CASE REPORT

MAXILLARY PALATAL RAMP- A GUIDE TO CORRECT DEVIATION OF HEMIMANDIBULECTOMY PATIENT : A CASE REPORT

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ABSTRACT

Management of benign or malignant tumor associated with mandible represent a difficult challenge for surgeon and prosthodontist in term of both removal of primary disease followed by rehabilitation. Depending upon location, extent and nature of the tumor, various treatment modalities like marginal, segmental, hemi or total mandibulectomy is indicated . Surgical resection of mandible is the commonest cause of mandibular deviation resulting in altered mandibular movement that leads to difficulties in swallowing and speech, compromised control of salivary secretion as well as severe cosmetic disfigurement. A corrective device known as guiding plane prosthesis is used to limit these manifestations. It is a device which aids for both physiotherapy and mastication. These case reports describe early prosthodontic intervention of a hemimandibulectomy patient with guiding plane prosthesis for correction of deviated mandible improving function and esthetics in post operative period.

KEY WORDS

Odontogenic tumor, hemimandibulectomy, segmental resection, oral rehabilitation, guiding ramp.

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INTRODUCTION

Neoplasm which are directly or indirectly associated with mandible usually necessitate extensive surgical resection of mandible with adjacent oral structures. The resultant continuity defect leads to deviation of mandible towards the resected side, difficulties in mastication, swallowing, speech, impaired mandibular movements, altered maxillomandibular relationship as well as significant cosmetic disfigurement.[1] The role of prosthodontist is paramount in restoring esthetics and maintainance of functional integrity. Various prosthetic modalities such as palatal ramp, mandibular guiding flange intermaxillary fixation & vaccum formed vinyl chloride pipe splint have been used to reestablish normal form and function of patient[2,3]. The prime objective of rehabilitation is to reeducate mandibular muscles to reestablish an acceptable occlusal relationship for residual mandible, so that patients can bring residual mandible into proper intercuspal position.[4]

This case report describes prosthodontic management of patients who has undergone hemi-mandibulectomy and was rehabilitated using a maxillary palatally positioned guiding ramp to achieve stable interocclusal relation.

CASE REPORTS:

CASE 1:

A 21 year male patient was referred to the Department of Prosthodontics, Dr. R. Ahmed dental college and hospital following hemimandibulectomy one and half months before. Patient presented with chief complaint of difficulty of chewing, impaired speech and disfigurement.

A detailed case history revealed that patient was diagnosed with odontogenic myxoma on left side of mandible 3 months back. A presurgical panoramic radiograph revealed extensive radiolucency involving left body of mandible extending from 33 to 38. Patient had undergone hemimandibulectomy along with disarticulation on left side under general anesthesia. Post surgical panoramic radiograph showed absence of mandible on left side from midline without any reconstruction.

Extraoral examination showed gross asymmetry of face and deviation of mandible towards the resected side (left) about 8-10 mm from midline(fig. 1).

Intraoral examination revealed missing 31 to 38 with thick freely movable soft tissue with scar formation in the left half of mandible and (fig. 2a & fig. 2b). Patient was not able to

Fig 1

Fig 2a

Fig 2b

Fig 3a

Fig 3b

Fig 4a

Fig 4b

Fig 5a

Fig 5b

achieve an appropriate intercuspal position by himself but with some forceful manipulation he was able to bring his mandible to proper intercuspal position (fig. 3a & fig 3b). On the basis of clinical and radiographic examination mandibular defect was classified as Cantor and Curtis class III[5] i.e resection defect involve loss up to mandibular midline region (fig. 4a & fig 4b).

A stainless steel stock dentulous tray and irreversible hydrocolloid (algitex, DPI, India) was used to record primary impression of maxillary and mandibular arches. The impressions were poured with type III Gypsum material (kalstone, Mumbai, India) and casts were retrieved. The twenty one guage SS wire was used to make circumferential clasp on 14 & 24 and Adams clasp on 16 & 26 as a retainer.

The self cure acrylic resin (DPI cold cure pink, India) base plate was prepared in the maxillary cast engaging all the teeth and mandible was guided laterally toward desired position and occlusal contact with palatal base plate was noted. Base plate was removed from mouth and a mix of autopolymerizing resin (DPI cold cure pink, India) was prepared and added to the base plate along the lateral border of non- defect side. Now, base plate was placed in the mouth and mandible was guided to the desire position establishing an index in the cold cure resin over maxillary palatal plate. This was repeated several times until the resin begin to polymerize (fig.5a). Then the entire prosthesis was removed and subsequently acrylised into heat polymerized acrylic resin. After adjustment prosthesis was inserted and it was ensured that patient was able to close into the index using appropriate manual manipulation of mandible. Finally, after finishing and polishing, prosthesis was delivered to the patient (fig. 5b).

Post insertion instruction were given regarding maintainance and patient was put on a regular follow up at the interval of 1 month for the period of 6 months. During the follow up visit, minor adjustments were done by adding self cure acrylic resin, along the slope of the guiding ramp and patient was accustomed to close the mandible into correct intercuspal position.

