

Esthetics redefined by cheek props – A case report

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Abstract

Dentistry is a combination of art and science but when a Prosthodontist can understand the patient needs, the final outcome of the treatment is more successful. A completely edentulous patient undergoes many consequences as a result of loss of teeth among them facial esthetic disfigurement as a result of slumped cheeks is a serious problem as it has got some psychological effect on the patient. There are many lines of treatments available both surgical and non-surgical, this article focuses on nonsurgical management of a patient with slumped cheeks with the fabrication of 4 different types of cheek prop prosthesis.

Keywords: Completely edentulous, Slumped cheeks, Cheek props, Cheek fullness, Push button, Intra-oral magnets, Soft-liners.

Introduction

Although the face represents only a small proportion of the surface of the body, it embodies our social identities and its one of the major vehicles for interpersonal communication. Facial appearances that depart from culturally acceptable concepts of attractiveness have been shown to be disadvantageous to the individual; this is especially the case when those deviations are significant. They reflect inherited characteristics on which may be superimposed the effects of disease or trauma, the most common of which are probably untreated or poorly treated edentulism. Negative changes in facial appearances are often perceived by the persons affected, as well as those around them, as negative changes to the individual themselves. Therefore when we treat edentulous patients, we are managing not just their oral biomechanics but more importantly their individuality. Success demands not only technical expertise but also empathy with the patient's fears and expectations. The edentulous state represents a loss of integrity of the masticatory system, which is frequently accompanied by adverse functional and esthetic sequelae. These are varyingly perceived by the affected patient, ranging from feelings of inconvenience to severe handicap.⁽¹⁾

As Jamieson⁽²⁾ stated, "fitting the personality of the aged patient is often more difficult than fitting the denture to the mouth." If the psychology of the patient is not considered, one's best efforts fail to provide results. Young⁽³⁾ stated that Denture esthetics is not a new term in the field of dentistry. It is defined as the effect produced by a dental prosthesis that affects the beauty and attractiveness of a person. The loss of oral structures primarily affects the appearance of the lower half of the face, but the reconstruction must be executed in harmony with the upper half of the face for complete esthetics. As age progresses, the loss of subcutaneous fat and elasticity of the tissue causes the cheeks to become slumped.⁽⁴⁾

Prosthodontists mainly deal with rehabilitation including loss of teeth, alveolar process, restoration of the tonicity of the musculature, restoration of elasticity of skin, and articulation of speech. Usually, certain facial structures get support from denture flanges, but sometimes the denture flange does not provide adequate support to the facial musculature and requires additional support.⁽⁵⁾

Slumped or hollow cheeks can add years to a person's age. A conventional cheek plumper prosthesis is a single unit prosthesis with extension near premolar-molar region which support the cheek. Major flaw of this design being increased weight of the prosthesis. Also the mesio-distal width may hinder placement especially in microstomia cases. Detachable plumper prosthesis is thus more beneficial.

In a detachable plumper prosthesis, plumper part can be detached from the complete denture. This clinical report illustrates the fabrication through four different techniques and use of cheek prop prosthesis in a completely edentulous patient with sunken cheeks.

Clinical Report

A 46 year old male patient reported to Mamata dental college and hospital requesting replacement of missing teeth. On examination patient had completely edentulous upper and lower arches. Patient had lost his teeth over a period of 2 years due to periodontal disease and was edentulous for past 1 year. One of the major findings on extra oral examination was sunken cheeks (Fig. 1) (preoperative pictures). Patient was conscious of them and desired a prosthesis which would make his face look fuller and healthier. Treatment plan was formulated, keeping patient's demand in mind. It was decided to give patient upper and lower complete dentures with detachable cheek plumpers for the maxillary denture.



