

GUIDING THE RESECTED MANDIBLE: A CASE REPORT

Isha Kulkarni¹, Rajashree Jadhav², Shreenivas Bhide³, Paresh Gandhi⁴, Pallavi Hippargi⁵, Ashish Kumar Rathod⁶

1.PG Student, Dept.Of Prosthodontics, Bharati Vidyapeeth, Deemed University, Dental College and Hospital, Pune

2.Associate Professor, Dept.Of Prosthodontics, Bharati Vidyapeeth, Deemed University, Dental College and Hospital, Pune

3.Professor and Head of the Department, Dept.Of Prosthodontics, Bharati Vidyapeeth, Deemed University, Dental College and Hospital, Pune

4.Professor, Dept.Of Prosthodontics, Bharati Vidyapeeth, Deemed University, Dental College and Hospital, Pune

5.PG Student, Dept.Of Prosthodontics, Bharati Vidyapeeth, Deemed University, Dental College and Hospital, Pune

6.PG Student, Dept.Of prosthodontics, Bharati Vidyapeeth, Deemed University, Dental College and Hospital, Pune

ABSTRACT:

The mandible is a single bone that creates the peripheral boundaries of the floor of the oral cavity. Loss of the continuity of the mandible destroys the balance and the symmetry of mandibular function, leading to altered mandibular movements and deviation of the residual fragment towards the surgical side. This clinical report gives a brief review of resection guidance prosthesis and describes the fabrication of an acrylic guidance flange prosthesis. Successful intercuspal position was accomplished through the use of the guidance appliance in a patient who underwent a resection of the mandible, subsequent to treatment for Squamous cell carcinoma.

Keywords: Guiding flange, mandibular resection

INTRODUCTION

The prosthodontic rehabilitation of patients with acquired mandibular defects is not easy and poses a difficult challenge. With continued improvement in surgical resection and reconstruction techniques, the prognosis for these patients has greatly improved. The unilateral loss of mandibular continuity due to surgery or trauma results in mandibular deviation toward the resected side. The reason for the deviation is multifactorial like the location and extent of the resection, the amount of soft tissue involvement, the degree to which innervation has been involved, how tightly the surgeon closed the wound, and the presence of remaining natural teeth, loss of the musculature, gravity pull. Numerous techniques have been described to reduce

mandibular deviation by retraining the patient's neuromuscular system. These include exercise programs, removable partial denture prostheses for dentulous patients, and complete denture prostheses for edentulous patients. ^[1]

Loss of mandibular continuity also causes rotation of mandibular occlusal plane inferiorly on the defect side. The pull of the suprahyoid muscles on the residual mandibular fragment causes inferior displacement and rotation around the fulcrum of the remaining condyle thus giving the tendency to an anterior open bite. ^[2]

The other debilitating consequences following resection are impaired speech articulation, difficulty in swallowing, poor control of salivary secretions, and severe cosmetic disfigurement. ^[2]

Prosthetic rehabilitation of mandibular discontinuity defects aims in restoration of mastication within the unique movement capabilities of the residual function in the mandible.

The literature shows the varying designs of Guiding Flange Prostheses that can be mandibular based or palatal based, it may be anchored to natural teeth or the denture flange.^[2,3]

CASE DETAIL

A 67 year old female had reported to the department of Prosthodontics, Crown and Bridge and Implantology, Bharati Vidyapeeth Deemed University, Dental College and Hospital, Pune for prosthetic rehabilitation. She underwent hemimandibulectomy of right side due to the presence of squamous cell carcinoma. The patient had undergone hemimandibulectomy involving the right condyle to the right parasymphiseal region. A postsurgical panoramic radiograph revealed radiolucency from the right neck of the condyle to the right parasymphiseal region.

Clinical examination revealed a severe deviation of the mandible towards the resected site with lack of proper contact between maxillary and mandibular teeth

The intraoral examination showed thick, freely movable soft tissues with scar formation, loss of alveolar ridge and obliteration of buccal and lingual sulci in the right half of mandibular region (distal to right lateral incisor).

