

CASE REPORT

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Prosthetic Management of Partially Resected Dentulous Mandible

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ABSTRACT:

In the area of head and neck tumors it is often necessary to perform radical surgery to eradicate the disease completely. Very often unsightly and incapacitating defects of the face and oral cavity are left as a result of such treatment. It is inconceivable that the treatment ends with the elimination of the disease. The correction of these defects should always be accompanied by this rehabilitation so as to make them socially acceptable as before. These may be treated by the plastic surgeon, the prosthodontist, or both.

Key words: Mandibular guidance therapy, Guide flange prosthesis, hemimandibulectomy

ABSTRACT

In the area of head and neck tumors it is often necessary to perform radical surgery to eradicate the disease completely. Very often unsightly and incapacitating defects of the face and oral cavity are left as a result of such treatment. It is inconceivable that the treatment ends with the elimination of the disease. The correction of these defects should always be accompanied by this rehabilitation so as to make them socially acceptable as before. These may be treated by the plastic surgeon, the prosthodontist, or both.

KEY WORDS:

Mandibular guidance therapy, Guide flange prosthesis, hemimandibulectomy

INTRODUCTION

The surgical treatment of tumors of the lower jaw quite frequently necessitates the removal of a portion of the mandible, resulting in the loss of normal relationship of the remaining portion of the mandible

to the upper jaw. There is a cosmetic deformity, due to the remaining fragment turning inward and backward, in addition to that caused by the tissue loss resulting from the removal of the tumor¹. There are two main problems in these cases, the restoration of function to the remaining segment of the mandible and cosmetic improvement. The restoration of the masticatory function is most important. Cosmetic improvement is secondarily addressed. The most consistently frustrating areas of maxillofacial rehabilitation is the treatment of dentulous patients who have had radical surgery of the floor of the mouth and mandible². Mandibulectomy and commando procedures involve the extensive loss of tissues and associated functions. The prosthetic prognosis is rarely good, and reconstructive surgical procedures, even when indicated, usually do not significantly improve the prosthetic potential sufficient to restore the patient's face to the normal facial contour due to the great amount of tissue loss and formation of cicatricial tissue. The possibility of pressure necrosis in these regions requires the restoration of facial contour to be limited to the condition as found³. This article aims in prosthetic management of hemimandibulectomy patients to

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reposition of the mandible in correct anatomical location and to enhance the patients confidence by improving the esthetics and function.

CASE REPORT

A 32 year old female reported to the Department of Prosthetic Dentistry with a chief complain of difficulty in mastication and speech. She had a unilateral discontinuity mandibular defect on the right side due to surgery for ameloblastoma. The surgery was performed 2 year back and reconstruction was done with muscle graft. No intermaxillary fixation was applied at the time of surgery.

Extra oral examination showed facial asymmetry with mandibular deviation to the right side. Clinical examination revealed severe deviation of the mandible towards the resected side, with lack of proper contact between the maxillary and the mandibular teeth. Intra oral examination showed missing teeth 42,43, 44, 45, 46, 47(Fig-1) and 48 and orthopantomogram for the same (Fig 2) .

Through clinical evaluation, it was noted that the patient's mandible could be manually placed into the centric occlusion without excessive force. Mandibular based acrylic resection prosthesis with a buccal guiding flange was planned. A maxillary and mandibular final impression was made by using elastomeric impression. [Fig3]. The master casts were poured with Type III dental stone.

A maxillomandibular record was made by manually assisting the mandible into the centric occlusion(Fig 4). The maxillary and mandibular cast was mounted on a three point articulator(Fig 5).

The mandibular resection prosthesis was fabricated on the defect (right) side. The design [Fig 6] included the guidance flange on the buccal and the supporting flange on the lingual at the non defect left side. The retention was provided by the interdental clasp, engaging the premolars and the molars. The guide flange extended superiorly and diagonally on the buccal surface of the molars and the premolars, allowing the normal horizontal and vertical overlap of the left maxillary teeth. The guide flange was sufficiently blocked out, so that it would

not traumatize the left maxillary teeth and the gingiva when the patient closed her mouth. A monoplane occlusal scheme was provided on the right side with the absence of all unwanted occlusal interferences, this provided esthetic and functional benefit to the patient with minimal harm. The prosthesis was finished, evaluated and inserted intraorally.

The guide flange provided a mechanical system which prevented the mandible from turning towards the resected side (Fig 7) . The patient was advised to use the guide flange device throughout the day, except at night and during meals.

Physiotherapy was suggested to assist the patient in improving the symmetrical arc of closure and in finding the centric occlusion position without guiding the mandible manually. The exercise consisted of the simple opening and closing of the mandible with and without the appliance. These movements tend to loosen scar contracture, reduce trismus and reprogram the remaining musculature to close the mandible into the centric occlusion. When prosthetic therapy is combined with a well organized exercise program, improved results can be achieved.

Three days after insertion of the prosthesis, the patient was able to achieve a functional intercuspal position without manual manipulation. After one week, the patient was evaluated for the insertion of the interim removable partial denture. The interim removable partial denture was fabricated for the patient with heat cure acrylic by utilizing the wrought wire clasp and by engaging the premolars and the molars to get retention. This prosthesis helped her to get accustomed to close the mandible into the correct intercuspal position without the use of any external aid [Fig8 and 9]. Guidance prosthesis and interim removable partial denture serve as training appliances till a cast partial denture can be fabricated for the patient. In this case report the patient was held under observation till an acceptable maxillomandibular relationship was achieved so as to further plan for a definitive prosthesis. The patient was comfortable with esthetic and function provided by the interim prosthesis.

