# Restoration of Facial Symmetry in a Patient with Bell Palsy Using a Modified Maxillary Complete Denture: A Case Report

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Permanent facial paralysis can be devastating for a patient. Modern society's emphasis on appearance and physical beauty contributes to this problem and often leads to isolation of patients embarrassed by their appearance. Lagophthalmos with ocular exposure, loss of oral competence with resultant drooling, alar collapse with nasal airway obstruction, and difficulties with mastication and speech production are all potential consequences of facial paralysis. Affected patients are confronted with both a cosmetic defect and the functional deficits associated with loss of facial nerve function. In this case history report, a modified maxillary complete denture permitted a patient with Bell palsy to carry on daily activities with minimal facial distortion, pain, speech difficulty, and associated emotional trauma. *Int J Prosthodont 2012;25:290–293*.

Bell palsy is defined as the idiopathic sudden onset of paresis or paralysis of the facial nerve. It was first described in a paper to the Royal Society of London in 1821 by the Scottish surgeon Sir Charles Bell.<sup>1</sup> Its cause is unknown, but animal studies have suggested the possibility that reactivation of herpes viruses may be responsible for demyelination. It affects 25 to 35 individuals per 100,000 each year, most commonly in the age group of 30 to 45 years. The condition presents disproportionately among pregnant women and individuals who have diabetes, influenza, a cold, or some other upper respiratory ailment.<sup>1</sup>

Although idiopathic by definition, etiologic hypotheses include ischemic (ischemia from disturbed circulation in the vasoneurosum causing paralysis), immunologic (in vivo sensitization of lymphocytes to peripheral nerve myelin giving rise to an autoimmune response), and viral factors (subclinical infection by herpes zoster or herpes simplex since a high frequency of patients have raised viral antibody titers as well as elevated interferon levels). The combination of facial paralysis and herpes infection is called Ramsay Hunt syndrome.<sup>2</sup>

Bell palsy is described as beginning with slight pain around one ear, followed by abrupt paralysis of the muscles of that side of the face. Patients report a history of sudden onset, usually upon waking in the morning. The eye on the affected side stays open, and an attempt to close the eye leads to the eyeball rolling upward so that only sclera is visible (Bell sign). The corner of the mouth droops with accompanying drooling. The buccinator muscle weakens, and as a result, food is retained in both maxillary and mandibular buccal and labial vestibules. The expression of the face changes drastically, and the creases of the forehead are flattened. Corneal ulceration from foreign bodies may occur as a result of impaired blinking. Involvement of the chorda tympani nerve leads to loss of taste in the anterior two-thirds of the tongue and reduced salivation.<sup>3</sup>

Although most patients recover well, a poor recovery with continuing facial disfigurement, psychologic difficulties, and possible facial pain appears to occur in approximately 30% of afflicted patients.

Bell palsy can be managed using several mediums, including medication, physiotherapy, eye care, and surgical intervention. Current medication recommendations include antiviral therapy (acylovir, valacylovir) in addition to corticosteroids, which leads to higher recovery rates after 3 to 6 months when compared to use of corticosteroids alone. Treatment with antiviral therapy alone is significantly worse than treatment with corticosteroids alone and is no better than using a placebo.<sup>4</sup> Muscle tone can be maintained through use of several physiotherapy options, namely electric

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Figs 1a and 1b Pretreatment view. (a) The patient showed paralysis of the right side with exposure keratitis of the right eye and drooping of the lips and cheek. (b) Asymmetry was further accentuated when the patient tried to speak or smile.

stimulation, galvanism, massage, and facial exercises. If incomplete eye closure is present, artificial lubrication and eye protection may help prevent visual loss from exposure keratitis. Nerve decompression, anastomosis, and grafting as well as facial reanimation surgery are other options to manage Bell palsy symptoms surgically. Nerve decompression is recommended within the first 2 weeks following the onset of paralysis, after which it is not beneficial. Nerve anastomosis of the central end of the hypoglossal or spinal accessory nerve with the distal end of the facial nerve can also be helpful. Nerve grafting is considered in cases of neuroma or loss of a portion of the nerve.<sup>2</sup> Facial reanimation surgery (crossfacial nerve grafts, nerve transfers, and free-muscle transplantation) and botulinum toxin injections also have shown promising results.<sup>5-8</sup> When facial reanimation is not possible, transposition of the corner of the mouth using the Z-plasty technique or the classic sling procedure using tendons, fascia, or alloplastic materials have been attempted for the static treatment of unilateral facial paralysis.9,10

