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REHABILITATION OF A BELLS PALSY PATIENT WITH A MODIFIED IMPRESSION TECHNIQUE AND MONOPLANE OCCLUSION: A CASE REPORT

Prosthodontics

Dr. Pragati Rawat* Senior lecturer, Department of Prosthodontics and Crown & Bridge, Subharti Dental College and Hospital, Meerut, Uttar Pradesh, India *Corresponding Author

Dr. Abhinav Sharma Senior lecturer, Department of Oral Medicine and Radiology, Subharti Dental College and Hospital, Meerut, Uttarpradesh. India

Dr. Pooja yadav Senior Lecturer, Department of Prosthodontics and crown & bridge.Maharana Pratap Dental College, Kothi, Mandhana, Kanpur.

Dr. Aditya Sharma Post Graduate Student, Department of Periodontology & Implantology, Subharti Dental College and Hospital, Meerut, Uttar Pradesh, India

ABSTRACT

Bells palsy is the most common acute lower motor neurone (LMN) paralysis of face. When most of the cases are abandoned from surgery due to complications and other reasons, the oral prosthesis plays an important role in patient's well-being. In addition to this, a flabby ridge in anterior region of mandible can compromise the stability of such prosthesis. This case report elaborates about a Bells palsy patient with localized hyperplastic ridge who was rehabilitated for function through modified impression technique and Monoplane occlusal scheme.

KEYWORDS

Bells palsy, Complete denture, Monoplane Occlusion, flabby ridge

INTRODUCTION

Bells palsy is a type of facial paralysis due to an affliction of the seventh nerve. This may be the result of disease of the peripheral nerve branches of the facial nerve. The facial nerve supplying orbicularis oris, buccinator, orbicularis oculi, occipitofrontalis, corrugator supercili, levator anguli oris, and platysma control various facial movements like blinking, opening and closing of the eyes, smiling, salivation, lacrimation (production of tears), and frowning. They also supply the stapes muscles in ear which is involved in our ability to hear. So, when the facial muscle malfunctions due to paralysis, all these functions are affected.[2,3] The neuromotor control of facial movements also appears different from the usual motor control mechanisms of skeletal muscles due to the limited ability of the facial muscles to provide feedback thus, affecting the prosthetic outcome.[4,5] To overcome this, modification in occlusal scheme to reduce lateral forces can be adopted. One method is to arrange teeth (maxillary and mandibular) to a flat plane with no overbite (vertical overlap). The plane can be positioned to prevent disturbing protrusive interferences, but it may compromise phonetics and esthetics. Another method is to incline the mandibular second molar to provide contact with the maxillary denture in all excursions.[6] If this condition is accompanied by a flabby ridge in mandibular anterior region, success of complete denture gets even more compromised as flabby ridges are typically composed of mucosal hyperplasia and loosely arranged fibrous as well as more dense collagenised connective tissues.[7] Forces exerted during the act of impression making can result in distortion of this mobile tissue. The resulting stability of the denture can be poor and both function and appearance can be heavily compromised.[8,9] For managing such mobile tissues various modifications in impression making procedures can be done. This article describes the management of Bells palsy patient having flabby mandibular ridge using monoplane occlusal scheme and a modified impression technique.

CASE REPORT

A 71 year old male patient reported to the hospital with the chief complaint of difficulty while chewing food due to loose lower denture since six months**.** The patient got all his teeth extracted 15 years back and soon after that he got a pair of complete denture fabricated. The patient wore this denture for 13 years. After that the denture became loose and he again got a new pair of denture fabricated. The patient was not satisfied with the denture and so, discontinued using those dentures after 10-15 days and started wearing the previous dentures again.

Patient also gave a history of facial paralysis of right side of the face one year back for which he took medicines and recovered. There was a recurrence of the facial paralysis of the same side six months back. Since, then the patient started experiencing the looseness of the dentures to a larger extent and thus, was having difficulty in chewing food. The patient also developed hearing problem since then. The cheeks of the patient were sunken. The lower lip of the patient was everted and had poor mobility. Corner of the mouth had wrinkles and were drooping (Fig.1A). Although the quantity and quality of the saliva was normal but due to constant drooping of the lower lip there was mucosal dryness. Neuromuscular coordination and muscle tone was poor. Speech was also affected. On intra oral examination it was seen that the anterior canine-canine region in mandibular region was flabby (Fig.1B). The mucosa overlying both the ridges was inflamed as the patient was wearing his old denture regularly without giving rest to the underlying mucosa.

A treatment plan was formulated to fabricate a complete denture with the modification in the impression technique (for mandibular arch) and occlusal scheme to achieve minimum displacement of denture during function and maximum retention and stability.

