



Subject Area : Prosthodontics

REMOVABLE CHEEK PLUMPERS USING DIE PIN AND METAL SLEEVES – A NOVEL TECHNIQUE

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ARTICLE INFO	ABSTRACT
Received 14 th May 2025 Received in revised form 26 th May, 2025 Accepted 13 th June 2025 Published online 28 th June, 2025	Complete dentures not meant to restore lost teeth, but also enhance facial aesthetics. This case report proposes a simple, effective, and non-invasive way for improving support for sunken cheeks utilizing cheek plumpers in an atypical cu-sil denture with a die pin. Cheek plumpers are ideal for sunken cheek patients due to their perfect aesthetic appeal, fit and stability during various functional movements. This novel technique promotes patient health. Cu-sil dentures are transitional dentures with openings for natural teeth which is relined by soft reliner or silicone.
Key words:	
Hollow cheeks, Cheek plumper, Customized die pin attachments, unconventional complete denture, Esthetics, Hollow Cheek Plumper, cusil denture.	
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INTRODUCTION

A cheek plumper is a prosthesis that is used to lift sunken cheeks, improving a person's appearance.

As Jamieson¹ stated, "fitting the personality of the aged patient is often more difficult than fitting the denture to the mouth." During fabrication of dentures, ensuring the correct extension and shaping of denture flanges can contribute to facial aesthetics by providing support for the lips and cheeks."

Young² stated that Denture aesthetics is not a new term in the field of dentistry. It is described as the impact a dental prosthesis has on a person's appearance and attractiveness.

A conventional cheek plumper is a single-unit prosthesis that supports the cheeks by extending close to the premolar-molar region. However, because of their increased bulk, single unit prostheses can cause issues for some patients during insertion and removal. Detachable cheek plumpers are an additional type.

The cheek plumper is independent from the denture, making it easier to place and remove from the mouth cavity. Several

attachments have been utilized and mentioned in literature to secure the separate cheek plumper to the denture.

This case aims to highlight a case of a partially edentulous patient who was given cheek plumpers bilaterally to increase esthetics, coupled with a cu-sil denture using customized stainless steel die pin attachments.

'Muller De van' stated that the perpetual preservation of that what remains is more important than meticulous replacement of what is missing. Preserving teeth and bone can enhance the prosthesis's longevity.

Cu-sil dentures are a type of transitional denture that preserves natural teeth, reduces bone loss, improves proprioception, esthetics, masticatory efficiency, and boosts confidence.¹⁰

Case report

A 37 year old male patient reported to the Department of Prosthodontics, Jaipur Dental College, Maharaj Vinayak Global University, Jaipur, Rajasthan, with the chief complaint of missing upper and lower front and back teeth. He also complained about his face seeming hollowed out.

The patient was conscious, coherent to the surroundings, and without any relevant medical history. On extra-oral examination, the major finding was sunken cheeks. The patient was partial edentulous during intraoral inspection. He reported that history of tooth loss due to periodontal disease and dental

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caries. Further probing revealed that the patient was edentulous for about 1 years.

On the first appointment, primary impressions were made with irreversible hydrocolloid material- Alginate (Prime Chrome Chromatic Alginate Impression Material).(Figure-1)

Primary casts were retrieved on which the spacer with full spacer designs was adapted and special trays were fabricated using self-cure acrylic resin (DPI, India).

were attached to the cu-sil denture using an innovative technique using die pin (stainless steel double die pins).

Metal sleeve was cut into half and die pin was also cut into half. Smaller diameter of die pin was trimmed and bigger diameter was preserved for the retention of the cheek plumpers. (Figure-4).

Midline was marked at the junction of 2nd premolar and 1st molar region on left and right side of the maxillary buccal

