



Aesthetic Enhancement, Speech Improvement And Harmonizing Occlusion Of A Patient With Unilateral Palsy.

Dr. Isha Prasad^{1*}, Dr Khushbu Samani², Dr. Narendra Padiyar U³, Dr. Hemant sharma⁴

¹Pg, Department of prosthodontics crown and bridge, Mahatma Gandhi Dental college and hospital, Jaipur
Email - ishaprasad2@gmail.com

²Pg, Department of prosthodontics crown and bridge, Mahatma Gandhi Dental college and hospital, Jaipur
Email - khushbu13samani@gmail.com

³Principal and Head of Department, Department of Prosthodontics Crown and bridge, Mahatma Gandhi Dental College and hospital, Jaipur

⁴Reader, Department of prosthodontics crown and bridge, Mahatma Gandhi Dental college and hospital, Jaipur

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ABSTRACT

Bell's palsy is an acute unilateral paralysis of the facial nerve, which was first described by Sir Charles Bell in 1821. A person's quality of life gets majorly affected by hemifacial paralysis. It can cause facial pain, difficulty in talking, eating and drinking, inability to express emotion, drooling of saliva, muscle twitching, tearing of eye and dryness of eye and mouth. Prosthodontic rehabilitation of individuals with Bell's palsy is a challenging task due to poor muscle coordination.

This case report presents a complete rehabilitation of patient with hemifacial paralysis of left side using unconventional procedures. To enhance function and aesthetics, a liquid-supported denture was planned for maxillary arch and a cheek recontouring prosthesis was also fabricated.

Keywords: Facial paralysis, Liquid-supported denture, functionally generated pathway, cheek recontouring prosthesis.

INTRODUCTION

Bell's palsy is an acute unilateral paralysis of the facial nerve, which was first described by Sir Charles Bell in 1821. A person's quality of life gets majorly affected by hemifacial paralysis. It can cause facial pain, difficulty in talking, eating and drinking, inability to express emotion, drooling of saliva, muscle twitching, tearing of eye and dryness of eye and mouth. Prosthodontic rehabilitation of individuals with Bell's palsy is a challenging task due to poor muscle coordination. Poor muscle coordination interferes with steps in impression making, jaw relation, and denture retention and stability, which may necessitate modification of conventional complete denture procedures. [1] Additionally, bilabial plosive sounds (p,b) and labiodental fricative sounds (f,v) are compromised in these cases due to buccolabial insufficiency. Presence of unmodified opposing dentition prevents occlusal balance during function thereby, compromising stability and retention and eventually leading to frequent mechanical failures of the prosthesis. This case report illustrates an approach for prosthodontic management of a compromised patient with facial palsy by restoring the functional and aesthetic needs of the patient.

CASE REPORT

A 70-year-old completely edentulous male patient reported to the Department of Prosthodontics, Mahatma Gandhi Dental College and Hospital, Jaipur, with a chief complaint of inability to chew food. History revealed that the patient had suffered from paralysis of the left side of the face since he was one. On extraoral examination, asymmetry of the face was noticed with loss of muscle tone on the paralyzed side. There was drooping of the corner of the mouth on the affected side, and there were uncoordinated movements of the lower jaw. According to House and Brackman's (1985) classification of Facial nerve dysfunction, the patient was classified as Grade V - **Severe Dysfunction**. This category includes obvious weakness and/or disfiguring asymmetry, only barely perceptible motion and asymmetry and tone at rest. Intraoral examination revealed high well-rounded maxillary edentulous ridge opposing natural dentition restored with coronal prosthesis in

lower jaw. A liquid supported denture on the maxillary ridge was planned using Functionally Generated Path technique to record the dynamic occlusion of the opposing arch. For the collapsed and flacid muscle, a removable cheek recontouring prosthesis was planned to aesthetically mask the palsy.

