

“Non Surgical Prosthodontic Rehabilitation of Patient With Deviated Mandible: A Clinical Report”



Medical Science

KEYWORDS : Dental Prosthesis design; Mandibular deviation; Mandibular guide flange.

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ABSTRACT

Denture fabrication for patients with deviated mandible due to trauma becomes extremely difficult without pre-prosthetic reconstructive surgery. Implant-assisted over-dentures may improve denture retention and stability, but this treatment may not be affordable always. This case report describes the prosthetic management of an edentulous patient with deviated mandible and difficult mandibular movements using a guide plane for mechanical corrective mandibular movement therapy and masticatory function.

Introduction

Mandibular deviation due to accidental trauma or related to radical surgical treatment for cancer of the oral cavity results in impaired functionality and facial asymmetry.^[1] The residual mandible deviates medially and superiorly, and it is more or less evident depending on the location and extend of the resection, the amount of soft tissue and innervation involvement, the presence of remaining natural teeth. The mandibular erroneous movement is more evident in edentulous patients than in dentulous patients that have had a normal intermaxillary relationship.^[1,2] Such patients most often require pre-prosthetic reconstructive surgery.

A corrective device named “guide flange prosthesis” is indicated to limit this clinical manifestation. The basic rehabilitation objective is to re-educate mandibular muscles to re-establish an acceptable occlusal relationship for residual mandible so that patient can control adequately and repeatedly opening and closing mandibular movements.^[3,4] Varying design of prostheses have been used including mandibular-based, palatally-based, anchored on natural teeth or denture flange.^[1-3,5] This case report describes the prosthetic management of an edentulous patient with deviated mandible and difficult mandibular movements using a guide plane for mechanical corrective mandibular movement therapy and masticatory function.

Case Report

A 60-year-old male reported with the chief complaint of difficulty in chewing food and wanted replacement of the missing teeth. There was history of accidental fall 48 years back. On extra-oral examination there was a scar on the facial skin over the right cheek. The lower facial height was reduced. The medical history was non-contributory. Intra-oral examination revealed mandibular U-shaped edentulous maxillary residual alveolar ridge. Panoramic radiograph of mandible revealed an osteal defect on the right side of mandible, underdeveloped condyle, rounding of angle of mandible, reduced width of ramus and loss of width of mandibular notch. (Fig 1) On left side, flattening of condylar head was observed. In TMJ view, a deformed right condyle was observed with no abnormality with the left condyle. (Fig.2) The right condyle was deviated from its natural position downwards and laterally. The articular eminence on the right side was flattened and the mandibular fossa malformed.

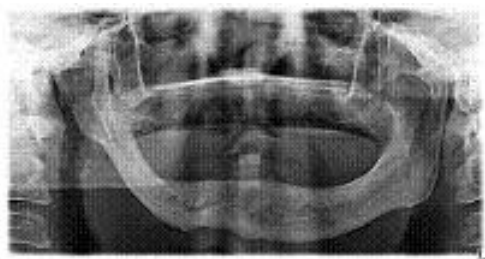


Figure 1. Orthopantomographic (OPG) view.

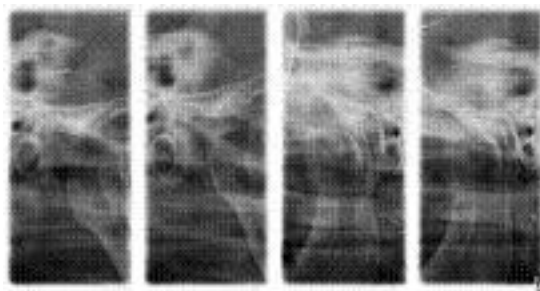


Figure 2. Open and closed TMJ view without dentures.

Due to trauma at a young age and delay in treatment, the mandibular growth was affected causing the non-affected mandibular segment to deviate towards the affected side and the affected side of mandible rotated through the frontal plane. This deviation increased on mouth opening leading to angular mandibular pathway. Rehabilitation was planned by fabrication of maxillary and mandibular complete dentures with a guiding flange attached to the maxillary denture to guide the closure of mandible into proper occlusion on the affected side.