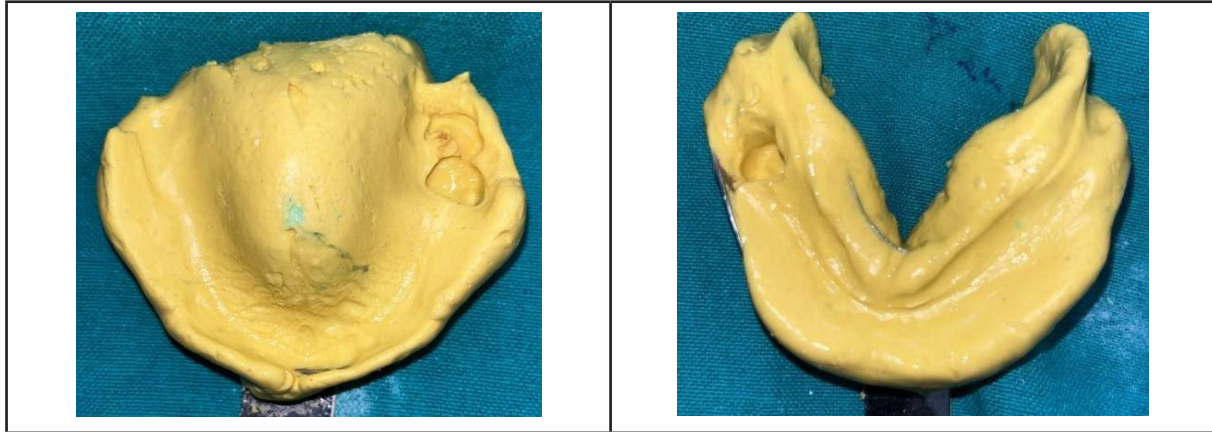


Figure 1. Primary impression.

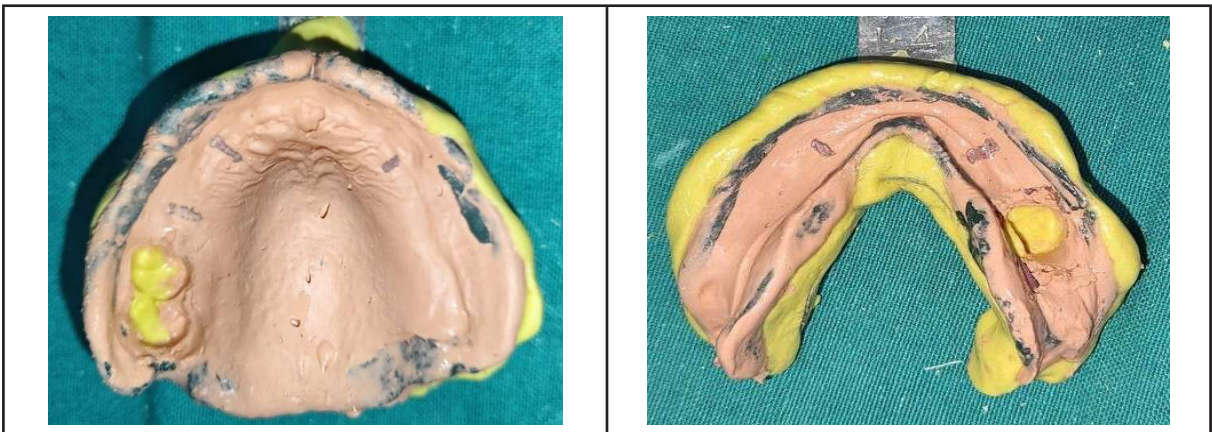


Figure 2. Zinc Oxide Eugenol followed by Alginate pickup impression.

During the next appointment, border moulding was performed and secondary impressions were made by pick-up impression technique with the help of Zinc Oxide Eugenol followed by Alginate pick up impression. (Figure 2)

Maxillo-mandibular relations were made on the next appointment (Figure 8). In order to address the sunken cheeks, look at the buccal surface of the maxillary dentures and facial fullness, the upper occlusal rim was altered based on the length and fullness of the lips and the patient's visibility both at rest and when speaking. Try in was done to check phonetics and esthetics.

Using cotton and modelling wax, detachable cheek plumpers were fabricated. (Figure-3)

Acrylization of the cusil denture and hollow cheek plumpers was done separately using heat cure acrylic resin. The cheek plumpers were removed, trimmed to make them hollow, and polished when they had cured.

Cheek plumpers can be fixed or removable or detachable depending on the patient. In our patient the cheek plumpers

flange area and cheek plumpers.



Figure 3. Detachable cheek plumpers made using cotton and modelling wax

Space is created at desired location in the maxillary buccal flange of the cu-sil denture and the cheek plumper, space is made by trimming to incorporate metal sleeve and die pin respectively. (Figure-5)

Metal sleeve was secured in antero-posterior direction place by using autopolymerising acrylic resin (DPI India).(Figure-6)

Die pin was inserted in the metal sleeve and modelling wax



Figure 4. Stainless steel die pins used for detachable cheek plumpers.