Fig. 1: Frontal view

Lateral view (Preoperative Pictures)

Maxillary and mandibular impressions were made using impression compound (Y Dents, MDM Corporation, Delhi). Custom trays were made using auto-polymerising acrylic resin. Border molding was done using low fusing impression compound (Aslate, Asian Acrylates, Mumbai) and wash impressions were made with medium body addition silicone impression material (Aquasil, Dentsply/caulk). Master casts were retrieved and silicon mold duplication of master casts was done in order to make four different types of prosthesis.(Fig. 2) Tentative Jaw relations were recorded, face-bow transfer was done(Fig. 3) and centric relation was obtained and transferred to Hanau semi-adjustable articulator.(Fig. 3) Teeth arrangement was done on the articulator(Fig. 4) and in next appointment waxed denture were first tried for occlusion and esthetics(Fig. 4). Till try in appointment it is same for all the types of prosthesis.



Fig. 2: Master casts

Silicon mold duplication



Fig. 3: Facebow record obtained and transferred to Hanau articulator



Fig. 4: Teeth arrangement

Try-in

Procedure for fabrication of different types of cheek prop prosthesis:

- a. **Conventional single unit hollow cheek prop prosthesis:** For the conventional single unit prosthesis, cheek fullness is obtained by adding wax to the occlusion rims in the needed area. And then teeth arrangement was done without disturbing the contour of occlusion rims and try in was done and evaluated for cheek fullness and then heat cure denture base was fabricated followed by flasking. (Fig. 5) To create hollowness in the area of increased

cheek fullness, plaster pumice syrup was added on the heat cure denture base, and then packing and curing of heat cure acrylic resin was done. (Fig. 5) After Final polishing and finishing of the conventional single unit hollow denture, it was checked in the patient for increased cheek fullness (Fig. 11, 12).



Fig. 5: Flasking

Plaster pumice packing

Conventional single unit hollow cheek prop prosthesis

- b. **Push button type** (Fig. 8): After the try-in appointment dentures are fabricated in a conventional method and dentures are finished and polished. cheek plumpers were made in wax (Fig. 6) and were attached to the maxillary denture and were evaluated to give patient a more fuller appearance.(Fig. 6) Putty index(Fig. 7) of cheek prop attached to the maxillary denture was made and after fabrication of the cheek props this putty index is used as a guide to attach the cheek props in their proper position.(Fig. 7). In this type push buttons were attached with male component attached to the cheek prop and female component on the buccal surface of finished maxillary denture. (Fig. 8)



Fig. 6: Finished denture without cheek props

waxed cheek props attached on buccal surface

acrylization of waxed cheek props



Fig. 7: Putty indexing of Waxed cheek props

cheek props attached in correct place

cheek props attached intra orally



Fig. 8: Cheek props attached with push button

Cheek props attached with intra-oral magnets

Cheek props attached with softliner

- c. **Magnet retained cheek props** (Fig. 9) After the try-in appointment dentures are fabricated in a conventional method and dentures are finished and polished. Cheek plumpers were made in wax (Fig. 6) and were attached to the maxillary denture and were evaluated to give patient a more fuller appearance (Fig. 6). Putty index (Fig. 7) of cheek prop attached to the maxillary denture was made and after fabrication of the cheek props this putty index is used as a guide to attach the cheek props in their proper position (Fig. 7). In this type, intra oral magnets were attached to the cheek props in their respective positions facing unlike poles against each other against the buccal surface of the denture. (Fig. 9)



Fig. 9: With sunken cheeks with increased cheek fullness (Post-insertion pictures)

- d. **Cheek props retained with soft-liner** (Fig. 10) After the try-in appointment dentures are fabricated in a conventional method and dentures are finished and polished. Cheek plumpers were made in wax (Fig. 6) and were attached to the maxillary denture and were evaluated to give patient a more fuller appearance (Fig. 6). Putty index (Fig. 7) of cheek prop attached to the maxillary denture was made and after fabrication of the cheek props this putty index is used as a guide to attach the cheek props in their proper position (Fig. 7). In this type, custom made attachments made with auto-polymerized resin are made on the finished cheek props and these are attached to the denture surface at their corresponding position which is marked already on the denture surface. Soft-liner is the mode of attachment in this type of prosthesis. (Fig. 10)