Deviation of mandible was observed towards the side of defect which was about 10 – 12 mm from midline on 40 mm of mouth opening due to the action of the left mandibular depressor muscles which were normal. The patient was not able to achieve an appropriate mediolateral position of the mandible and was unable to repeat this position consistently for adequate mastication.

On the basis of clinical and radiographic examination the patient was classified as Class II Mandibular defect according to Cantor and Curtis classification of mandibular defects.^[4] Based on the clinical situation, a palatal based guiding prosthesis was planned.

Two sets of the maxillary and mandibular preliminary impressions were recorded using stainless steel stock trays with irreversible hydrocolloid impression material. The mandibular stock tray was modified by trimming the buccal flanges to make the mandibular impression.

The impressions were poured with Type III gypsum material and casts were retrieved. A custom tray was made and final impression was made using monophasic impression material after border moulding. The cast was poured and retrieved. The maxillomandibular relations were recorded using wax bite to measure the deviation of the mandible accurately. The maxillomandibular relations were transferred on to the articulator.

A single thickness modelling wax was adapted on the maxillary cast covering the entire hard palate up to the occlusal

surfaces of the right posterior teeth. Later it was acrylicized using heat-polymerized clear acrylic resin to make the maxillary stabilization plate. The palatal flange was waxed-up with modelling wax around the wire substructure and subsequently acrylicized with heat-polymerized acrylic resin to make the Guiding Flange Prosthesis. The Guiding Flange Prosthesis was tried in the patient's mouth and the initial stability and retention was checked. The inclination of the guideflange was adjusted by selectively trimming the teeth-contacting surface & adding the autopolymerizing clear acrylic resin where ever required. Thus the smooth gliding flange surface was developed intraorally to guide the mandible into a definite closing point in occlusion. Care was taken to preserve the lingual-surface indentations of the opposing maxillary teeth which were guiding the mandible in a final definite closing point during mastication. The flange height was adjusted in such a way that it guided the mandible from large opening position to the maximum intercuspation in a smooth path. After modifying the prosthesis the patient was trained to use the prosthesis, and post-insertion instructions were given. The patient was followed up at the regular interval of two months.

DISCUSSION

A patient who undergoes any surgery has some amount of mental trauma which is inevitable. Following mandibular resection the patient has impaired function as well as esthetics. This adds up to the psychological impairment.

The primary goal of any treatment is restoring the function. Thus the use of a simple guidance prosthesis not only restores the function but improves the deviations thus the esthetics. This helps in maintain the functional occlusal relationship during the post-healing phase. After the deviation is corrected the final prosthesis is planned.

The success of such guidance therapy varies and depends upon the nature of surgical defect, early initiation of guidance therapy and patient cooperation and other factors.

The various advantages of guidance prosthesis are as follows ^[2]

1. Realigns the resected mandible with the opposing maxillary dentition
2. Corrects deviation
3. Improves speech and deglutition
4. Ease of fabrication
5. Non-invasive
6. Patient compliance
7. Economical

The earlier the treatment is initiated the result will be more successful. The guidance prosthesis has to be used for a limited amount of time. Now the result would be an ideal one when the patient will be able to close the mandible in the functional occlusal position without the use of any appliance.

CONCLUSION

Prosthetic modifications to routine prosthetic procedures are necessary to compensate for deficits that are not correctable with surgical reconstruction.

The maintenance of facial form, prevention of tethering of intraoral tissues have greatly enhanced the results obtained by prosthetic intervention.

For optimum results these prostheses should be combined with an organized

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FIGURES:



Figure 1:Pre-operative view



Figure 2: Primary impression



Figure 3: Mandibular master cast



Figure 7 : Intraoral lateral view of guiding flange



Figure 4: Maxillary guiding flange



Figure 8: Postoperative view: left, right and frontal view of the corrected occlusion by maxillary guiding flange



Figure 5: Intraoral occlusal view of guiding flange



Figure 9: Follow up after three months



Figure 6: Intraoral lateral view of guiding flange