Figure 5. Space created for metal sleeve and die pin placement.



Figure 6. Metal sleeve secured using autopolymerising resin

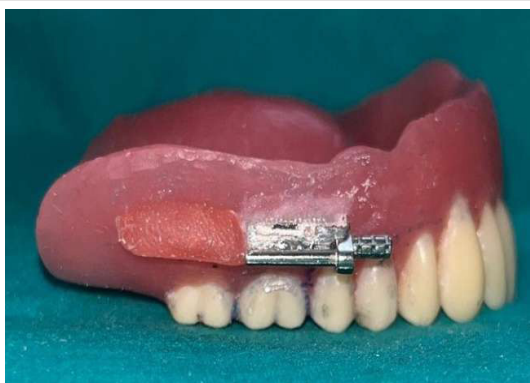


Figure 7. Aluminium foil adaptation done for easy removal of cheek plumpers.

was adapted distal to the metal sleeve and aluminium foil was adapted on the buccal flange area.(Figure-7)

Autopolymerizing acrylic resin was used to fill the space made in the cheek plumpers, and it was then fitted into the buccal flange portion of the maxillary denture.

After the polymerization of the acrylic resin the cheek plumpers are slid in the anterior direction. The cheek plumpers were made with die pins.(Figure-8)

After the denture was inserted, it was confirmed that the cheek plumper had enough room to clear the occlusal table. Following placement, the patient expressed satisfaction with the prosthesis's enhanced fit and appearance. In addition to being informed about the cheek plumper's attachment and detachment, the patient was urged to attend the routine follow-up examination.

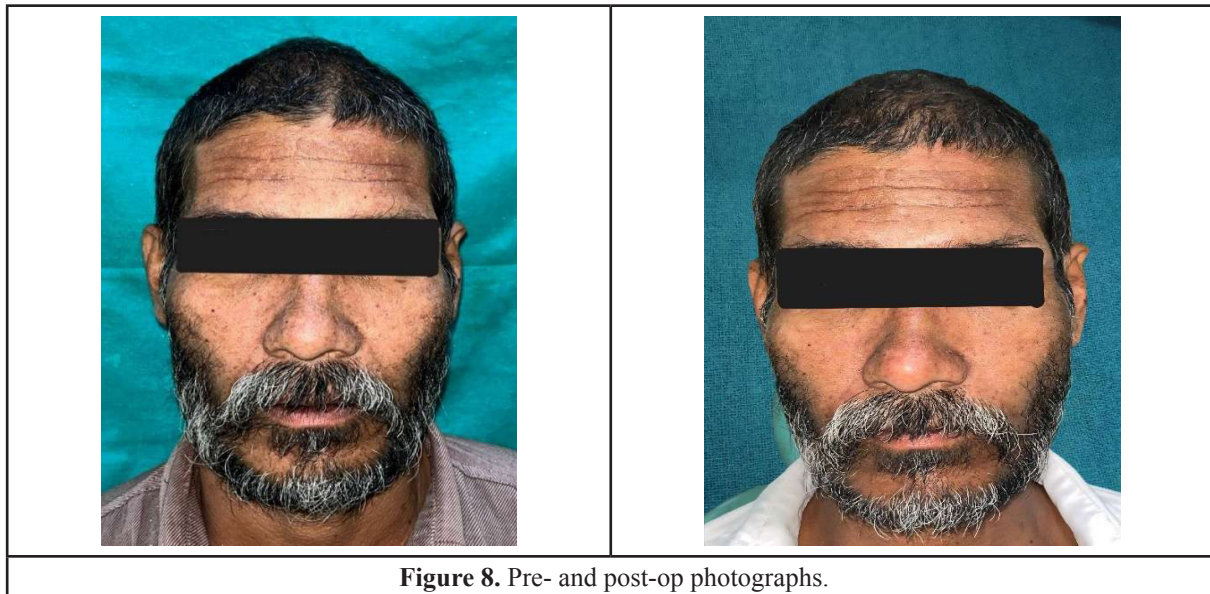


Figure 8. Pre- and post-op photographs.

DISCUSSION

A prosthodontist faces numerous obstacles, including correcting sunken cheeks to improve an individual's appearance.

To overcome the disadvantages of conventional cheek plumper, Magnet-retained plumper prostheses have been utilized in the past, however they have low corrosion resistance and gradually lose their magnetic properties and changing of magnets after every 6 months³.

