

# Management of sunken cheeks and esthetic rehabilitation of a patient by using detachable cheek plumpers in a conventional complete denture with a new attachment system: A case report

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## ABSTRACT

*The natural consequences of ageing can lead to edentulism as well as the loss of muscle tonicity of the face. This can cause unesthetic appearance, functional impairment and thus disturbed psychosocial life. Sunken cheek is one of the major findings of edentulism. It can be managed with conventional maxillary and mandibular denture prosthesis. However additional support may be required in special cases. Cheek plumper prosthesis provides the extra support and restores the facial esthetics; thereby enhancing the self esteem of the patient. This clinical report describes a simplified technique for the management of sunken cheeks and esthetic rehabilitation by using detachable cheek plumpers which can be easily fabricated and attached to the conventional maxillary complete denture with crosspin.*

**Keywords:** Complete denture; Sunken cheeks; Esthetics; Dowel pin; Cheek plumpers.

## INTRODUCTION

People are increasingly on the lookout for ways and means of enhancing their natural beauty now-a-days. It is vital for a dental practitioner to think about the entire face in totality once attempting to figure on dental aesthetics. External facial features like eyes, nose, cheeks, lips and facial musculature are an important factor in determining facial aesthetics due to their extreme visibility.<sup>1</sup>

Form of cheeks is determined by the support provided by internal structures like teeth, ridges or dentures in the edentulous patients.<sup>2</sup> Cheek contours are altered by the loss of

anterior teeth. With the loss of posterior teeth and subsequent loss of vertical dimension of occlusion, the cheeks tend to collapse and move medially.<sup>3</sup> Extraction of natural teeth followed by excessive residual ridge resorption, long term edentulism without restoration, thinning of tissues due to ageing, or weight loss may also lead to sunken cheeks.<sup>4,5</sup> Also, this can make a person appear older and hence have a negative psychological impact on the patient.<sup>5</sup>

Prosthodontics not only confines to replacement of missing teeth but also restoration of facial support.<sup>6</sup> Conventional procedures can fulfill these requirements. However in some situations, where the patient has sunken cheeks, an additional support to the dentures should be provided. This can be achieved by using cheek plumper or cheek lifting appliances which enhances the support of sunken cheeks to provide better esthetics.<sup>5</sup> Use of plumper prosthesis in maxillofacial prosthodontics is well documented and has been described for improving esthetics and the psychological profile of patients.<sup>7</sup>

A conventional cheek plumper is single-unit prosthesis with an extension near the premolar-molar region that supports the cheeks. Such prostheses are an integral part of the contour of maxillary denture flanges designed by over-contouring the flanges 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.<sup>7</sup>

To overcome these problems, detachable cheek plumpers have been advocated.<sup>8</sup> They offer more advantages in terms of ease of use. Their merits include; easy retrieval when desired by the patient, prevention of muscle fatigue, less discomfort, ease in hygiene maintenance, economical, non-invasive, improved esthetics to the desired level, simplicity of the clinical and laboratory procedure.<sup>4,7</sup>

Different types of attachments for its use with cheek plumpers have been discussed in the literature such as magnet,<sup>3-8</sup> push button,<sup>1,6,7</sup> buccal tube and springs.<sup>4,9</sup> However these attachments have certain disadvantages like short-term durability, corrosiveness, and high cost. Magnet and push button may cause rotation of the cheek plumpers during oral function. Also magnets can cause interferences in patients with cardiac pacemaker and implantable cardioverter defibrillators.<sup>3</sup> Moreover these attachments cannot be customized.

Therefore, a new attachment was used to overcome the demerits of previously used attachments. This clinical report describes the management of sunken cheeks using detachable cheek plumpers attached with crosspin to the conventional complete denture. It provided absolute precision between the cheek plumpers and the denture base with some added benefits such as high durability, resistance to corrosion, ease of availability and cost effective.

## **CASE REPORT**

A 54-year old male patient reported to the Department of Prosthodontics for replacement of missing teeth. The patient was conjointly conscious about his overall

facial look and desired to have a prosthesis which might build his face look fuller and healthier. He had lost his teeth over a period of five years because of poor periodontal conditions. He was completely edentulous for past three years and had not worn denture since then. Intraoral examination revealed completely edentulous maxillary and mandibular ridges. Extraoral examination revealed sunken cheeks along with wrinkling of skin and flaccidity of facial muscles (Fig. 1). Due to psychological stress about the appearance, he was leading a socially isolated life.

Considering all these findings, a treatment plan was formulated. Since the patient wanted both, replacement of missing teeth and improvement in facial appearance, a conventional complete denture along with detachable cheek plumpers were planned. Primary impressions of maxillary and mandibular ridges were made with medium-fusing impression compound (Y Dents, MDM Corporation, Delhi, India) and custom trays were fabricated by using autopolymerizing acrylic resin (DPI Ltd, India). Border moulding procedure was performed with low fusing impression compound (DPI Pinnacle, The Bombay Burmah Trading Corporation Limited, Mumbai, India) and secondary impression was made with zinc oxide eugenol impression paste (DPI Impression paste, India). Horizontal and vertical jaw relations were recorded. Other clinical and laboratory steps were completed for a conventional complete denture till try-in stage.

In the try-in appointment, esthetic evaluation revealed a sunken appearance of cheeks with waxed-up maxillary and mandibular complete denture. A waxed-up cheek plumpers fabricated by using Alu wax (Maarc, India) were attached to the maxillary waxed-up complete denture on both the sides of the buccal flanges at first and second molar region (Fig. 2). Necessary adjustments were done. Diligent examination showed no occlusal interferences. It was ensured that the denture retained its stability and there was no unnecessary tension on the facial muscles. This step was done to evaluate the cheek support. A dramatic change in the appearance was observed and the prosthesis was accepted up by the patient.

