Conservative Management of Facial Nerve Palsy: Face-lift Device

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ABSTRACT: Facial asymmetry is a common clinical presentation of facial paralysis. Facial nerve may have irreversible damage leading to permanent paralysis and marred facial appearance. Both the surgical and conservative treatment modalities have been discussed in literature. Surgical modalities includes micro-neurovascular transfer of a free-muscle transplant, cross-face nerve graft, tantalum strips, fascial strips, and masseter motor nerve. Conservative treatment includes pharmacokinetics, prosthodontic device therapy, and physiotherapy. Prosthodontic device therapy is sometimes helpful in reducing the facial asymmetry. A case report of a patient is presented in which author has fabricated a removable intra-oral prosthodontic device to lift the sagged facial tissues in order to improve the esthetics, phonetics and mastication. The device also helped in improving the patient’s psychological and social behavior.

Key Words: Facial nerve palsy, Conservative management, Face-lift device

INTRODUCTION: Facial nerve paralysis is an abnormal condition characterized by the partial or total loss of the functions of the facial muscles or the loss of sensation in the face, the degree of paralysis depends on the nerves affected. It has been classified in different ways. Acquired facial nerve paralysis may be caused by disease, infection or trauma. Patients with facial paralysis may have physical and/or psychological problems. Common physical difficulties associated with facial paralysis include twisted nose, uneven smile, distorted expressions, inability to close the eye or raise the eyebrow on the affected side, moreover, there may also be drooping of muscles on the non-affected side leading to drooping of saliva, difficulty in chewing and poor phonetics. Psychologically, the patients are concerned with their disfigured face which may lead to inferiority complex. As the affected side has little or no control on bolus during mastication, food may get lodged in the buccal sulcus. Patients also complain of muscular fatigue on the healthy side during facial expression, phonetics and mastication. The goal of the treatment is to restore the facial symmetry, both in static and at dynamic conditions. Unfortunately, this is not always possible. Literature supports both the surgical and conservative treatment modalities. Possible surgical options include micro-neurovascular transfer of a free-muscle transplant, cross-face nerve graft, tantalum strips, fascial strips, masseter motor nerve etc. The success of surgical options cannot be guaranteed. Conservative treatment options include medications for the possible viral or inflammatory causes, appliance/device therapy as a supportive or palliative method and physiotherapy. The non-surgical intra-oral device may be used to improve the aesthetics and functions of the face. This method is comparatively easy to design and the patients may be benefitted by reversible treatment options, minimum morbidity and mortality, cost effectiveness and involvement of the patient in the therapy. The patient involvement may lead to increase in the treatment success. The device may be given to the patients as a solo treatment option or in combination with others. Face lift device may help the patients in improving aesthetics and phonetics as well as in achieving psychological goals. The purpose of this article is to revisit, describe and evaluate a conservative treatment option for patient with permanent facial nerve paralysis where surgical intervention is contraindicated, delayed or differed. This may be given to the patient during recovery phase or in combination with other treatment options.