Disadvantages of conventional cheek plumpers ^{4,6}

The traditional cheek plumper may put too much weight on the top denture, and gravity may cause the prosthesis to come loose.

The buccal extension may interfere with the masseter muscle and the coronoid process of the jaw, destabilizing the upper denture, particularly during eating. Muscle fatigue may come from the extensions.

Excessive mediolateral width of the denture may cause insertion issues, particularly in microstomia individuals.^{5,6}

Detachable plumper prostheses were intended in this instance to facilitate prosthesis insertion and lessen the final prosthesis weight. The patient was able to use the denture if necessary by removing the detachable plumpers.

Advantages of magnet retained cheek plumpers ^{4,6}

- Small size
- Reseating of cheek plumpers is automatic, ease of placement & removal and cleaning.

Disadvantages of magnet retained cheek plumpers^{4,6}

- Poor corrosion resistance
- Negative impact of magnetic fields on oral tissue health
- Loss of magnetic property over time may need regular replacement.⁹

Advantages of press button retained cheek plumpers (Rupal J. Shah et al., 2014) ^{6,7}

- Small & light weight Snug fit
- Inexpensive

Disadvantages of press button retained cheek plumpers

- Poor corrosion resistance
- Food lodgement
- If only one button is utilized to attach the plumper, the plumpers can rotate while function. Therefore two push buttons in each plumper are preferred for better stability.

Advantages of Wire retained cheek plumpers ⁶

- Small & light weight
- Inexpensive
- Easy of insertion & removal
- Easily available

Disadvantages of wire retained cheek plumpers ⁶

- The distance between the prosthesis and denture
- Food lodgement

Advantages of Die pin retained cheek plumpers ⁷

- No rotation, movement while function
- Precise fit
- Good strength
- Easy insertion/removal of prosthesis
- Can be applied to individuals whose dexterity is impaired.
- Corrosion not reported

Disadvantage of die pin retained cheek plumpers

- Technique sensitive
- Extra step for lab procedures

Cu-sil dentures are meant to maintain the remaining natural teeth, and hence the periodontal ligament and alveolar bone. They have an impact on denture stability and retention.

Additionally, it provides the patient with the psychological fulfillment of keeping their natural teeth in their original state.

Indications for the Cu-sil overdenture¹⁰

- Periodontally compromised teeth
- Elimination of extraction
- Presence of single or isolated teeth
- Poor prognosis of complete denture
- Few natural teeth remaining

Contra-indications of cusil denture^{10,11,12}

- Presence of too many teeth
- The presence of anterior teeth and severe undercuts.
- Bruxism
- High smile line

Advantages of cusil denture includes¹²

- No pre-prosthetic preparation required
- Adjustment are not required on insertion,
- Comfortable to patient
- maintenance of vertical dimension¹¹
- Affordable
- Increased stability and retention
- Easy manipulation of cusil denture to a complete denture prosthesis.

Disadvantages of cusil denture includes¹²

- Frequent maintenance of denture
- Use of special anti-microbial agents
- Use of denture cleansers
- Frequent replacement of soft liners
- Plaque builds up because the whole gingival border of the remaining teeth is coated.¹¹

CONCLUSION

This article describes a simple, effective and non invasive treatment alternative to enhance functionality of facial muscle, aesthetic, comfort in cu-sil denture individual with hollow or sunken or slumped cheeks.

A successful management of sunken cheeks using single stainless steel die pin.

The functioning of various muscle in the face is hindered when the lips and cheeks are not supported. This leads to wrinkles and sagging appearance of lips and cheeks.

Hollow detachable single die pin cheek plumpers allow ease of placement and cleansing in mouth without adding weight to the prosthesis and can effectively restore the cheek contours improving overall comfort, facial appearance and self confidence of patient.

The use of die pins in the present case illustrates a paradigm shift from the conventional methods, providing excellent esthetics and support during various functions.

The die pin attachments are affordable, durable, and resist movement at rest and during function.

For individuals who have very few teeth left, Cu-Sil dentures are an alternate therapeutic option. Transitional dentures, such as Cu-sil dentures, are among the finest treatment alternatives for preserving remaining natural teeth in patients who do not choose to have their remaining natural teeth extracted or used as an overdenture.

Soft liners are used to relined cusil dentures. Because of their visco-elastic qualities, they create a cushion-like effect that distributes pressures more evenly by absorbing energy.¹³

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