## **Case Report**

A 62-year-old male farmer who exhibited all of the classic features of Bell palsy sought complete denture treatment at the Chandra Dental College and Hospital, Uttar Pradesh, India. He reported a sudden onset when he was 8 years old associated with sudden exposure to a cold wind on a winter morning. His face became

paralyzed on the right side on the same day, along with an inability to close the right eye properly ever since. He lost sight in the eye 4 years prior to his arrival at the hospital because of repeated infection, ulceration, and keratosis. The patient lost his teeth gradually as a result of periodontal disease and became completely edentulous 3 years prior; he had not yet sought complete denture treatment (Figs 1a and 1b). His intraoral examination showed well-formed edentulous maxillary and mandibular ridges and healthy oral mucosa.

# **Treatment Plan**

Antibiotic drops were prescribed for the right eye, and the patient was given dark glasses for protection purposes. The patient's poor health and low socioeconomic status demanded the simplest and least expensive dental treatment possible, and complete dentures were prescribed including a modification to the maxillary prosthesis. Routine clinical protocol was followed in the design and fabrication of the complete dentures, other than the addition of a 21-gauge wire in the form of a J-shaped buccal loop to engage the corner of the mouth and lift it up to the level of the nonparalyzed side (Figs 2a and 2b). The wire loop was embedded in the wax of the buccal flange of the provisional denture. It was adjusted during the try-in appointment to ensure that its position provided circumoral symmetry and esthetics without compromising comfort and simulated functional jaw movements. Because of the paralysis of the muscles,

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Figs 2a and 2b Patient wearing his new complete dentures with an attendant improvement in facial symmetry.



Figs 3a and 3b The buccal loop can be seen (a) engaging the corner of the mouth of the paralyzed side and (b) hidden by the patient's moustache.

the tissues were flaccid and did not exert dislodging forces on the maxillary denture during functional movements. The extraoral portion of the loop was conveniently well hidden in the patient's moustache (Figs 3a and 3b).

After completing the trial setup appointment with the prostheses to the satisfaction of the patient, the dentures were waxed up and processed. The loop was processed similar to a C-clasp in a partial denture. At the insertion appointment, the loop was covered with a medical-grade soft plastic coating to avoid traumatizing the oral commisure. Pediatric Ryle tubing was cut to the required length and slipped onto the wire loop to fit it snugly (Figs 4a and 4b). Follow-up appointments were carried out routinely to ensure patient comfort and satisfaction. No discomfort or any problems in mouth opening or mastication were noted resulting from the J-shaped loop, and the patient was quite happy with the prosthesis.

# Conclusion

The described technique offers an inexpensive, simple, and expedient approach to managing some of the sequelae related to Bell palsy that are part of a dentist's remit. The availability of well-formed edentulous ridges and an excellent peripheral seal permitted excellent retention and stability of the dentures, and the presence of the patient's moustache allowed for camouflage of the oral commisure's support via a buccal loop. This simple technique can also be easily adapted for dentate patients by attaching the loop to a retainer plate.

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**Figs 4a and 4b** Extraoral view of the prostheses showing the modified maxillary denture with a J-shaped buccal loop covered with a soft plastic coating fabricated by placing a piece of Ryle tubing onto the wire loop.

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#### Literature Abstract

## Oral health-related quality of life and perceived dental needs in the United States

This study investigated the impact of sociodemographic variables, perceptions of dental needs, reported dental visits, and saliva indicators on oral health–related quality of life (OHRQoL) in the United States. OHRQoL was calculated with data extracted from the National Health and Nutrition Examination Survey (NHANES) 2003–2004. NHANES measured OHRQoL by a shorter version of the Oral Health Impact Profile (OHIP-49). This short version of the OHIP-49 (OHIP-7) consists of seven questions regarding functional limitation, physical disability, social disability, handicap, physical pain, psychologic disability, and psychologic discomfort. Noninstitutionalized subjects (n = 6,183) participated in the NHANES 2003–2004. The mean score for OHRQoL was 2.8 of a maximum 28 points. OHRQoL was the poorest among those with a perceived need to relieve dental pain. Perceived need for dentures or feeling of dry mouth was the second highest risk factor for poor OHRQoL.

Seirawan H, Sundaresan S, Mulligan R. J Public Health Dent 2011;71:194–201. References: 35. Reprints: Dr Hazem Seirawan, Former Research Assistant Professor of Dentistry at Herman Ostrow School of Dentistry, University of Southern California, 925 West 34th Street, Los Angeles, CA 90089. Email: mhseirawan@gmail.com—Simon Ng, Singapore

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