CASE REPORT: A 55-year old male patient with facial nerve paralysis was referred for the prosthodontic management of the condition. Past medical history revealed that seven years back patient had undergone surgical resection of the acoustic neuroma of the right side. At the time of surgery, the surgeon informed the patient about high risk of permanent facial nerve damage. Other than facial paralysis, patient is in good health. There was no history of diabetes, hypertension, allergy, convulsion or any other physical disability or weakness. He had difficulty in mastication in addition to compromised aesthetics and phonetics. Diagnostic impressions of mandibular and maxillary dental arches were made with irreversible hydrocolloid. Models were poured, surveyed and studied. Metal frame work was planned but patient refused both the teeth preparation and cross arch plate. Definitive impressions were made in polyvinyl siloxane. The heat polymerizing clear acrylic buccal plate was fabricated, which was retained through adam’s clasp on tooth 16 and 15 with 0.7 mm wire. A loop was made with 0.7 mm wire and was tagged to lift the lip (fig 1). The patient could not comply with this design and requested for a more convenient device, as he was a teacher by profession and was hesitant about the visibility of any part of the device. So, another buccal plate was designed without lip lifting part. This plate was processed in heat polymerizing pink acrylic and was retained with C clasp on teeth 17 (maxillary right second molar) and 14 (maxillary right first premolar). The buccal plate extended from first premolar to the second molar area on the right side. Wax block was designed on the plate to camouflage the asymmetry (fig 2). Patient was...
involved throughout the treatment planning and device designing. Wax was added and removed in segments to achieve best outcome. The target was to lift the sagged facial muscles in upward and outward directions. Tissue displacement and repositioning was carried out with consideration that it should not induce tissue irritation especially in the sulcus. The final waxed plate was processed in heat polymerizing pink acrylic resin. After finishing and polishing, the device was inserted into the patient’s mouth. There was a substantial difference in patient’s aesthetics visible in the pre- and post-insertion pictures (fig 3 and fig 4).

**DISCUSSION**

Dahlberg\(^\text{15}\) used a device to lift the lip which consisted of a translucent plastic. The device connected the rubber band tension to a metal hook that was fastened to the last upper molar on the affected side. Bierman\(^\text{12}\) used extra-oral wire to lift the corner of lip. This wire at one end hooked around the ear while the other side hooked and lifted the lip. The author also faced similar patient requirement. The author also supported the endeavors of Dahlberg\(^\text{15}\), Bierman\(^\text{12}\), Folkins and MacLeod\(^\text{11}\) and Lazzari\(^\text{16}\) as the initiative for the prosthodontic management of the facial paralysis.

Ysunza et al\(^\text{20}\) and Yetiser\(^\text{7}\) mentioned better prognosis of surgical treatment if carried out within one year of the facial paralysis. Muller\(^\text{21}\) found 80 percent patients of Bell’s Palsy recover usually without any treatment. Therefore the importance of case selection for surgical intervention is very important. Lazzari\(^\text{16}\) suggested that disuse atrophy and fibrosis may be the potential complications. Folkins and MacLeod\(^\text{11}\) highlighted the advantage of intra-oral device for facial palsy. According to them the device is comfortable, non-irritating to tissues, does not damage the teeth, easily constructed and maintained\(^\text{11}\). Author’s work supported the method used by Folkins and MacLeod as the device could be

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**Figure 1**: The heat polymerizing clear acrylic buccal plate was fabricated, which was retained through adam’s clasp on tooth 16 and 15. A loop was tagged to lift the lip. This design was rejected by the patient.

**Figure 2**: The heat polymerizing pink acrylic buccal plate was fabricated, which was retained through C clasp on 17 and 14. The buccal plate extended from first premolar to the second molar area on the affected side. Wax block was designed on the plate to camouflage the asymmetry.

**Figure 3**: Pre-condition without the device. (with the permission of patient).

**Figure 4**: After the insertion of Face-Lifting Device.
easily modified. Larsen et al proposed the use of appliance or device even in the recovery phase of facial palsy. Author also proposes the same. Dahlberg lifted the lip with device he called “Plastic Lip Cradle.” Bierman named it as splint while Lazzari called it as prosthesis. Author proposes the name for this prosthesis/appliance/splint as “Face-Lift Device”. The appliance does not fulfill the definition of either prosthesis or occlusal splint.

**SUMMARY:**

1. Disuse atrophy and fibrosis are potential and severe complications of facial nerve palsy.
2. Face-lift device may be used for the patients with facial paralysis as adjunct and supportive treatment or as a support in recovery phase.
3. Face-lift Device is helpful in restoring aesthetics and functions of patient’s face while in recovery phase or when surgical intervention is delayed.
4. Name of the device may be Face-Lift Device.

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**REFERENCES:**


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