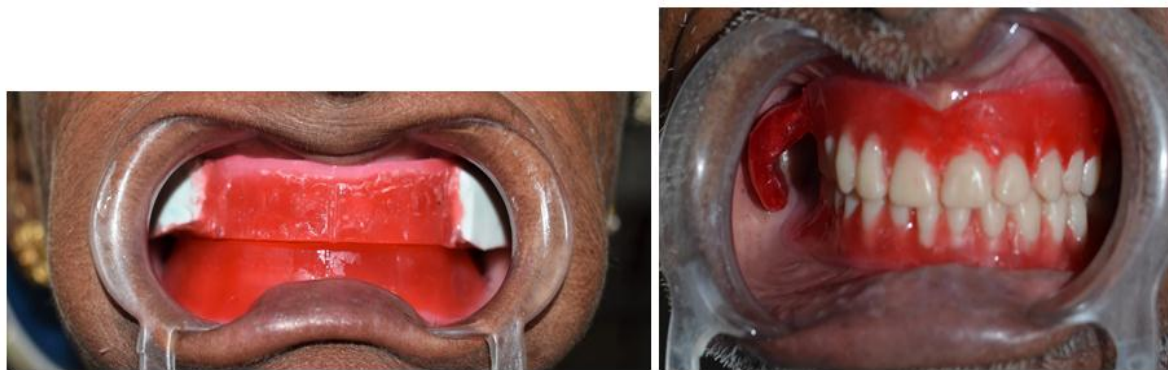


Figure 2: A- Patient wearing trial dentures with soft putty attached for maxillary cheek plumpers. B- Trial denture with wax attached for cheek plumper.



Figure 3: Maxillary and mandibular denture with adapted soft putty.

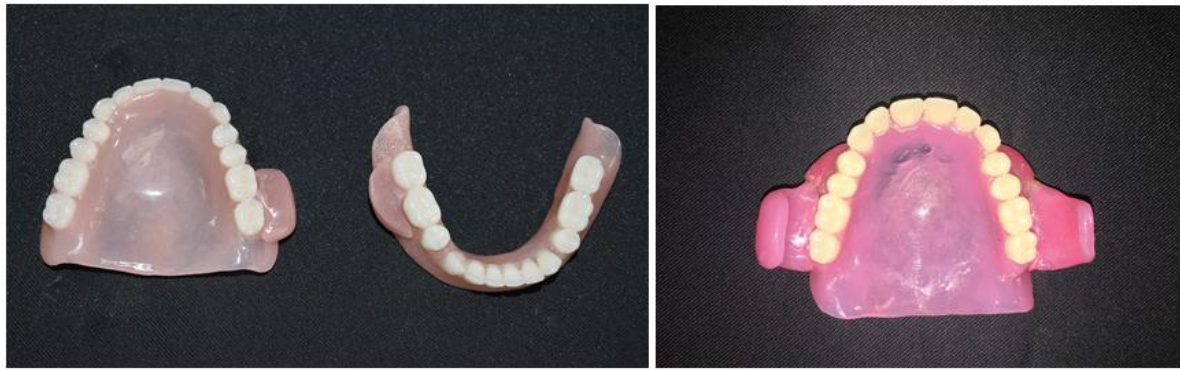


Figure 4: A-Cheek plumper attached to maxillary and mandibular denture. B- Cheek plumper attached to the maxillary denture.



Figure 5: A- Maxillary and mandibular denture with magnet incorporated into the buccal flange. Cheek plumpers with magnets incorporated into surface contacting the denture. B- Die Pin slots incorporated into the buccal flange of the maxillary denture. Die pin incorporated into the cheek plumper.



Figure 6: A,B- Intraoral view of definitive dentures and cheek plumpers attached.



Figure 7: A,B- Patients with definitive denture and cheek plumpers attached to dentures.