A commercially available crosspin (Harald Nordin SA, Switzerland) used as an attachment consists of a single straight cross-shaped brass dowel pin and a plastic sleeve (Fig. 3). The length of crosspin was customized according to the total thickness of the buccal flange in maxillary molar region. The tapered ends of crosspin were cut using a metal disc in straight micromotor handpiece to obtain a straight component. The length of plastic sleeves was conjointly customized. After satisfactory results were obtained, two customized crosspins were incorporated into each maxillary waxed-up cheek plumpers (Fig. 4). Holes were made on the buccal flanges of both right and left sides of waxed-up maxillary complete denture corresponding to the pin dimension and position for the sleeves were made (Fig. 5). The cheek plumper assembly was then attached to the denture base. It was again verified into the patient's mouth for fullness and occlusal discrepancy. The waxed-up plumpers were separated from the waxed-up denture. Conventional flasking and dewaxing procedures were completed separately for the maxillary and mandibular complete dentures and cheek plumpers. The mold space was packed with heat-polymerizing acrylic resin (DPI, Mumbai, India) and curing procedure was performed according to the manufacturer's

instructions. The cured maxillary and mandibular complete dentures and cheek plumpers were retrieved. Trimming, finishing, and polishing of the prostheses were performed. After finishing and polishing, holes were made on the right and left posterior buccal flanges of the heat-polymerized maxillary denture base corresponding to the crosspin dimension and position (Fig. 6). The plastic sleeves were incorporated into the holes and sealed with auto-polymerizing acrylic resin. The processed acrylic cheek plumpers were re-oriented to the maxillary denture base (Fig. 7).

The finished maxillary complete denture attached with cheek plumpers and the mandibular complete denture were inserted into the patient's mouth and examined. There was a considerable improvement in the facial esthetics, overall appearance and sunken cheeks were managed significantly (Fig. 8). The cheek plumpers did not affect the speech, retention or stability of the dentures. The patient was satisfied with the facial appearance. Instructions were given regarding cleaning, retrieval, insertion and maintenance of the prostheses. Post-denture insertion recall was done after one day, one week and one month. Further recall appointments were scheduled every six months but no complications were noted.

#### **DISCUSSION:**

In this clinical report, esthetic evaluation revealed the need of additional support to the upper part of the cheeks. The advantage of using cheek plumpers only in maxillary complete denture is that the weight and bulk of the prostheses is reduced. However, cheek plumpers in the mandibular denture can also be fabricated when the maxillary cheek plumpers alone cannot provide adequate support. It is indicated in patients with maxillofacial defects, reduced overlying muscle tonicity or severe resorption of the alveolar process.

Crosspin was preferred as an attachment since it has numerous advantages over other attachment methods. It has a double-profile design which resists rotation or movements of the cheek plumpers while in function. It has good strength as well as long term durability. The crosspin fits snugly into the plastic sleeve which prevents its contamination with saliva. Therefore, corrosion was not reported with this attachment, unlike others previously used. It is easily available in prosthodontic laboratory and comparatively cost effective. A smaller dimension is needed to be trimmed out from the denture base for placement of the attachments.

It is straightforward to insert and remove without any hindrance and hence can be used in patients with compromised dexterity. It can also be used in patients with cardiac pacemakers and cardioverter defibrillators. It can be customized easily according to the thickness of buccal flange, which varies in different patients. However there are some drawbacks related to the crosspin. It cannot be used in patients allergic to metal and could also be troublesome to clean the holes made into the denture base.

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**FIGURES:**

Fig. 1. Pre-operative frontal view showing sunken cheeks.



Fig. 2. Waxed-up cheek plumpers attached to the buccal flanges of the waxed-up maxillary complete denture at first and second molar region.



Fig. 3. Crosspin (Cross-shaped dowel pin on the left and plastic sleeve on the right).



Fig. 4. Crosspins incorporated into the waxed-up cheek plumpers.

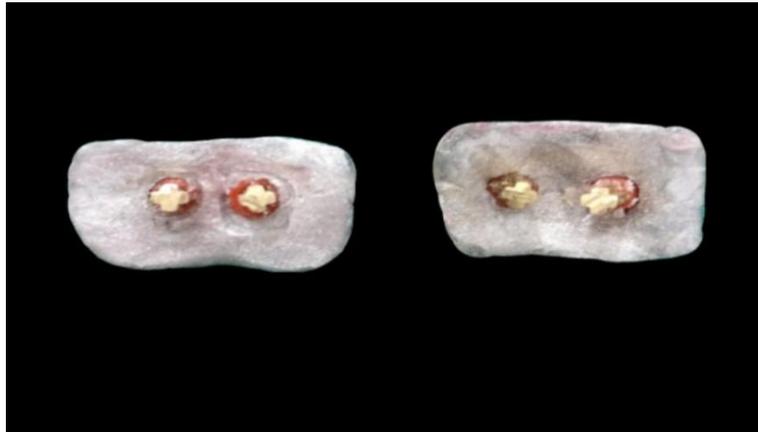


Fig. 5. Sleeves incorporated into the holes of waxed-up maxillary complete denture.



Fig. 6. Holes made into the buccal flange of heat-cure polymerized maxillary complete denture.



Fig. 7. Completed maxillary complete denture attached to cheek plumpers and mandibular complete denture.



Fig. 8. Post-operative frontal view showing improved esthetics.