Recording the functionally generated pathway [3]:

Preliminary and final impressions of the maxillary ridge and mandibular dentition was made in the conventional manner. The maxillary and mandibular casts were mounted on a semi-adjustable articulator using standard procedures. Further, an occlusal rim using impression compound was fabricated on another temporary denture base leaving a visible gap between opposing teeth and the rim [Figure1]. Carding wax was added to the rim and the denture base was placed intraorally. Patient was trained to close in centric relation to indent the soft wax. Now, the patient was instructed to slide his mandible in forward direction without losing teeth-contact until the lower incisors were at edge-to-edge relationship with the rims. Similarly, the lateral eccentric pathways were also recorded for both left and the right side [Figure2A]. Beading and boxing was done, and poured with the die stone to form occluding template [Figure2B] which was mounted to the articulator. Teeth arrangement was done against the stone core and try-in was carried out in a conventional manner. Harmonious occlusal contacts were observed in eccentric movements [Figure3].

Fabrication of the cheek recontouring prosthesis:

A stainless-steel wire clasp and mesh assembly was fabricated over the duplicated cast of dentures to facilitate interlocking of the heat cure acrylic resin[Figure4]. Modelling compound was used to record a functionally and aesthetically acceptable prosthesis to support the facial muscles and also to help in improvement of phonetics[Figure 5]. The procedure was carried out so as to place tension on the vestibular fornix on the affected side^[4]. After achieving the optimal thickness, the clasp and mesh assembly with the impression compound was flaked for acrylization. The appliance was finished, polished and the adaptation over the acrylized denture was also verified.

Fabrication of liquid supported denture: [5]

Stage I

Prior to packing the Polymethylmethacrylate dough, a 1 mm thick, soft, flexible polyethylene sheet (3M Easy-VacGasket-GB040) was adapted on the maxillary cast with the help of a vacuum heat-pressing machine keeping it 2 mm short of the borders[Figure 6]. After this the conventional compression moulding technique was carried out. The denture was then finished, polished, and the patient was asked to use the denture for 2 weeks till he got adjusted to the new dentures.

Stage II

After 2 weeks, A putty impression of the tissue surface of the denture was made and poured in dental stone. All the acrylic-polyethylene junctions were marked on the stone replica. A new polyethylene sheet of 0.5 mm thickness (3M EasyVacGasket-GB020) was adapted on this stone replica by vacuum-pressing and was further cut into the desired shape to form the final denture base.

The temporary 1mm thick sheet was then replaced by 0.5mm thick sheet which was incorporated to the denture via cyanoacrylate adhesives and difference in the space was occupied by a viscous liquid, i.e., glycerine[Figure 7 A]. Denture insertion was done along with the cheek recontouring prosthesis. Patient was recalled for follow-up after 3 months to evaluate denture and patient satisfaction of cheek recontouring prosthesis. On 6 months follow-up, lost liquid was re-injected and the denture was sealed again.

DISCUSSION

This patient was rehabilitated with liquid supported maxillary complete denture, the main advantage of which was its flexibility and its continuous adaptation to the oral mucosa. Also, during masticatory function, liquid supported denture will provide optimal stress distribution.

For achieving a harmonious balanced occlusion in a maxillary single complete denture without modifying the mandibular existing fixed partial denture prosthesis of the patient, FGP technique was used.

Facial symmetry could be restored with the use of a removable prosthesis. By supporting the paralyzed side with the cheek recontouring prosthesis less resistance was encountered by the muscles on the unaffected side while speaking, which also helped in improving the phonation of the patient.

CONCLUSION

A removable complete denture prosthesis in which the occlusion was developed using a FGP helped in satisfying functional needs of mastication and improved stability of the prosthesis. Addition of a cheek recontouring prosthesis helped in improving the phonetics and support facial muscles. Though a fixed prosthesis using implants was possible, it would not have been possible to achieve the functional needs, aesthetics and speech of patients suffering from unilateral paralysis. The described treatment plan and procedure is a simple and cost-effective method for rehabilitation in patients where the patient is not willing for any surgical intervention.