## DISCUSSION

The cheeks are less mobile than the lips and are embraced on three sides by foundations that are subject to little change: the zygoma, the mandible and the parotid gland overlying the masseter muscle in the posterior region. In addition, support is also provided by subcutaneous fat and buccal fat pads which are responsible for the soft, rounded contours of the cheeks in the lower third of the face. Cheek contours are altered by the loss of posterior teeth, and they tend to collapse and move medially to meet the laterally expanding tongue.<sup>[3]</sup> Corrections for slumped 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. The plastic surgery is a traumatic procedure which leaves behind the post-surgical scar, sometimes contraindicated in old patients suffering from systemic diseases.<sup>[7]</sup> Although these modalities may be effective, they have a lot of disadvantages including cost, skin irritation and allergic skin reactions.<sup>[10]</sup>

Because of their increased size and weight, conventional cheek plumpers present major limitations in terms of retention and stability in patients with maxillary dentures. They could also cause muscle fatigue with continuous use.<sup>[11]</sup> Muscle fatigue can be prevented if the patient has the option of removing the cheek plumpers when experiencing discomfort. Additionally, the limited mediolateral width of the oral cavity might hinder the placement of cheek plumpers, especially in patients with microstomia. Detachable plumper prostheses could facilitate the insertion of dentures in such situations.<sup>[12]</sup>

Some commonly used techniques for fabricating detachable cheek plumpers are by using magnets, customized Co-Cr attachments, press stud attachments, orthodontic elastic modules, and wire-retained cheek plumpers. Clinicians can choose the appropriate attachment according to the thickness and height of the denture flange and the dexterity of the patient.<sup>[6,12]</sup> Some of the advantages of magnet retained cheek plumpers<sup>[13]</sup> are their small size, automatic reseating<sup>[7]</sup> and their ease of placement and removal. While some of the disadvantages of magnet retained cheek plumpers include<sup>[13]</sup> their poor corrosion resistance, loss of magnetic property over a period of time which may require frequent replacement.<sup>[9]</sup>

In the case of the patient discussed in this report, maxillary cheek plumpers failed to provide adequate support to the cheeks, probably because of the reduced tonicity of the overlying muscles and the extent of resorption of the alveolar process. The patient required additional support to the lower region of the cheek. Therefore, mandibular cheek plumpers were inserted to provide additional support to the cheek below the maxillary plumper. In situations where maxillary cheek plumpers do not provide adequate cheek support, mandibular cheek plumpers can be added to improve

cheek support and enhance esthetics.<sup>[14]</sup>

Die pins can be easily placed back into their slot thus preventing any distortion. It is imperative that the slot for the die pin be cleaned out before attempting to reseat the die pin attached to the cheek plumper back into its channel. Although the use of die pin warrants easy placement and removal, good stability and is cost effective over magnets, the maintenance of oral hygiene and long-term durability are still to be evaluated.

## CONCLUSION

Every patient has unique anatomy and muscle function. Basic anatomy and physiology along with patient's psychology play an important role in denture acceptance and use. In this report, a simple and non-invasive way of enhancing facial esthetics of a patient with sunken cheeks has been presented. Detachable cheek plumper provides increased patient comfort leading to greater acceptance of prosthesis. The magnet retained prosthesis successfully restored the contour of cheeks, improved esthetics and psychological well-being of the patient. Magnetic retention for cheek plumpers is advantageous due to its small compact size of the magnet and strong attractive forces; however, over a period of time magnets used intraorally require replacement due to questionable long-term durability in the oral environment. As we have used such intra oral magnets, the patient was informed about the limitations and was instructed to report to the clinic once every 6 months to replace the magnets if needed. The use of die pins in one of the cases presented, requires minimal manual dexterity of the patient as it simply involves placing the cheek plumpers with the die pins into their slots provided on the complete dentures. Also, it is relatively cheap compared to most of the other techniques that are currently in practice for fabricating detachable cheek plumpers. The patients were well informed about the measures to maintain oral hygiene and of the detachable cheek plumpers delivered. The patients were satisfied with both the methods of cheek plumping when followed up for a period of six months.

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