CASE REPORT

A Systematic Approach for Functional Rehabilitation of Hemimandibulectomy Patient

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ABSTRACT

Discontinuity of mandible due to varied reasons leads to the loss of balance and symmetry of face which is further complicated by deviation of remaining mandible towards the resected side. This clinical paper describes in detail the prosthetic management of hemimandibulectomy patient due to traumatic accident using flexible denture for such patients with limited mouth opening until a more definitive form of treatment is rendered. Flexible denture provides a financially acceptable approach in the era of implantology and autogenous grafting.

KEYWORDS: Flexible Denture, Hemimandibulectomy Patient, Sectional Impression, Limited mouth opening.

INTRODUCTION

Prosthetic rehabilitation of hemimandibulectomy patient due to acquired defects poses a great challenge because the discontinuity of the mandible leads to facial asymmetry, altered muscle function, deviation of the remaining mandible to the resected side, esthetic deformities and functional compromise. Cantor and Curtis have given a classification of mandibular defects for edentulous patients which can also be utilized for dentulous individuals.[1]

The debilitating sequence following mandibular resection are impaired speech, articulation, difficulty in swallowing, poor control of salivary secretions and severe cosmetic disfigurement.[2] Basic rehabilitation objective is to reeducate mandibular muscles to establish an acceptable occlusal relationship for residual mandible so that patient can adequately control and by the repeated opening and closing movements achieve a functional occlusal relationship.[3]

This clinical paper describes the management of such a patient who had undergone mandibular resection due to traumatic accident on right side that has not been surgically reconstructed and Kennedy's class I partially edentulous maxillary arch. The prosthetic management of this patient is done using Flexible denture with acetal resin clasps on terminal abutment teeth which serve as a better treatment alternative for these patients.

CASE REPORT

A female patient aged 25yrs reported to the Department of Prosthodontics with a chief complaint of difficulty in eating, poor appearance and difficulty in speech. Extraoral examination showed facial asymmetry with depression on right side .On eliciting history the patient revealed loss of right side of the mandible due to road traffic accident with fewer teeth remaining (31,32,33 &34).On the basis of clinical and radiographic examination it was classified as Cantor and Curtis classification class III of partially edentulous mandibular arch.

The vestibule was obliterated on the right side with limited mouth opening of about 25mm with deviation. Maxillary arch had a Kennedy class I partially edentulous situation with 11,12,13,14,21& 22 remaining [Figure 1].

Fig 1: Resected Mandible of Right side

The impression making was extremely difficult hence sectional trays for maxillary arch had been decided and Flexible denture was planned for easy insertion and removal to improve the masticatory ability and esthetic appearance of the patient.

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PROCEDURE

Preliminary impression for both maxillary and mandibular arches were taken in plastic stock trays with irreversible hydrocolloid (Dentalgin, Prime dental products, Mumbai, India) that has been sectioned because of the limited mouth opening of the patient .The sectional trays were realigned and preliminary cast was obtained. The custom impression tray for the maxillary arch was fabricated in two parts for secondary impression. The posterior part of the tray to obtain the mucosal border molded impression of the edentulous portion of the maxillary posterior region with low fusing compound(DPI Pinnacle tracing sticks, DPI ,India) and light bodied elastomeric impression material(Imprint,3M ESPE, Germany).The anterior part of the tray obtains the impression of anterior teeth .These two components were indexed using the snap –on button attachment (Figure 2) and master cast poured with type IV die stone(Kalstone, Kalabhai, Karskarson Pvt, India).Secondary impression for mandibular arch was also taken.