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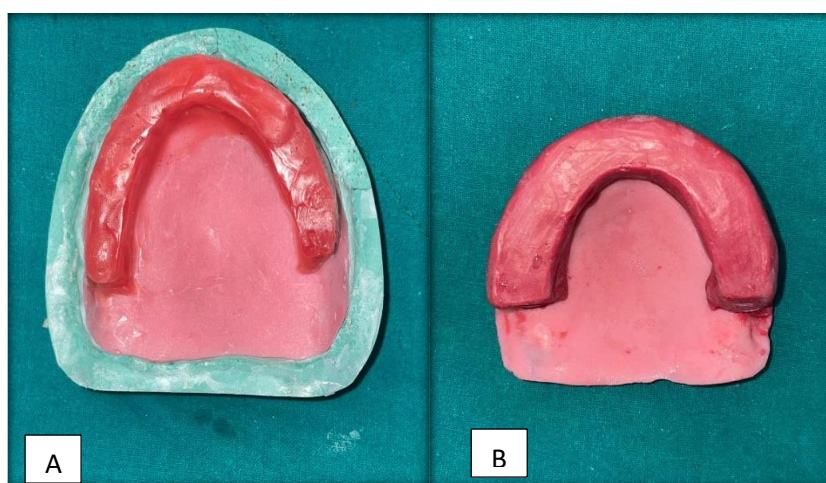


Figure 1 :

- A) Wax occlusion rim**
B) Impression compound occlusion rim

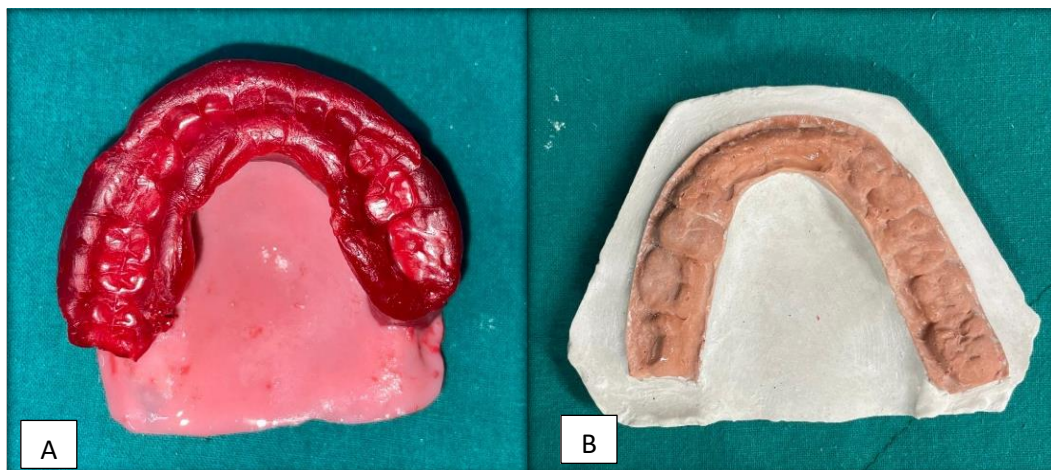


Figure 2 :

- A) Functionally generated pathway**
- B) Stone core cast**



Figure 3 :

