

How to Cite:

Sajjanar, J., Ingole, A., Soni, M., Gade, J., Rana, Z., & Sajjanar, A. (2022). Undetachable hollow light weight vacuum formed cheek plumper to restore esthetics of a completely edentulous patient. *International Journal of Health Sciences*, 6(S6), 2302–2307.
<https://doi.org/10.53730/ijhs.v6nS6.9819>

Undetachable hollow light weight vacuum formed cheek plumper to restore esthetics of a completely edentulous patient: A case report

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Abstract---Facial esthetics is an integral part of dental treatment. Edentulous patient are increasingly demanding improvement in esthetics at the end of treatment. The edentulous state is associated with loss of teeth, resorbed alveolar ridge, reduced muscle tonicity, and hollow cheeks. Complete denture treatment includes not only the replacement of missing teeth but also the restoration of facial appearance. In individuals with marked resorption of the alveolar process, conventional dentures fail to provide adequate support;

necessitating additional support for the cheeks. This can be done using cheek plumper or cheek lifting appliances. This article has described a simple, effective and non-invasive treatment alternative to improve facial appearance in a completely edentulous patient using undetachable light weighted hollow vacuum sheet formed plumper prosthesis.

Keywords---cheek plumper, prosthesis, edentulous patient, vacuum sheet.

Introduction

Facial esthetics plays an important role in a person's professional and social life. 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.¹ 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 well 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. This can be done using cheek plumper or cheek lifting appliances. Cheek lifting appliances have been used previously to improve aesthetics and psychological profile in patients. Use of plumper prosthesis in maxillofacial prosthodontics is also well documented.^{2,3}

A conventional cheek plumper is 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 over contouring denture flanges in the mediolateral and anteroposterior directions within physiologic limits. However, the increased weight and bulk of conventional cheek plumper's make their insertion challenging and also hampers the retention of maxillary complete dentures.⁴ In order to overcome this problem one may use vacuum forming sheet to make cheek plumer which may serve the purpose of being light weight and less bulk. Cheek plumper can be of two types:

- Undetachable / Conventional Cheek Plumper
- Detachable cheek plumper.

The present paper exemplifies case report of undetachable cheek plumper with fulfilling the limitation. This article has described a simple, effective and non-invasive treatment alternative to improve facial appearance in a completely edentulous patient using undetachable light weighted hollow vacuum sheet formed plumper prosthesis.

Clinical Report

A 62-year old completely edentulous male patient reported to the Department of Prosthodontics with the chief complains of difficulty in chewing due to missing teeth and poor aesthetics. It was noticed that patient was socially demoralized due to loss of teeth and poor aesthetics because of sunken cheeks (figure 1). History revealed that patient was edentulous since last 3 years and has not worn denture since then. Extra-oral examination revealed that patient had poor aesthetics, unsupported oral musculature leading to sunken cheeks. Intra-oral examination revealed that ridges were well defined in both maxillary and mandibular arch and diagnosed according to ACP Classification: Class II Completely Edentulous maxillary and Mandibular edentulous arch with Sunken [Hollow] Cheeks. All the steps for conventional complete denture were completed till Try-In stage (Figure 2).

At the Try-In stage, the template for cheek plumper was fabricated with the help of modelling wax. Modelling wax was molded and placed over the maxillary right and left buccal flange of the denture base. Border movements were done so that the wax is well adapted. Movements were repeated till the cheeks gained required fullness. Now, the cheek plumper made of modelling wax were separated from waxed up denture bases. The indentations in form scoring lines anterior, posterior, superior and inferior extent were marked on trial waxed up denture for future attachment of cheek plumper. Cheek plumper templates were made of putty consistency polyvinyl siloxane impression material. This was utilized to make positive replica of the cheek plumper using dental stone. On this cast vacuum form sheet of thickness 2 mm was adapted using vacuum forming machine. Adapted sheet was separated from the cast and excess was cut with scissors. Denture flasking and dewaxing procedures were finished separately for the final denture. Trimming, finishing, and polishing procedures were performed. The vacuum formed cheek plumper were attached to final maxillary complete denture using cyanoacrylate adhesive material (Figure 3) within indentations made on the final denture. The patient was given common post insertion instructions and was encouraged to make efforts to learn to adapt to the new dentures and hollow cheek plumper. Within a week, the patient expressed satisfaction in mastication, phonetics and esthetics. The undetachable hollow cheek plumper did not compromise the retention form and weight of maxillary complete denture.



Fig 1. Pre operative view of patient with shrunken cheeks



Fig 2. Try-In of cheek plumper using Modelling Wax



Fig. 3. Vacuum formed sheet cheek plumper were attached to final maxillary complete denture using cyanoacrylate adhesive material

Discussion

In today's world denture esthetics is not confined only to selection of the teeth based on factors like form, shape, color, arrangement and sex. Instead, it is more about harmonization between the artificial and natural tissues. Loss of teeth in posterior region results in loss of cheek support due to which cheek tend to move medially to meet laterally expanding tongue. Also, loss of the teeth in anterior region leads to changes in cheek contour as a result of loss of vertical dimension of occlusion. The apparent loss of subcutaneous fat, buccal pad of fat and elasticity of connective tissue also produces the slumped cheeks, seen in aged.⁵

Rectifications of drooping of cheeks can be done by different methods like reconstructive plastic surgery, injecting the botulinum toxin (BOTOX) in the facial muscles and different type of prosthesis.^{6,7,8} Conventional cheek plumper's present major limitations in terms of retention and stability in patients with maxillary dentures due to their increased size and weight.⁹ In the present case report undetachable cheek plumper prosthesis was planned to reduce weight of the final prosthesis by making them hollow and from vacuum forming sheet . Perhaps, fulfilling the limitation of cheek plumper undetachable hollow and lightweighted cheek plumper was not increased in weights that hamper retention of the maxillary complete denture.

Conclusion

The ability of the dentist to understand and recognize the problems of edentulous patients, to select the proper course of treatment required and reassure them is of great clinical importance. This case report describes a simple and economic prosthetic aid that not only offers esthetics but also improves the psychological and functional profile of the patient.

Financial support and sponsorship: Nil

Conflicts of Interest: There are no conflicts of interest

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