Discussion

Corrections of slumping of cheeks can be accomplished by various methods, Incorporation of a metallic wire with acrylic button attached to the buccal flange of mandible to provide support to the sunken cheeks is considered as one of the better treatment options.^(6,7) Lazzari described the fabrication of a maxillary removable partial denture for a patient with unilateral facial paralysis. Design included an open loop of eight gauge half round wire attached in the area of first bicuspid, the purpose of which was to elevate and support the upper lip and corner of the mouth. Loop was covered with baseplate wax and after completion of adjustments replaced with clear acrylic resin.⁽⁸⁾

Larsen et al. advocated fabrication of maxillary removable partial denture framework with a retentive mesh in the bicuspid region which was reinforced with modelling plastic to obtain desirable contours on evaluation of speech and esthetics. Wax was later substituted with autopolymerizing resin.⁽⁹⁾ These techniques may however result in the dentures being

bulky and cause discomfort to the patient. These days for quick short term results non-surgical injectable fillers like botulinum toxin-ABOTOX is been used, but long term suitable results are still awaited. Surgical correction is also available treatment modality but it leaves behind a post-surgical scar.⁽¹⁰⁾ In most of the cases, fabrication of cheek plumper prosthesis is very common but, the procedure described here in this article has definitive assured advantages in which we have fabricated cheek props by 4 different techniques:

1. **Conventional single unit hollow denture:** (Fig. 5, 11, 12) To decrease the weight hollowness is created using the plaster pumice sugar syrup. This type has got increased the cheek fullness (esthetics) amongst all but has decreased retention and stability.⁽¹¹⁾
2. **Detachable cheek props attached with intra oral magnets:** (Fig. 9) Ease of placement and removal are made easy with this type but the magnetic property diminishes with time needing frequent replacement. This type is not so economical.⁽¹²⁾
3. **Detachable cheek props attached with push buttons:** (Fig. 8) Most economical of all the types, ease of placement and removal are easy but the buttons are poor corrosion resistant. Masticatory efficiency and phonetics are good with this type of cheek props.⁽¹³⁾
4. **Detachable cheek props attached with softliner:** (Fig. 10) Custom made attachments are made with modelling wax on the inner side of cheek props and these are inserted on to the holes which are filled with soft liner on the denture surface. This type has got increased masticatory efficiency and ease of placement and removal and is the most accepted type by the patient in terms of esthetics and efficiency but the only disadvantage is that soft-liners will lose their resiliency over a period of time.⁽¹⁴⁾

To know the usefulness of different types of cheek props prosthesis, 4 different types are fabricated and

given to a single patient and evaluated. Patient is given a form and asked to rate the different types of prosthesis in terms of different qualities. Among all the types push

button type and cheek props attached with soft-liner are better in all objectives according to the patient.

Type of prosthesis	masticatory efficiency	Esthetics(increased cheek fullness)	retention	phonetics	ease of placement	Psychological wellbeing
Conventional single unit hollow cheek prop prosthesis	**	*****	**	***	***	***
Push button type	*****	****	****	*****	*****	****
Magnet retained cheek props	*****	****	****	***	*****	*****
Cheek props retained with soft liner	*****	****	*****	****	*****	****

Scale: 1* poor, 2 ** fair, 3 ***average, 4***** good, 5***** excellent

Conclusion

To correct sunken cheeks to enhance the aesthetics of an individual is one of the many challenges faced by a Prosthodontist. The dentist's ability to understand and recognize the problems of edentulous patients, to select the proper course of required treatment and reassure them has proven to be greatest clinical value. This case report describes fabrication of different prosthetic aids that not only provides esthetics but also improves the psychological profile of the patient.

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