

A Customized Innovative Technique to Enhance the Esthetics of Sunken Cheeks with Cheek Plumpers in Complete Denture Patients: A Case Report

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Abstract

Ageing is related to loss of teeth, resorption of the alveolar ridge, and reduced tonicity of the facial muscles, resulting in sunken cheeks and an unesthetic appearance. Sunken cheeks are one among the main consequences of flaccid facial musculature. A cheek plumper could be a commonly used prosthesis to reinforce the support of sunken cheeks, providing better esthetics. This clinical report describes a technique for fabricating detachable maxillary cheek plumpers by placing grooves and ridges using inlay wax and putty.

Keywords: Cheek plumpers, Denture esthetics, Sunken cheeks.

Case Report

A 72-year-old male patient with good general health reported to our department requesting replacement of his missing teeth. He had been edentulous for the last ten years. Extraoral examination showed an extended face with sunken cheeks (Fig 1). The patient reported concerns about facial esthetics due to his sunken cheeks. On intraoral examination class I maxilla supported type A residual ridge morphology, and a category I mandible supported bone height and a type B muscle attachment consistent with the Prosthodontic Diagnostic Index, Complete Edentulism Checklist¹. He was classified as Class I, based on overall other parameters¹. A treatment plan was thus formulated considering his esthetic demands and intraoral conditions. All treatment options were provided to the patient, and he opted for a maxillary conventional complete denture with plumpers and a standard mandibular denture.



Fig 1

Fabrication

Maxillary and mandibular impressions were recorded using impression compound. An acrylic custom tray was fabricated for the maxillary and mandibular arches. The maxillary and mandibular arches were border molded using a low-fusing impression compound, and a wash impression was made using zinc oxide eugenol impression paste. Then, the jaw relation records were obtained. This was followed by a trial of the waxed denture. Wax was added arbitrarily onto the buccal flange area of the maxillary denture within the premolar and molar regions to cause changes within the patient's facial esthetics (Fig 2). For recording the space available for the cheek plumpers, a thin film of Vaseline was applied as a separator (in the premolar and molar regions). The patient was then asked to perform movements like opening and closing of the mouth and lateral movement of the mandible to assess the quantity of space actually available within the coronoid region and coronomaxillary space to incorporate the cheek plumper. The patient was also asked to activate all muscles by performing functions like movement of the cheek,

muscles of facial expression. Following the addition of wax consistent with the comfort of the patient's functional activities, the wax was retrieved and was reduced by 2 mm to stay far away from the trial denture borders (Fig 3). A putty index of the customized, moulded wax was made using addition silicone (Fig 4,5). Inlay wax was used to make retentive ridges on the polished surface of the buccal flange of the maxillary trial denture within the premolar and molar area to assist with the retention of the cheek plumper. The retentive ridge was 2 mm high, 2 mm thick and 4 mm away from the outer periphery of the plumper on either side (Fig 6a,6b). These retentive ridges were duplicated by pouring the molten baseplate into the putty index generated above and were oriented onto the trial denture after applying a thin layer of petrolatum (Fig 7). The wax pattern thus obtained was evaluated for appropriate thickness and fit on the trial denture. The plumper was fabricated from this wax pattern using flexible denture base material, and therefore, the denture was acrylicized separately using heat-cured acrylic (Fig 8), (DPI Heat Cure; Dental Products of India). The shade of the denture base resin and versatile cheek plumper were matched before processing. Following finishing and polishing, the flexible cheek plumper was fitted on the denture. The entire denture with the plumper was tried within the patient's mouth for stability, esthetics, retention, and performance (Fig 9). The facial appearance was also evaluated (fig 10). The patient was given instructions regarding use, fit, and maintenance of the cheek plumper. He was recalled after 24 hours, 1 week, and 6 months. The patient didn't report pain or discomfort, and no ulceration or sore spots were noted on intraoral examination. The denture hygiene was satisfactory. The patient reported complete satisfaction with the dentures at recall visits.

**Fig 2****Fig 3****Fig 4****Fig 5****Fig 6a****Fig 6b**



Fig 7



Fig 8



Fig 9



Fig 10

Discussion

The area available for the cheek plumper is not static and therefore requires knowledge of the anatomy and physiology of the area for fabrication of a successful and functional prosthesis. The cheeks are supported from three aspects, the zygoma above, the mandible below, and the parotid gland overlying the masseter muscle posteriorly². The anterior part of the cheek is supported by the muscular framework converging into the modiolus, and posterior support is provided by the posterior teeth and their supporting structures². With the loss of the posterior teeth, the cheeks tend to collapse to varying degrees and move medially to meet the laterally expanding tongue. Loss of subcutaneous fat and elasticity of the connective tissue produces the hollow cheeks seen in the aged². The critical consideration for the procedure discussed here is the technique implemented. The material used in this case for recording the coronoid space was modelling wax, and its use is well documented. The method described here is a verifiable, repeatable, and clinically relevant method to achieve a cheek plumper that functions in harmony with the stomatognathic system. The retentive mechanism used for the cheek plumper was a friction lock attachment. It does not contain any metal components, can be fabricated easily in the laboratory, does not require any extra or specialized equipment, and is cost effective. For fabrication of the cheek plumper, flexible denture base material was chosen for the precise fit it offers and its flexibility; however, its retention over time also depends on the number of times the patient removes and attaches it. Conventional cheek plumpers, when used, add to the weight of the prosthesis, can cause muscle fatigue, and make the denture unstable³. They also make insertion and removal difficult, particularly for patients with xerostomia⁴. In this report, a detachable plumper was fabricated, reducing the weight of the definitive prosthesis and allowing easy placement and removal onto and off of the denture. Rectifications of drooping of cheeks can be done by different options like reconstructive plastic surgery, botulinum toxin (BOTOX) injections in the facial muscles and different type of prosthesis⁵.

References

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