Preliminary impressions were made using impression compound for both maxillary and mandibular arches Spacers were adapted over both the casts Custom impression trays were fabricated on the preliminary casts obtained using auto-polymerizing polymethylmethacrylate. Border molding was done using low fusing green stick impression compound for both the arches. The final wash impression for maxillary arch was made with zinc oxide eugenol paste For the mandibular arch, a window in the region of flabby tissue was cut in the border molded custom tray. Tray adhesive was applied on the tray and then the final impression was made with the low viscosity elastomeric impression material (Fig.2A). After the material had set, the tray with the recorded impression was retrieved from the oral cavity. The material which had flown through the window was trimmed and the tray was again positioned in the patient's mouth. The impression of only the flabby region was made by dispensing the light body material on the flabby region through syringe without displacing the tissue (Fig.2B). While the material was setting, a thick paste of plaster of paris was applied over it in the form of a bolus to support the impression material beneath.

The orientation jaw relation was recorded using face bow and both the casts were secured on the semi-adjustable articulator. The most difficult step in jaw relation as expected was to determine the occlusal vertical dimension due to non-repeatability of the path of closure and bite position on the bite plane. Patient's previous denture vertical dimension of occlusion was used as a guide and accordingly, the mandibular plane was lowered and the vertical dimension was decreased by 3-4 mm. Artificial teeth having monoplane occlusal table (zero degree cuspal angulation) were arranged following the mono planal theory of occlusion (Fig.3A,B,C). It was difficult to assess phonetics either with the previous denture or by the patient himself as the speech was affected due the facial paralysis (Fig.3). After

completing the anterior and posterior try-in based on the patient's esthetics and function the complete denture was processed.

The regular alveolar mucosal massage was advised to the patient to maintain the supporting tissues in a state of good health. Eversion of lower lip and decreased muscle tone were due to the facial paralysis that the patient had encountered 1 year and 6 months back. Therefore, patient was prescribed certain exercises for muscle strengthening[10].

DISCUSSION

Bell's palsy is a rapid unilateral facial nerve paresis (weakness) or paralysis (complete loss of movement) of unknown cause. The condition leads to the partial or complete inability to voluntarily move facial muscles on the affected side of the face. Although typically self-limited, the facial paresis/ paralysis that occurs in Bell's palsy may cause significant temporary oral incompetence.[10] Food and saliva can pool in the affected side of the mouth and may spill out from the corner.[3] Since, the condition is idiopathic more often, and the reason for paralysis of the face cannot be traced, surgery is abandoned by plastic surgeons in many Bell's palsy cases. But, the treatment choice does not end here, as the patients can be considered for esthetic and functional rehabilitation by the prosthodontists. The goal of the prosthetic treatment should be to support the weakened muscles like buccinator, orbicularis oris, and levator anguli oris and provide comfort and esthetics to the patient over a long period of time.[2]

While, authors such as Muthuvignesh et al,[2] Godavarthi et al.[5] and Doddamani et al.[11] adopted bilaterally balanced occlusal scheme in such patients, others have modified the occlusal scheme. Suresh S et al.[12] and Rathi et al.[13] utilized neutral zone technique, whereas, Rajapura et al.[14] used lingualized occlusal scheme and later on flattened the occlusal table using self-cure clear acrylic resin to modify the occlusion of patients with Bells palsy. In this case report, Zero degree posterior teeth (Monoplane occlusal scheme) were selected as they have the advantages of simplest recordings and a wide range of tooth positions is possible. Further, such modifications eliminated lateral stresses on the underlying structures. For improvement of aesthetics, various authors have advocated the use of cheek plumper, [5,11,15] but, in this case report no cheek plumper was used as patients main concern was mastication rather than esthetics.

Apart from that, a mandibular flabby ridge can add to the problem as the forces exerted during impression making can result in distortion of the mobile tissue. As a result the denture will be compromised in esthetics and function. First material that was introduced in the field of dentistry for recording impression of flabby tissues was Impression plaster, which being a mucostatic impression material produces little or no pressure. But, it is difficult to handle and pour. It offers little advantage over low viscosity Polyvinyl siloxane materials. Light body Polyvinyl siloxane is also a mucostatic material. Also, it does not distort easily, exerts minimal pressure and reproduce accurate details.[16] Therefore, elastomeric impression material was chosen for recording the impression of the flabby tissue.

Patient was satisfied with the denture. He was instructed to maintain the oral hygiene. Frequent recall visits were also advised to the patient.

CONCLUSION

Complete denture patients may present with various neuromuscular disorders. Planning complete denture treatment is challenging task, which requires modification of clinical procedures. If precautions are taken at every step during denture fabrication, a functionally acceptable denture can be delivered.

Fig 1: Bells Palsy patient with sunken cheeks and drooping lower lip (A); Mandibular anterior flabby ridge (B);

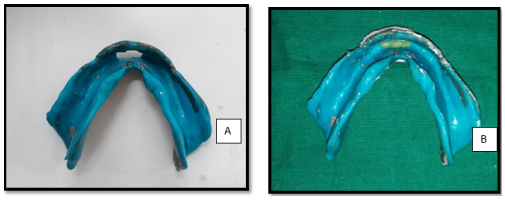

Fig 2: Window cut in the region of flabby tissue (A)Impression of flabby region made with light body impression material(B)

Fig 3: Zero degree posterior teeth (A); Occlusion on the right side (B); Post-Op photograph of the patient ©

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