Acta Stomatologica Marisiensis 2025;8(1)43-49

CASE REPORT

DOI: 10.62838/ASMJ.2025.1.06

Enhancing Denture Aesthetics Using a Detachable Cheek Plumper with Upper Cu-sil Denture: A Case Report.

Manu Rathee¹, Aarti Sulekh¹, Sarthak Singh Tomar¹, Balavignesh S¹ ¹Pt. B.D. Sharma University of Health Sciences, Rohtak, Haryana, India.

Abstract

Introduction: Aesthetics plays a vital role in the treatment of completely edentulous patients. Modern prosthodontics goes beyond merely replacing missing teeth, with a strong focus on improving facial aesthetics. One of the significant concerns is the loss of support to the facial musculature, leading to sunken cheeks due to flaccid facial muscles. This change in facial appearance not only affects the aesthetics but also impacts the psychological well-being of the patient. Cheek plumper appliances are designed to provide additional support to weakened facial musculature, thereby restoring facial contours and enhancing overall aesthetics. Case Presentation: A partially edentulous patient with pronounced sunken cheeks due to the loss of facial muscle support was presented. A detachable acrylic cheek plumper appliance was fabricated to address these issues. The appliance was designed with push-button attachments, which were selected due to their durability compared to magnetic attachments, which lose their magnetic properties over time. The appliance was designed and fitted to offer adequate support and improve the patient's facial aesthetics. Discussion: Cheek plumper appliances are an effective solution for restoring facial aesthetics in edentulous patients with sunken cheeks. Traditional attachments such as magnets have been commonly used, but they tend to lose their magnetic strength over time, leading to appliance failure. In contrast, push-button attachments have been shown to offer better durability and longevity, making them a more reliable option. This report highlights how pushbutton attachments help cheek plumper offer reliable support and better facial aesthetics. Conclusions: Detachable acrylic cheek plumper appliances utilizing push-button attachments provide a reliable and long-lasting approach to restoring facial esthetics in completely edentulous patients. This technique provides lasting support for sunken cheeks, improving both facial aesthetics and psychological well-being.

Keywords: Facial Esthetics, Sunken Cheeks, Detachable cheek-plumper, Cheek lifting appliance, push-button.

Introduction

Facial aesthetics significantly impact a person's life's professional and social aspects [1]. The appearance of the lower face is shaped by the contour of the jawbone, the underlying teeth, and the surrounding soft tissues and muscles. The edentulous state, marked by the loss of teeth, resorbed alveolar ridge, reduced muscle tone, and hollow cheeks, contributes to changes in facial appearance [2]. As a person ages, the loss of subcutaneous fat and decreased skin elasticity cause the cheeks to sag, leading to a sunken appearance and accentuation of wrinkles due to tissue laxity [3]. This aging appearance often results in social rejection and psychological distress. Complete denture treatment should not only focus on replacing missing teeth but also on restoring facial aesthetics. Conventional complete dentures help support the lips and cheeks by positioning teeth correctly, but additional support for the facial musculature is often

needed, especially for the cheeks. In such cases, cheek plumper can be used to enhance facial appearance and provide psychological benefits. These prostheses extend near the premolarmolar area to offer support for the cheeks [6]. However, conventional single-unit cheek plumper have some drawbacks: (1) their increased weight and bulk make insertion difficult and reduce the retention of maxillary complete dentures; (2) they are unsuitable for patients with limited mouth opening, as the added thickness can make it challenging to insert or remove the dentures. Another type of cheek plumper consists of separate components that are connected to the denture flange using various attachment methods. Due to their detachable nature, they are easy to insert, remove, and clean, making them ideal for patients with limited mouth opening [4,5]. Magnets, press buttons, ball-end clasps, die pins, hooks and loops, customized friction lock attachments, and orthodontic wire springs are

just a few of the attachment types that have been used over the years. Each has pros and cons of its own. This article focuses on the fabrication of a detachable cheek plumper using a push button attachment [7].

Case presentation

Clinical report

A 80-year-old patient reported to the Department of Prosthodontics with a chief complaint of difficulty in chewing food due to missing teeth and sunken cheeks. Extraoral examination revealed poor esthetics, severely sunken cheeks with wrinkled skin, and unsupported cheek musculature. On intraoral examination, the patient had four teeth remaining (13,12,11,21) in the maxillary arch (Fig. 1a) and a completely edentulous mandibular arch (Fig. 1 b). Since due to the patient's advanced age, general debilitation, and socioeconomic status, and also considering his socioeconomic status, the maxillary Cu-sil denture with cheek plumper appliance was planned.

Procedure

The preliminary impression was made using an irreversible hydrocolloid (Algitex Alginate Impression Material, Bombay, India) in a perforated edentulous tray (Fig. 1c and 1d). The primary cast (Fig. 1e and 1f) was poured with dental plaster (Kaldent Dental Plaster; Kalabhai Karson Private Limited, Mumbai, India), and custom trays were made using autopolymerizing resin (DPI-RR cold cure; New Delhi, India) over it.