DISCUSSION

Rehabilitation is an essential phase of cancer care and should be considered from the time of diagnosis in a complete and comprehensive treatment plan. The primary objective of rehabilitation is the restoration of appearance and function. Mandibular resection, as a consequence of surgical treatment of the tumour, will clinically result in facial asymmetry and malocclusion⁴. The residual mandible deviates medially and superiorly and it will be more or less evident, depending on the location and the extension of the resection, the amount of soft tissue and innervations which are involved and the presence of the remaining natural teeth. A corrective device named 'Guide Flange prosthesis' is indicated to limit that clinical manifestation and to restore mandibular function⁵. The basic design of the guide flange prostheses will depend greatly on post-operative findings, as there are no type of appliances that will serve for every patient. However there are fundamental principles for the construction of a functional appliance: Every patient should maintain functional occlusion for mastication, and this maybe accomplished by a guide plane⁶. Dorsey J. Moore et al. (1976)⁷ described a technique which combines crowns with a maxillary prosthesis to guide the mandible into a functional occlusion.

This clinical report illustrates the prosthetic management of a patient who underwent mandibular resection due to surgery for ameloblastoma. The literature shows various types of cast metal guidance prostheses which are effective in managing the mandibular deviation⁵. In this case report it was planned to fabricate an interim acrylic guiding flange to achieve an stable and an acceptable maxillomandibular relationship for the patients before proceeding with definitive prosthesis. This simple acrylic guiding flange was not only cost effective for managing mandibular deviation but also restore the patient esthetic and function to the great extent. Nonanatomic acrylic resin posterior teeth are used to minimize lateral stress which would tend to displace the mandibular appliance.³ In this case report monoplane occlusal scheme was provided to restore the function with minimal ill effects. Since Mohamed A. Aramany et al. (1977)⁸ reported patients

who were treated by the use of immediate intermaxillary fixation after segmental resection of the mandible to eradicate cancerous lesions. They claimed that the use of intermaxillary fixation during the first postoperative weeks reduces the degree of deviation.

A classification of mandibular defects has been described by Cantor and Curtis. Although the classification system is suggested primarily for edentulous patients, it is also applicable to partially edentulous patients⁹.

CLASSIFICATION OF MANDIBULAR DEFECTS⁹ :- (FIG-9)

Class I: Mandibular resection involving alveolar defect with preservation of mandibular continuity.

Class II: Resection defects involve loss of Mandibular continuity distal to the canine area.

Class III: Resection defect involves loss up to the mandibular midline region.

Class IV: Resection defect involves the lateral aspect of the mandible, but are augmented to maintain pseudoarticulation of bone and soft tissues in the region of the ascendin ramus.

Class V: Resection defect involves the symphysis and parasymphysis region only, augmented to

Preserve bilateral temporomandibular articulations.

Class VI: Similar to class V, except that the Mandibular continuity is not restored.

CONCLUSION

The mandibular guidance therapy is most successful in patients whose resection involves only bony structures with minimal loss of soft tissue and no radical neck dissection or radiation therapy. Therefore the patients who are treated for any tumors are generally are ideal candidates for the use of a mandibular guidance therapy. For better results, the prosthetic management should be combined with an exercise program¹⁰.

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Fig 1 : Pre-operative intraoral view showing mandibular deviation towards resected side.



Fig 2 : Ortho pantamogram view showing resected mandible on right side

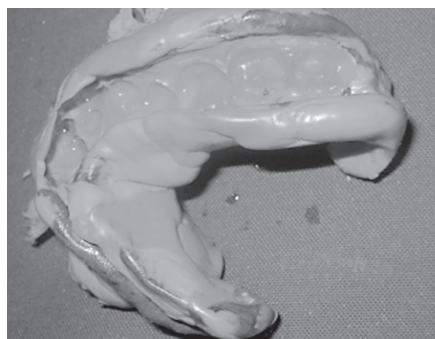


Fig 3 : Impression made using elastomeric impression.



Fig 4 : Maxillomandibular Relationship



Fig 5 : maxillary and mandibular cast were mounted on a three point articulator

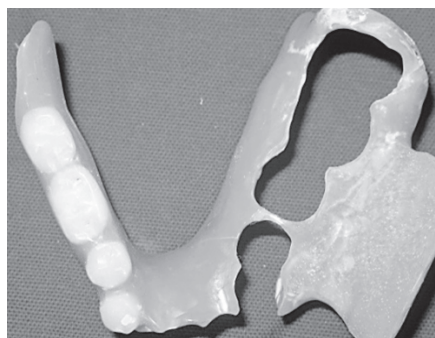


Fig 6 : Design of Guide Flange Prosthesis : a : guiding flange, b: support flange c: prosthesis



Fig 7 : Intraoral view of the patient with the Guide flange prosthesis

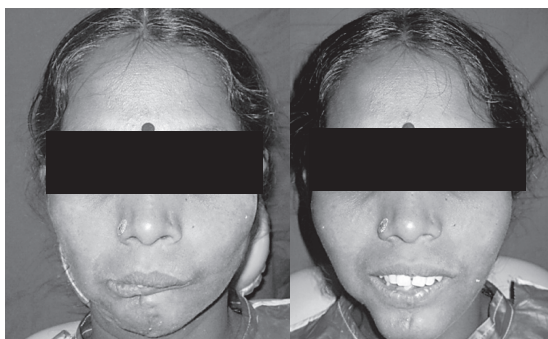


Fig 8 : Pre treatment frontal view

Fig 9 : Post treatment frontal view



Fig 10 : Cantor and Curtis classification of mandibular defects.