**Teeth arrangement done against the stone core.
Note Harmonious occlusal contacts in eccentric movements**



Figure 4 :A stainless-steel wire clasp and mesh assembly

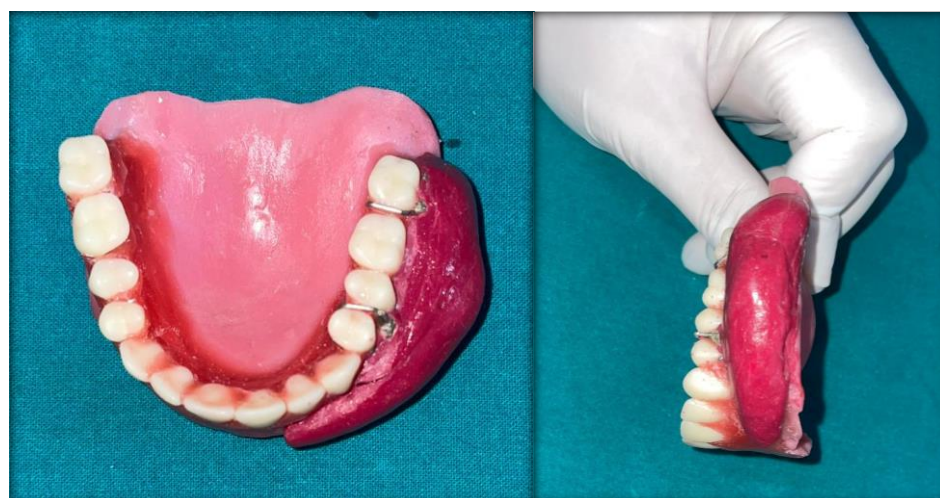


Figure 5: Modelling compound used for recording the zone for cheek recontouring prosthesis



Figure 6: Adapted vacuum form sheet of 1 mm incorporated at the time of packing.

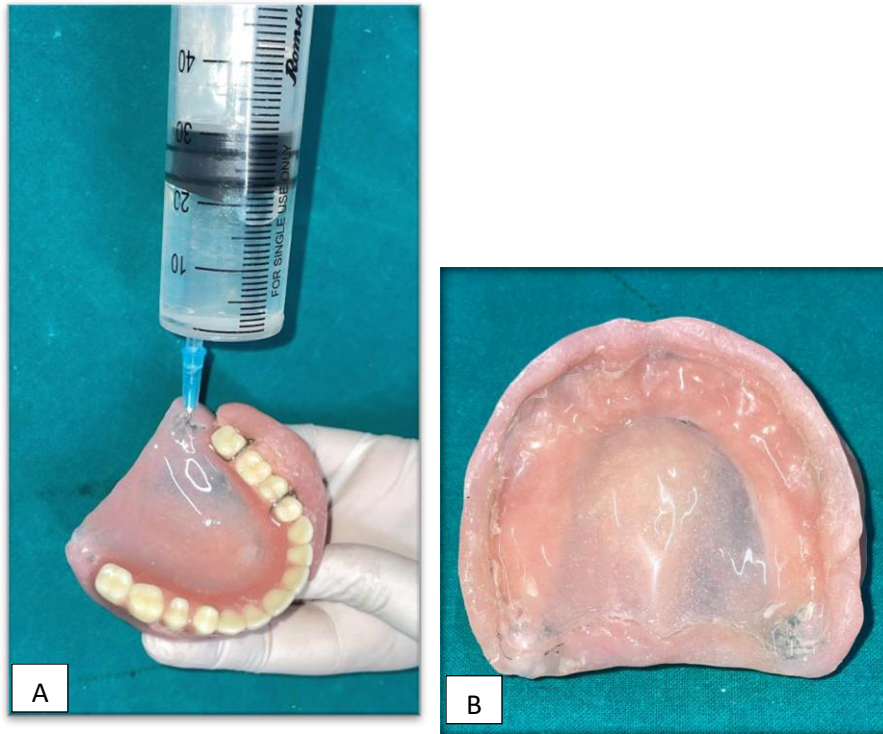


Figure 7 :

- A) **Incorporation of glycerin as a liquid medium**
- B) **Liquid-supported denture with shock-absorbing effect**



Figure 8

- A) **Frontal preoperative photograph; note the mask-face appearance and turned-down mouth angles**
- B) **Frontal profile after denture delivery. Note the facial musculature lift on the affected side**