Figure 1. (a) Intraoral maxillary arch view (b) Intraoral mandibular arch view (c) Primary impression of maxillary arch (d) Primary impression of mandibular arch (e) Primary maxillary cast (f) Primary mandibular cast.

Border molding was done using green stick impression compound (Pinnacle Tracing Sticks; Maharashtra, India), and an addition (vinyl polysiloxane) impression silicone material (Neopure Light Body, Gurgaon, India) was used for the final impression due to its dimensional stability, accuracy, and patient comfort. (Fig. 2a and 2b). Light body elastomeric impression material was chosen for its superior flow and detail reproduction, which is essential in capturing soft tissue contours in geriatric edentulous patients, especially around undercuts and movable mucosa. The stone (Kalabhai Karson Private Limited, Mumbai, India) was used to pour the master cast (Fig. 2c and 2d), over which a denture base with occlusal rims was fabricated.

The semi-adjustable articulator (Arcon-Type) was programmed using average values for condylar inclination and incisal guidance, as individualized settings could not be reliably recorded from the geriatric patient. This approach ensured functional occlusion while minimizing procedural complexity. Maxillomandibular jaw relation was recorded (Fig. 2e), followed by articulation of maxillary and mandibular casts on a semi-adjustable articulator (Arcon-Type Articulator) (Fig. 2f), and teeth arrangement was done (Fig. 2g). A facebow transfer was not performed due to the patient's advanced age and limited cooperation. Instead, a simplified mounting was done using anatomical landmarks on a semi-adjustable articulator.



Figure 2. (a) Maxillary final impression using light body silicone (b) Mandibular final impression using light body silicone (c) Maxillary Master cast (d) Mandibular master cast (e) Recording Jaw relation (f) Articulation on semi-adjustable articulator (g) teeth arrangement on semi-adjustable articulator frontal view.

After the try-in (Fig. 3a) of dentures, cheek plumper made of modelling wax (DPI modelling wax; Dental Product maxillary denture near 1st premolar to 2nd molar region and inspected extra orally for acceptable cheek support, contour, and interference with masticatory movements and facial muscular strain and spasm (Fig. 3b). After curing of a denture (Fig. 3c) and cheek plumper, two 1.5mm deep and 8mm diameter holes on either side were made on the buccal flanges of the maxillary denture and corresponding area of cheek plumper. Push buttons with male and female counterparts of the same dimension were sealed with auto-polymerising acrylic resin on the buccal flange of a maxillary denture (Fig 3d, 3e, 3f, 3g). On the day of insertion, cheek plumper were attached to the denture extra orally (Fig. 3h) and tried in the patient's mouth. The dentures were evaluated for retention, stability, support, aesthetics, occlusion, and function which were found to be satisfactory (Fig. 4a and 4b).

The patient was given instructions regarding the use and maintenance of the cheek plumper. The patient was asked to follow up after 24 hours, 3 days, and 1 week, and accordingly, his complaints were addressed.



Figure 3. (a) Try-in (b) Wax trial of Cu-sil denture with cheek plumper (c) Final cured cusil denture with cheek plumper (d) Push buttons (e) Male part attached to cheek plumper (f) Female part attached to the cu-sil denture (g) cheek plumper attached to the denture (h) Post-insertion intraoral frontal view.



Figure 4. (a) Extraoral pre-rehabilitative view (b) Extraoral post-rehabilitative view.

Discussion

Although cheek plumper appliances have been previously reported in the literature, the use of a detachable push-button mechanism in conjunction with an upper Cu-sil denture presents a novel, cost-effective approach that prioritizes ease of use, patient comfort, and long-term stability. This case illustrates the originality of integrating these features in a single prosthesis design tailored to geriatric rehabilitation. Cheek support is primarily provided by the zygomatic arch, the mandible, and the parotid gland overlaying the masseter muscle at the back. Additional support comes from the subcutaneous fat and the buccal fat pad [8,9]. The anterior part of the cheek is supported by the muscular framework, which converges at the modioli, while posterior support is provided by the posterior teeth and their supporting structures. When the posterior teeth are lost, the cheeks tend to collapse and move medially to meet the expanding tongue. The loss of subcutaneous fat and reduced connective tissue elasticity contribute to the hollowed appearance of the cheeks seen with aging [10]. Conventional cheek plumper face several limitations, primarily due to their increased size and weight, which can compromise the retention and stability of maxillary dentures. Prolonged use may also

lead to muscle fatigue, although this can be avoided if the patient has the option to remove the plumper when discomfort arises. Furthermore, the restricted mediolateral width of the oral cavity makes it difficult to place a cheek plumper, particularly in patients with microstomia. In such cases, detachable plumper prostheses help facilitate denture insertion [11]. Intraoral magnets are small and possess strong attractive forces, but they often need to be replaced due to corrosion after a few months, and can suffer from stability issues. Press button retained cheek plumper, on the other hand, has poor resistance to corrosion, food lodgement problems, and requires at least two buttons per side for better stability.[12] Additionally, these press buttons are not medical-grade or approved for oral use. In the case discussed, a customized bar and clip attachment was employed [14]. This attachment demonstrated biocompatibility, corrosion resistance, and fewer allergic reactions compared to other metals, with satisfactory retention and stability. Furthermore. since the plumper was detachable, the patient could use the food accumulation, patient discomfort due to the added weight and bulk of the dentures, the need for manual dexterity to ensure correct attachment, and the vulnerability of magnetic attachments to corrosion and loss of magnetism, as well as the risk of press stud fasteners breaking [13]. Clinical risks associated with this technique include the potential for mucosal irritation or trauma due to improper seating of the detachable components. The non-biocompatible nature of commonly available press buttons may result in allergic responses or corrosion. There is also a minor risk of aspiration or swallowing of the small components if they dislodge during insertion or removal. Therefore, patient education and routine maintenance checks are critical.