Clinical Procedure

The primary impressions were made in stock edentulous trays using medium fusing impression compound (Y-Dents impression compound; MDM Corporation, New Delhi, India) and the primary casts were made. The custom trays were fabricated with autopolymerizing acrylic resin (DPI Cold Cure; Dental products of India, Mumbai, India), carefully border moulded and the secondary impressions were made using Zinc oxide eugenol paste (DPI Impression paste, Dental products of India, Mumbai, India) and poured with type III gypsum material (Kalstone; Kalabhai Karson Pvt. Ltd., Mumbai, India) to get the master casts. The wax occlusal rims were prepared. Facebow record was transferred to the semi adjustable articulator (Hanau H2; Teledyne Technologies, Los Angeles, Calif). Vertical and horizontal jaw relations were recorded and transferred to the articulator and the mandibular cast was mounted on the articulator. It was planned to fabricate a guiding flange attached to the maxillary denture which would guide the mandibular denture into occlusion and prevent mandibular deviation.

The mandibular path into proper occlusion was recorded in wax which was extended from the palatal surface of the maxillary trial denture base. The wax was softened and the patient was guided to slowly close into desired intercuspation. This was repeated till it was confirmed that the wax guided the patient to properly close the mandible into desired relation on the normal side without any deviation to the affected side without assistance. The occlusion was verified at the try-in stage. (Fig 3a, Fig 3b)



Figure 3a. Trial dentures - right lateral view.



Figure 3b. Trial dentures - left lateral view.

Mandibular closure was confirmed with coinciding maxillary and mandibular midlines. Anatomic acrylic resin denture teeth (Rolex, Ashoosons, Delhi, India) were arranged. The dentures were processed in heat polymerizing acrylic resin (Dental products of India, Mumbai, India) following conventional technique. The efficacy of the guide flange to guide the closure of the mandible into desired position was evaluated clinically and radiographically. (Fig 4) On radiographic evaluation the position of the left condyle was improved while in resting position while no significant difference seen on the right side. (Fig 5)



Figure 4. Guide plane in maxillary denture.

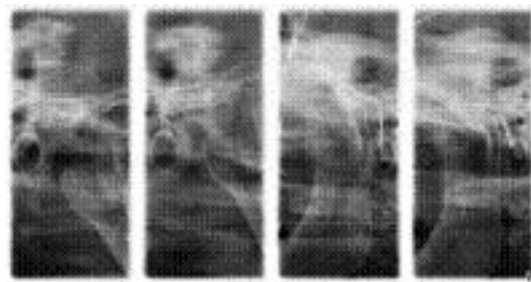


Figure 5. Open and closed TMJ view with dentures.

The dentures were checked in the patient's mouth for function, phonetics, aesthetics and comfort and instructions were given for proper denture care and maintenance. The patient was re-

called after 24 hours and then weekly. The patient was satisfied with the improved masticatory function.

Discussion

Robinson et al. [6] suggested a cast mandibular resection restoration and fabrication of a provisional guide plane for manipulating the mandible into an acceptable maxillomandibular relationship in patients lacking motor control to bring the mandible into occlusion. Hasanreisoglu et al. [7] suggested that for dentate patients, palatal guide ramps or mandibular guide flange prostheses are indicated. Beumer et al. [8] reported that if the mandible can be manipulated comfortably into an acceptable occlusion position, a cast metal guidance ramp will be appropriate. If some resistance is encountered in positioning the mandible, an acrylic guidance ramp is suggested, as this material can be periodically adjusted. Nasrin Sahin et al. [9] described the fabrication of cast metal guidance prosthesis with supporting flanges and retentive flanges for patient following a segmental mandibulectomy and claimed that the patient was able to achieve a functional intercuspal position after the insertion of the prosthesis. The present case differs from previous reported cases in terms that no surgery was performed to correct the deviation which patient suffered from his trauma in early adolescence.

The literature describes various types of guidance prostheses which are effective in managing the mandibular deviation. [6-12] But such appliances are complex, technique sensitive, expensive and require multiple visits. The acrylic guide flange prosthesis presented here is a simple and cost effective method for managing the mandibular deviation and proper occlusion. This requires less time and can be easily adjusted and/or relined. The fabricated prosthesis also helped the patient to utilize the chewing capabilities on the non-affected side as the patient's masticatory efficiency was impaired because of the traumatic defect on the right side of temporomandibular complex. Though the patient was able to chew food from his left side but was in a constant state of dull pain while eating. The dull pain on the non-affected side was relieved due to the more co-ordinated masticatory strokes and harmonious muscular relations with the TMJ complex.

Conclusion

Use of the guide flange and the neutral zone concept can help in achieving a satisfactory prosthesis for patients with mandibular prosthesis. Application of conventional prosthodontic principles, along with patient cooperation, can achieve long term success of the prostheses and predictable patient satisfaction in such cases.

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