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Enhancing denture esthetics using magnet retained cheek plumper- A case report

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ABSTRACT

This clinical report describes a technique to improve support for sunken cheeks using magnet retained detachable acrylic cheek plumpers. The new generation of magnets with improved technology provides sufficient denture retention for clinical application. However, further follow-up may be necessary to ascertain the long-term usefulness of the magnet-retained prosthesis, because of corrosion and further loss of magnetism.

Keywords: Cheek, Cheek plumper prosthesis, Denture esthetics, Detachable, Device, Esthetics, Plumper, Prosthetic, Removable partial denture, Sunken.

I. INTRODUCTION

In the contemporary era, one's self-representation of beauty and the way others are perceived play pivotal roles in shaping an individual's identity across all life stages. The noticeable concavity of the cheeks, attributed to their pronounced visibility, significantly influences the overall assessment of facial aesthetics. The form of cheeks is determined by the support provided by internal structures—teeth, ridges, or dentures.^[1] The facial musculature relies on the support provided by the natural dentition or dentures to maintain the external form of the lips and cheeks. Insufficient support can result in weakened muscles, leading to skin wrinkling and sagging of lips and cheeks. This not only contributes to an aging appearance but also has negative psychological effects on an individual's personal, professional, and social life..^[2,3]

Not only should a complete denture replace missing teeth, but it should also effectively restore facial contours. This can be achieved through appropriate extensions and contours of the denture flange.. However, sometimes even with proper extensions of the denture flange and countering the issue is not solved in some cases like patients with hollow or sunken cheeks, extra support has to be provided.^[4]

A cheek plumper, alternatively referred to as a cheek lifting appliance, serves as a prosthesis designed to support and elevate the cheeks, offering the necessary structural and aesthetic enhancement to boost the patient's self-esteem. ^[5] This prosthesis is basically for supporting and plumping the cheek to provide a youthful appearance. A cheek plumper can be of two types: detachable and

und detachable.^[5] The purpose of this case report is to enhance the esthetics in the complete denture patients with the customized attachment cheek plumper by an innovative method.

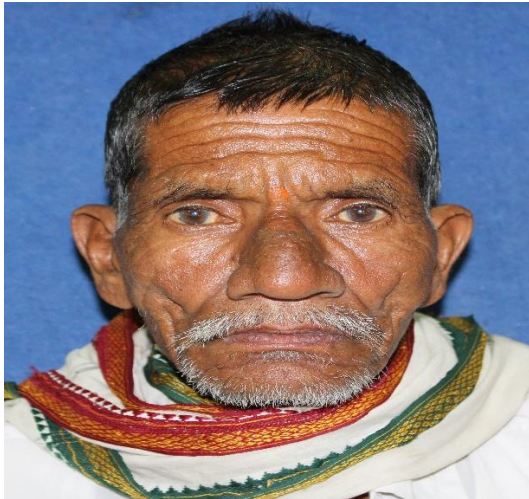
II. CASE REPORT

A 65 year old patient reported to department of prosthodontics in Government dental college and hospital , Sambhajinagar , with chief complaint of missing teeth and poor esthetics since 4 year. He lost his teeth because of periodontal disease and caries. On intraoral examination patient well rounded maxillary arch and slightly resorbed mandibular arch. Extraoral examination revealed wrinkling of the skin and unsupported musculature leading to sunken cheeks. The patient was very conscious of his appearance and desired a prosthesis which would make his face look fuller and healthier. Keeping the patient's demand in mind, fabrication of maxillary and mandibular complete dentures with intraoral magnet-retained, detachable cheek plumpers attached to the maxillary denture was planned . The steps of fabrication were as follows.