Limitations:

Although the push-button retained detachable cheek plumper shows promising results in improving facial esthetics and is relatively easy to fabricate and maintain, some limitations persist. The use of non-medical-grade materials for the push-button attachments may lead to corrosion, food lodgment, or allergic reactions over time.[10] Manual dexterity is required to attach and remove the cheek plumper correctly, which may pose difficulties for geriatric or neurologically compromised patients. Additionally, long-term clinical outcomes and patient satisfaction with such appliances warrant further research through controlled clinical trials.[11]

Conclusion

Prosthodontic rehabilitation involves more than just replacing missing teeth; it also aims to restore facial aesthetics. Cheek plumper is easy to create and offers a non-invasive, costeffective solution to improve facial appearance in patients with sunken cheeks [15]. This innovative approach contributes to the overall well-being of the patient.

Conflict of Interest: None to declare.

Acknowledgements

No funding was received for this research work.

References

1. Rathee M, Mittal S, Jain P, Tomar SS, Diwan K. Enhancement of facial esthetics in a completely edentulous patient with sunken cheeks through innovative customized attachment: A case report. Indian J Geriatr Care. 2024 May-Aug;13(2):69-72.

- 2. Kumar A, Nair S. Detachable cheek plumpers: An innovative adjunct to improve facial aesthetics. J Clin Diagn Res. 2020.
- 3. Patel H, Gupta R. Innovative use of press-button cheek plumper attachments in elderly edentulous patients. J Geriatr Dent. 2021.
- Bains JW, Elia JP. The role of facial skeletal augmentation and dental restoration in facial rejuvenation. Aesthet Plast Surg. 1994;18(3):243-6.
- Nayar S, Sivaraman S. Innovative detachable cheek plumpers for complete dentures: An updated approach. J Indian Prosthodont Soc. 2020;20(3):212–216.
- Bhushan P, Aras MA, Coutinho I, Rajagopal P, Mysore AR, Kumar S. Customized Cheek Plumper with Friction Lock Attachment for a Completely Edentulous Patient to Enhance Esthetics: A Clinical Report. J Prosthodont. 2019 Jan;28(1):e1e5.
- Rathee M, Divakar S, Malik S, Wakure P, Chahal S. Rehabilitation and esthetic enhancement of an edentulous patient with hollow cheeks using an innovative detachable cheek plumper: A case report. Eur J of Dent Oral Heal. 2021 Dec;2(6):9-13.
- Virdiya NM, Palaskar JN, Wankhade J, Joshi N. Detachable cheek plumper with different attachments for improving esthetics in a conventional complete denture: A clinical report. J Prosthet Dent. 2017 May;117(5):592-596.
- 9. Sharma R, Vyas A. Prosthetic rehabilitation using customized cheek plumper attachments in complete denture therapy. Clin Case Rep. 2021;9(11):e05123.
- 10. Shah RJ, Chaturvedi AT, Prajapati HG, Malek FG, Darji BJ, Katyayan PA. Enhancement of patient aesthetics using detachable cheek plumper in complete dentures: case series. Sch J Med Case Rep. 2014;2:615-7.
- 11. Patil S, Rajeshwari CL, Srivatsa G. Customised cheek plumper for a completely edentulous patient. A clinical report. IP Ann Prosthodont Restor Dent. 2023 March;9(1):3-6.
- Kamakshi V, Anehosur GV, Nadiger RK. Magnet retained cheek plumper to enhance denture esthetics: A case report. J Indian Prosthodont Soc. 2013 Sep;13(3):378-81.
- 13. Rathee M, Singla S, Singh S, Jain P, Agarkar V. Enhanced facial esthetics for geriatric patients with customized complete denture for amplified cheek support. Int J Oral Health Dent. 2022 March;8(1):82-85.

Acta Stomatologica Marisiensis 2025;8(1)43-49

- 14. Wang Y, Zhang L. 3D printing of removable dentures: Enhancing esthetics in geriatric patients. J Prosthet Dent. 2022;128(4):613–618.
- 15. Sreenivasan V, Ariga P. Comparative evaluation of friction lock vs push-button cheek plumpers in

edentulous patients. 2023;40(1):e37–e43. Gerodontology.

Corresponding author:

Aarti Sulekh

Post Graduate Student, Department of Prosthodontics, Post Graduate Institute of Dental Sciences, Pt. BD Sharma University of Health Sciences, Rohtak, Haryana, India. Email: <u>aarti00101@gmail.com</u>

Received: May 12, 2025 / Accepted: June 10, 2025