CASE 2:

A 25 year male patient had attended to the Department of Prosthodontist, Dr. R Ahmed Dental College & Hospital with a chief complain of difficulty in chewing and altered facial appearance following mandible resection. Patient gave a medical history of ameloblastoma in right mandibular posterior region and was undergone segmental mandibulectomy of the affected side one year before. No intermaxillary fixation was applied at the time of surgery and the resective surgery was not followed by any reconstruction to replace bony continuity.

Extraoral examination revealed deviation of residual mandible towards right side resulting in gross asymmetry of face (fig.1). Intraoral examination showed missing 45, 46, 47 and 48. There was no functional occlusion on the left side. Around 5mm deviation was noted from the midline (fig.2a & 2b). There was complete obliteration of vestibule on the resected side with scar tissue formation.

Fig 1

Fig 2a

Fig 2b

Fig 3

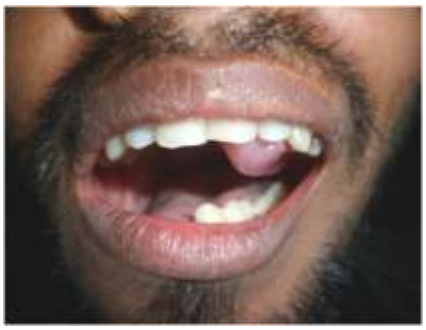

Fig 4

Fig 5

Fig 6

Primary impression were made in alginate (algitex, DPI, India) using stock tray and poured with dental stone (kalstone, Mumbai, India) to retrieve the casts (fig. 3). 22 guage SS wire was used to prepare 'C' clasp on 13 and 23 & Adams clasps on 16 & 26 for retention. Maxillary base plate was prepared using self- cure acrylic resin (DPI cold cure pink, India) and it was finished, polished. Patient was recalled and base plate was inserted to check retention and stability. Then base plate was modified to act as guidance (DPI cold cure pink, India) prosthesis by addition of self cure acrylic resin to form ramp or guide plane, palatal to maxillary teeth opposing non resected portion of mandible (fig. 4). Mandible was guided to desire occlusal position. Mandibular movement was repeated for several time and necessary manipulation were done to allow mandibular teeth to glide over lateral aspect of the ramp & acrylic resin was allowed to polymerize completely. Then the entire prosthesis was removed and subsequently acrylised into heat polymerized acrylic resin was finished & polished and inserted into patient mouth (fig. 5).

Following insertion it was verified that mandible is closing in a satisfactory position and interferences were removed to allow smooth guiding over the ramp (fig. 6). Post insertion instruction were given regarding maintainance and patient was put on a regular follow up at the interval of 1 month for the period of 6 months. During the follow up visit, minor adjustments were done by adding self cure acrylic resin, along the slope of the guiding ramp and patient was accustomed to close the mandible into correct intercuspal position.

DISCUSSION

Rehabilitation of hemimandibulectomy patient should be taken under consideration from the time of diagnosis for complete and comprehensive treatment plan.[6,7] Loss of mandibular continuity results in deviation of remaining mandibular segment towards the resected side due to uncompensated influence of contralateral musculatures resulting in facial deformity and function loss. In such situation use of guide plane helps to obtain a normal midline relationship of residual fragment of mandible to the maxilla.

Guiding prosthesis is primarily interim training device till a definitive prosthesis can be fabricated for the patient. It guides the patient to close into a desirable occlusal position. Two types of guidance prosthesis could be considered : a palatally position guiding ramp and mandibular based flange prosthesis. In presence of greater degree of deviation, palatal ramp prosthesis is opted, where as if deviation is not severe guiding flange prosthesis is performed.

For better result prosthetic rehabilitation should be started as soon as possible to limit the deviation and it should be accompanied by stretching exercise to minimize scar formation.

This prosthesis is most successful when resection involves only bony structure with minimal sacrifice of adjacent oral tissues.

This maxillary prosthesis is usually constructed in acrylic resin with either cast or wrought wire retainers. Acrylic ramp are advantageous as it permit periodic adjustment unlike metal guiding flange that allow minimal adjustment. It is simple cost effective and requires less number of patient visits.

The basic design of appliance varies from case to case and it depends upon postoperative finding as well as patients' requirement in terms of function and aesthetics[8].

CONCLUSION

Following surgical intervention, it is the role of prosthodontist to functionally rehabilitate the abused stomatognathic system.

In case of hemimandibulectomy patient, a prosthetic option such as guiding plane aid in restoring physiologic oral activity to almost original state of function[9]. This device permits use of same prosthesis both for eating & mechanical correction of mandibular deviation.[10] But successful outcome depends upon proper treatment planning, type & extent of defect, timely initiation & patient cooperation. If treated with corrective appliance in the initial healing phase, it enhances physiologic well-being as well as quality of life of the patients.

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