1. Primary impressions of the upper and lower arches were taken with DPI pinnacle® modelling plastic impression compound, followed by the fabrication of custom trays using autopolymerizing acrylic resin.
2. Procedure Border molding was performed using low fusing plastic impression compound DPI pinnacle, and definitive impressions were made using condensation silicone.
3. Jaw relation was recorded; teeth arrangement followed by try-in was done to check for occlusion, esthetics, and phonetics.
4. Following try-in, cheek plumpers were made modelling wax and were attached over the buccal flange of the waxed up maxillary and mandibular denture in the premolar molar region using magnetic attachments on either side for trial in the same appointment. The adapted plumpers were inspected extra-orally for adequacy of cheek support and contour and interference with functional movements.
6. The attachment of cheek plumpers resulted in a notable improvement in facial aesthetics, a change that the patient promptly embrace.
7. The magnets were extracted from the cheek plumpers, following which both plumpers underwent processing with heat-cure acrylic resin using a reverse flasking technique..
8. After deflasking, cured denture and cheek plumpers were retrieved, trimmed, finished, and polished.
9. Two semicircular holes on either side were made on the buccal flanges of the maxillary denture and corresponding area of cheek plumpers.
10. Half-cut magnets were integrated into both the denture and cheek plumpers using auto-polymerizing acrylic resin, and thorough polymerization was achieved by subjecting them to a pressure pot.
11. After inserting the complete denture, plumpers were attached to the maxillary denture and adequate clearance from the occlusal table was verified .
12. Demonstrations on attaching and removing the cheek plumper were conducted, accompanied by detailed instructions for the patient. Regular follow-up visits were recommended to ensure proper care and maintenance



Patient wearing denture with cheek plumper



Preoperative



Postoperative

III. DISCUSSION

The term 'esthetics,' coined in 1750, emerged as a fusion of knowledge aimed at bestowing beauty, in juxtaposition to the logical pursuit of truth in science. As per GPT, denture esthetics is characterized by the impact a dental prosthesis has on enhancing the beauty and attractiveness of an individual.

Advancements in denture esthetics have surpassed the simple selection of teeth based on factors such as form, shape, color, arrangement, and gender. It now involves a more intricate process of harmonizing artificial elements with the natural, addressing issues like sagging cheeks through methods like reconstructive plastic surgery, injecting botulinum toxin (BOTOX) into facial muscles, and employing various types of prosthetics. The plastic surgery is a traumatic procedure which leaves behind the post-surgical scar, sometimes contraindicated in old patients suffering from systemic diseases.^[5] While these approaches may yield effectiveness, they come with a range of drawbacks, encompassing factors such as cost, time required for onset, as well as the potential for skin irritation and allergic reactions.^[6]

Traditional cheek plumpers are singular prosthetic units featuring extensions on both sides of the posterior flange of the denture base. Prolonged use of these can result in muscle fatigue and reduced retention of the prosthesis. Muscle fatigue can be prevented if the patient has the option of removing cheek plumpers when experiencing discomfort.^[7] Therefore, in the present case, a detachable plumper prosthesis was planned.

Cheek plumper can be of two types:

1. Undetachable / Conventional Cheek Plumper
2. Detachable cheek plumper^[9]

The utilization of magnets is favored for their compact size and robust attractive forces. This approach offers several benefits, including straightforward cleaning, easy placement for both dentists and patients, automatic reseating, simplicity in clinical and laboratory procedures, and a consistent retentive force over successive insertion-removal cycles.^[2]

This implies that magnets can consistently deliver a retentive force despite numerous cycles of prosthesis insertion and removal. Nevertheless, the enduring durability of magnets poses a challenge. In this particular instance, the application of a cobalt-samarium magnet proved crucial for retention and remained a cost-effective solution for the patient. The patient was thoroughly briefed on the procedure and the materials employed, and informed consent was obtained.^[2]

The patient also accepted the need for frequent review calls after insertion of the prostheses. A constant follow-up on a longitudinal basis is necessary, and further research on the magnetic field of commercially available magnets is needed.

IV. CONCLUSION

The dentist's proficiency in comprehending and identifying the challenges faced by edentulous patients, coupled with the apt selection of necessary treatments and providing reassurance, has demonstrated immense clinical significance. This case report delineates a novel prosthetic solution, not only enhancing aesthetics but also positively impacting the psychological well-being of the patient.^[5] Magnetic

retention for hollow cheek patients is advantageous due to its small compact size and strong attractive forces; however, over a period of time the magnets used intraorally require replacement due to lack of long-term durability in oral conditions.

Having employed intraoral magnets in this case, the patient was apprised of their limitations and advised to schedule clinic visits every six months for potential magnet replacements if deemed necessary.

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