CLINICAL REPORT

Detachable cheek plumpers with different attachments for improving esthetics in a conventional complete denture:
A clinical report

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Facial esthetics play an important role in a person’s professional and social life.1 The appearance of the lower half of the face is determined by the contour of the jaw bones, underlying teeth, and the soft tissues and muscles surrounding the teeth. The edentulous state is associated with loss of teeth, resorbed alveolar ridge, reduced muscle tonicity, and hollow cheeks.2

Loss of teeth followed by resorption of the alveolar ridge and loss of muscle tone leads to the slumping of the cheeks, resulting in a hollowed-out, sunken appearance and exaggeration of wrinkles because of tissue laxity. This aged appearance frequently affects the patient’s self-image, leading to feelings of social rejection and psychosocial pressures and further age-concealment procedures.3

Complete denture treatment includes not only the replacement of missing teeth but also the restoration of facial appearance. Conventional complete dentures with appropriate flange extensions and positioned teeth adequately support the overlying lips and cheeks. However, in individuals with marked resorption of the alveolar process, conventional dentures fail to provide adequate support, necessitating additional support for the cheeks.

Cheek plumpers have been described for improving esthetics and the psychological profile of patients with maxillofacial defects and facial paralysis.4,5 Patients with facial paralysis were provided extended denture flanges to improve support to the overlying facial tissues.6

Cheek plumpers have also been used to improve esthetics in patients with complete dentures. A conventional cheek plumper is a single-unit prosthesis with an extension near the premolar–molar region that supports the cheeks. Such devices are an integral part of the contour of maxillary denture flanges designed by overcontouring denture flanges in the mediolateral and anteroposterior directions within physiologic limits. However, the increased weight and bulk of conventional cheek plumpers make their insertion challenging and also hampers the retention of maxillary complete dentures. Moreover, they cannot be used in patients with limited mouth opening because the additional thickness might hinder the insertion and/or removal of the dentures.7

Another type of cheek plumpers are those that are separate components attached to the denture flange. In
such detachable prostheses, the plumper can be detached from and reattached to the complete denture by the patients themselves.8–11 Because of their detachability, they are easy to insert, remove, and clean.

However, maxillary cheek plumpers (conventional or detachable) do not adequately provide fullness of cheeks in line with the angle of the mouth below the device. To compensate for this hollowness, the insertion of mandibular cheek plumpers in addition to maxillary cheek plumpers was planned.

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Two male patients, aged 78 and 67 years, sought care at the Sinhgad Dental College and Hospital complaining of missing teeth and with the expectation of improving their appearance. Clinical examination revealed completely edentulous maxillary and mandibular arches, and extraoral findings of wrinkling of skin and flaccidity of facial muscles, resulting in sunken cheeks (Fig. 1).

Because the patients were seeking improvement in their facial appearance, a treatment plan was formulated involving the insertion of conventional complete dentures and detachable cheek plumpers for maxillary and mandibular dentures. 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 modeling 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 relation was recorded, and the tooth arrangement was evaluated.

Wax patterns for the cheek plumpers were fabricated during the clinical evaluation stage. A roll of softened modeling wax was adapted over the buccal flanges of the maxillary denture on either side in the premolar–molar region. The adapted wax was inspected extraorally for adequacy of cheek support and contour. Because the definitive wax patterns of the maxillary cheek plumpers did not provide adequate support to the cheek below (in the mandibular region; Fig. 2A), mandibular cheek plumpers were planned to ensure adequate fullness in the lower half of the cheek. Wax patterns for the mandibular cheek plumpers were fabricated by a similar method (Fig. 2B) 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. For the first patient, magnets (Permag Products Pvt Ltd) were incorporated into the buccal flanges of the dentures and cheek plumpers with autopolymerizing acrylic resin (Fig. 4). For the second patient, press stud fasteners (Pony Snap Fasteners) were incorporated for retention (Fig. 5). During the insertion of the dentures, adequate clearance of the cheek plumpers from the occlusal table was verified. The patients were given instructions...
regarding the attachment and detachment of the cheek plumpers (Fig. 6) and asked to present for regular follow-up evaluations (Fig. 7).

**DISCUSSION**

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.8

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.

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**Figure 2.** A, Patient wearing trial dentures with wax patterns for maxillary cheek plumpers attached. Cheek below maxillary trial denture shows insufficient support. B, Maxillary and mandibular cheek plumpers attached.

**Figure 3.** Trial dentures with wax patterns for cheek plumpers.
Detachable plumper prostheses could facilitate the insertion of dentures in such situations.

Previous studies have discussed the use of press stud fasteners\textsuperscript{7,12} and magnets.\textsuperscript{7-10} Magnets have the benefit of being small, facilitating automatic reseating because of their magnetic forces, and being easy to remove and clean.\textsuperscript{13} Few authors have used stud attachments, orthodontic elastic modules, and wire-retained cheek plumpers.\textsuperscript{7,11} Clinicians can choose the appropriate attachment according to the thickness and height of the denture flange and the dexterity of the patient. In the case of the patients 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. Although the maxillary cheek plumpers succeeded in reducing the hollowness of the cheeks, the patients required additional support to the lower region of the cheek. Therefore, additional mandibular cheek plumpers were inserted to provide additional support to the cheek below the maxillary plumper, thus reducing the overall hollowness. In

Figure 4. A, Maxillary denture with magnets incorporated into cameo surface of buccal flange. B, Cheek plumpers with magnets incorporated into surface contacting denture. C, Cheek plumpers attached to maxillary denture.

Figure 5. A, Press stud fasteners incorporated into buccal flange of maxillary denture. B, Press stud fasteners incorporated into cheek plumper.

Figure 6. Intraoral view of definitive dentures and cheek plumpers attached.
situations where maxillary cheek plumpers do not provide adequate cheek support, mandibular cheek plumpers can be added to improve cheek support and enhance esthetics.

However, cheek plumpers have a few drawbacks, including the accumulation of food, patient discomfort resulting from the additional weight and bulk of the dentures, the requirement of manual dexterity of patients to ensure accurate attachment, and the susceptibility of magnetic attachments to corrosion and loss of magnetism and of the press stud fasteners to breakage.8,9 Therefore, periodic patient recall is necessary to assess and, when required, replace the attachments.

SUMMARY

Cheek plumpers are straightforward to fabricate and provide a noninvasive and cost-effective treatment option for the improvement of facial appearance in patients with sunken cheeks. This treatment helps improve esthetics and the psychological well-being of patients. Detachable cheek plumpers provide increased patient comfort, leading to greater patient acceptance of the prosthesis. In situations where the desired cheek muscle draping cannot be achieved in patients with sunken cheeks, mandibular cheek plumpers can be successfully inserted in addition to maxillary cheek plumpers in order to improve the overall facial appearance.

REFERENCES


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