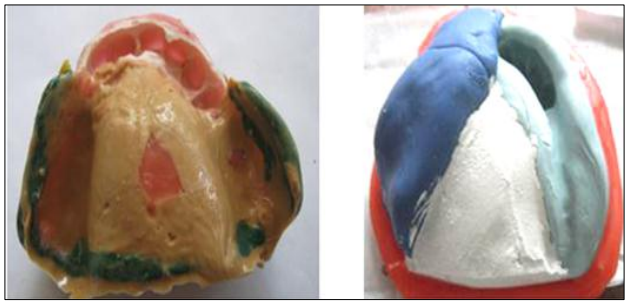

Figure 2: Sectional Maxillary and Mandibular Impression

Maxillo-mandibular relation was then recorded with patient directed onto the maximum functional position as given by Desjardins.[3] The centric relation taken in more comfortable and repeatable position for the patient and mounted in a semi-adjustable articulator. Teeth arrangement was proceeded with monoplane occlusion using non-anatomic acrylic resin posterior teeth which would minimise the stress and improve the stability .The patients functional and esthetic evaluation being carried out at the try in appointment. The denture was then processed using flexible denture material(valplast) with acetal resin clasps placed on terminal abutment teeth which improved the retention and esthetics(Figure 3). Injection molding technique is utilised and diatoric holes placed on the resin teeth for enhancing the retention. The denture was finished, polished and then inserted.

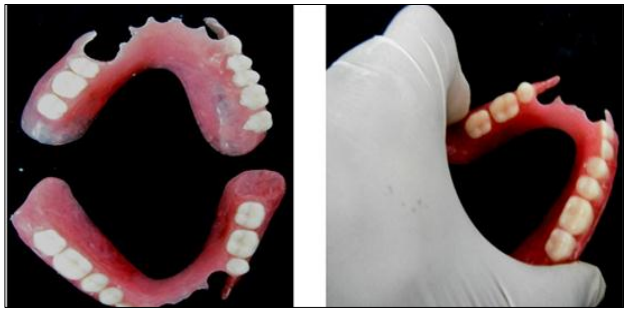

Figure 3: Flexible denture with acetal resin clasps

During insertion the denture is inspected for border extensions, occlusal interferences and speech. The patient's speech improved with this inerim partial denture and patient was able to close their mandible into normal position without deviation. Since the denture was flexible it was able to adapt onto the resected side over soft tissue with improved function and esthetics. The patient was recalled at regular intervals after 24 hours, one week and 3 months patient expressed improvement in their appearance as well as mastication. Patient's quality of life improved with this interim flexible denture a cost effective alternative in the current scenario of implants(Figure 4).

Figure 4: Pretreatment and Post Treatment

DISCUSSION

Mandibular deviation in hemimandibulectomy patient is mainly due to uncompromised influence of contralateral musculature particularly internal pterygoid muscle and pull from contraction of cicatricial tissue on resected side. The dentulous mandibular discontinuity patient is at a tremendous advantage as compared to their edentulous counterparts in correction of the deviation.[3] Literature review advocates fabrication of guide flange prosthesis for these patients to improve masticatory function and esthetics but since considerable period of time have elapsed after surgical procedure guidance prosthesis was not feasible.[4]

The design of the definitive non-guiding prosthesis for mandibulectomy patient depend upon the relation of the remaining teeth to the opposing occlusal surface. Following the principle of conventional partial denture construction every attempt was made to obtain cross arch stabilisation and full mucosal coverage over the available support tissues. Patient's tactile sense or sense of comfort is used to assess the vertical dimension of occlusion and a monoplane scheme of occlusion with non-anatomic cuspal form of teeth to decrease the amount of lateral stabilising forces on the supporting tissues. Flexible denture material is a monomer free thermoplastic dental polymer with low flexural modulus and modulus of elasticity with better patient acceptance.[5]

Surgical reconstruction with autogenous bone grafting is the best method of rehabilitation of such patients but surgical morbidity and pain associated with these procedures precludes its usage. Recently, bioimplants

containing Bone Morphogenic protein-7 can be used to promote bone regeneration in critical sized mandibular defects. The use of rhBMP-2 with collagen carrier can also be used for such defects without the use of bone grafting material. This rhBMP-2 is a cytokine which supports bone formation that is combined with beta-tricalcium phosphate matrix as a reconstructive approach for hemimandibulctomy patients.[6,7] In developing countries these advanced procedures were not adopted and more conservative options such as neutral zone technique and twin rows of teeth are utilised.Hence flexible dentures were utilised as the most appropriate treatment of this patient due to economical reasons.[8]

CONCLUSION

The hemimandibulectomy patient is a difficult patient to manage because the prosthodontist is limited in their ability to provide a reasonable and practical occlusal scheme, these patients are best treated with uncomplicated prosthesis.Since most patients undergoing hemimandibulctomies are from less socioeconomic favoured population the recent and better treatment options such as implants,bone grafting are not feasible . Flexible denture for these patients improved the esthetic appearance and the function without much complication in insertion and removal.

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