

## An Innovative Solution To Slumped Cheeks: “Spring Retained Cheek Plumper”- A Case Report.

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**Abstract:** Completely edentulous ridges and their residual ridge resorption are two inevitable physiologic/pathologic processes which cause functional and esthetic impairment of the patient. Sometimes in cases where ridge resorption is more and artificial denture is not able to support facial soft tissues adequately; it leads to sunken/hollow cheek appearance. Such cases are ideal candidates for cheek plumper. However, these appliances stretch cheeks away from denture flange resulting in loss of vacuum seal, hence poor retention. Few patients feel discomfort in their facial muscles due to prolonged wearing, so the removable plumpers are more accepted by patients as compared to fixed ones. In this article a simplified design of removable cheek plumper is discussed which can be easily fabricated within available resources and lower jaw is restored with implant supported overdenture to combat the problem of retention loss.

**Keywords:** slumped/hollow/sunken cheeks, cheek plumper, complete denture, esthetics.

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### I. Introduction

In recent times, esthetics plays an imperative role for an individual owing to the physical and social needs. The general outlook of the face is determined by soft tissue supported underneath by the facial bones. Whereas, middle face in particular is formed by soft tissue (Cheeks and Lips) and its support from inside is provided by the natural teeth and alveolar ridges.<sup>1</sup> Extraction of natural teeth followed by excessive residual ridge resorption or long term edentulism without restoration with denture teeth, leads to sagging of cheeks and lips. In long term these facial muscles become weak and lose their tonicity and resultantly sunken cheeks are common findings in such patients.<sup>1,2</sup>

During prosthodontic rehabilitation of such patients, the cheek area requires some extra support as compared to the support provided by flange and teeth of the denture alone. To fulfill this requirement of extra bulk, appliance known as cheek lifting appliances or cheek plumpers are added in the denture. These can be fixed or removable. The conventional design was fixed, which was achieved by thickening of buccal flange. However, these have few disadvantages like increased weight; discomfort to patient while chewing and loss of retention. Moreover, in cases of difficulties faced, patients cannot remove the plumpers resulting in wastage of the entire denture prosthesis.<sup>3</sup>

The other alternative is detachable cheek plumper. Most commonly used attachments in removable plumper prosthesis are magnets, ball end clasps and springs.<sup>2,5</sup> Their merits include; easy retrieval so that patient can remove them during oral functions, ease in hygiene maintenance, economical, noninvasive, improved esthetics to the desired level, simplicity of the clinical and laboratory procedure. Whereas its demerits include loss of retention as it stretches the soft tissue curtain or facial seal away from denture borders and thus causing break in vacuum seal. Other disadvantages are increased weight of denture, and constant strain on cheek muscles leads to muscle fatigue, frequent review calls for detachable magnet prosthesis over a period of time, difficult to insert in microstomia patient due to large size.<sup>6</sup>

### II. Case Report

Forty five years old male completely edentulous patient reported with chief complaint of difficulty in chewing food. History revealed that his teeth were mobile and within a short duration he lost all his teeth. For the last two years he is completely edentulous and is not using any prosthesis. On examination one of the significant finding was very prominent malar process and sunken cheeks. Intra oral examination showed excessively resorbed upper and lower ridges. Blood investigations were carried out to rule out any systemic disease.

### **Clinical Procedure:**

Diagnostic impressions were made and wax rims were fabricated to record tentative jaw relations and to evaluate the required cheek support for the cheek plumpers. It was noted that retention of lower denture was getting compromised (FIGURE 1-A); to overcome this mandibular implant supported overdenture was planned. Implants were placed in 33 and 43 region. (FIGURE 1-B) After the healing period, (FIGURE 1-C) impressions were made for complete denture fabrication in conventional manner following all the guidelines for resorbed ridges. Permanent record bases were fabricated over the master casts. Wax rims were constructed and jaw relation was carried out.

### **Cheek plumper procedure:**

Teeth arrangement followed by denture wax trial was done. At this stage, soft modeling wax was placed in buccal corridor (buccal to maxillary premolar and molar region) to support cheeks from inner side. (FIGURE 1-D) Once satisfied with the bulk and position of wax blocks their positions were marked on trial denture. The inner surfaces of these wax blocks were trimmed to reduce weight and to get space for attachment placement. These blocks were later fixed with attachments and acrylised in heat cure resin. (FIGURE 1-E)

### **Attachments for cheek plumper (FIGURE 1-E)**

**For cheek plumper:** For holding these wax blocks, two helix springs were made in 23 gauge orthodontic wire having one arm embedded in wax block and other free arm for attachment with denture.

**For denture:** (FIGURE 1-F) A 6mm length of orthodontic buccal tube was cut and soldered with ligature wire on its outer surface. Four such buccal tubes were attached vertically on buccal flange of maxillary denture (two on each side) to hold spring free arm. Soldered wire on tube was embedded in denture acrylic to hold tubes strongly in place.

**Attachment mechanism:** Free arm of helix spring can be placed in these vertical tubes. (FIGURE 1-G, H) These cheek plumpers were then checked intraorally for esthetics without compromising retention of dentures. It was found that anterior border was visible during broad smile (FIGURE 2-B) so accordingly trimming was done. (FIGURE 2-C) Another added advantage of this design is the spring action by virtue of which the cheek plumper can be pressed medially thereby less stretching the cheek muscles takes place during opening of the mouth resulting in less discomfort compared to the fixed plumpers.

## **III. Discussion**

Facial disfigurement due to hollow or sunken cheeks can be either a result of normal physiologic process (edentulism) or pathological conditions like hemiplasia, Bell's palsy, burn scar, maxillofacial surgery, damage to marginal branch of facial nerve. Restoring external form of the lips and cheeks is an integral part of the dental treatment.<sup>1-3,7,8</sup> Cheek/Lip plumper or cheek lifting appliance is a prosthesis which is used as an adjunct to the artificial dentures to support the slumped or unsupported cheeks to improve facial esthetics. These should not be visible from outside during speech and should be comfortable for the patient to justify its purpose. These prosthesis can be incorporated either as fixed or removable and can be attached either to maxillary or mandibular denture as per the requirement of the case without compromising retention and esthetics.<sup>9</sup> If attached to mandibular denture the prosthesis will also move during functional movements, hence can cause discomfort to the patient and along with compromising the retention of lower denture. Looking at these clinical parameters, planning an adjunct for maxillary denture is always advantageous over mandibular denture. Various attachments have been described in literature for the removable plumper with their merits and demerits.<sup>6-11</sup> This article has shown relatively simple, inexpensive and effective clinical technique whereby a retentive maxillary denture was chosen for adding removable cheek plumper and as mandibular ridge was atrophic so implant supported overdenture was planned. These two added modifications not only improved function, comfort but also enhanced the appearance and health of the patient. The advantages of this design are reduced weight (due to hollowing of inner surface of plumper which gives space for attachment placement), spring action which reduces muscle strain, easy detachability for cleaning or in case of discomfort. The possible disadvantage is the gap between prosthesis and denture which is a dead space for food lodgment but the patient was asked to remove prosthesis while having meal.

## **IV. Conclusion**

This case report describes a method of fabricating a removable cheek plumper using available resources in the dental laboratory to correct facial contour in a patient having excessive slumping of the cheeks. This prosthesis is not only simple in design, easy to fabricate, comfortable for the patient to insert and remove but also renders excellent esthetics (most sought after parameter) and stability during functional movements which boosts the self esteem of the patient.

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