PROSTHODONTIC REHABILITATION OF HEMIMANDIBULECTOMY PATIENT- A CASE REPORT

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The patient who has undergone mandibular resection is left with multiple physiologic & cosmetic deficiencies, including the ability to masticate in an acceptable or efficient manner. The treatment of these patients is enhanced by careful preoperative evaluation & involvement of prosthodontist to discuss potential rehabilitative needs with the surgeons. In the discontinuity defect, the most common postoperative rehabilitative problem is the lack of occlusion secondary to mandibular deviation. Prosthodontist find challenging to provide reasonable & practical occlusal schemes for such patients with mandibular deviations. This article presents a case report of successfully rehabilitation of patients with hemimandibulectomy, by an interdisciplinary approach.

Keywords- Hemimandibulectomy, training flange, complete denture, interdisplinary,rehabilitation

Today, advances in medical science has enabled to save the patients from the dreaded disease like cancer. But the inevitable mutilation that follows the radical surgery possesses greatest challenge of all the time to achieve a successful rehabilitation. These patients are left untreated or partially rehabilitated due to lack of co-ordination amongst the specialist. The prognosis is related directly to the amount of the remaining bone and soft tissue and becomes less favorable as the size of the resection increases.[1-5]

Particularly in patients with hemimandibulectomy patient when no training flange is planned. This leads to loss of vertical relation and centric occlusion on the non-surgical site due to deviation of mandible towards surgical site as a result of contracture. Pre-surgical intervention by the prosthodontist helps in planning and fabrication of guiding or training flange. This device helps in guiding the remaining mandible to its centric relation position for definite period of time, which is particularly challenging in completely edentulous patient.

This case report highlights the importance of interdisciplinary approach where the successful rehabilitation has been achieved with a team approach using simplified technique to fabricate training flange and surgical stent following surgical procedure and complete rehabilitation of patients who had undergone left segmental mandibulectomy by fabrication of conventional complete denture.

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CLINICAL REPORT

A 67 year old female with swelling of the left side of the mandible reported to Modern Dental College and Research Centre, Indore. On thorough Clinical, Hematological, Histological and Radiological examination patient was diagnosed as moderately differentiated squamous cell carcinoma of the alveolus of left side of mandible (fig 1, 2, 3). To achieve complete rehabilitation post surgically the patient was referred to the prosthodontists for treatment planning. A three phase treatment planning was formulated for the patient.

FABRICATION OF TRAINING FLANGE

To maintain the occlusion on the non surgical site after resection of mandibular defect a training flange was fabricated. Pre-operative impression of upper and lower arch was made using irreversible hydrocolloid and study cast was obtained in type III dental stone taking all aseptic precautions.

Interocclusal record was obtained by Alu wax and the casts were articulated on mean value articulator. The surgical site was marked as per the planning by surgeon and the mock resection was carried

out on the cast.The remaining teeth were also removed, a postoperative situation on one side and completely edentulous upper and lower arch was obtained (fig 4). Record bases were fabricated in autopolymerising resin and occlusal rims in modelling wax (fig 5). To provide interlocking with lower wax rim, 3mm trough was created following the contour of upper occlusal wax rims. To provide inter arch ligation of training flange at the time of surgery, 4 stainless steel hooks were embedded into the buccal surface of wax rims, such that 2 hooks were parallel to each other one at molar region and other at premolar region. To engage wire during circummandiular wiring of lower flange, (2mm) of trough was created notching the lower wax rims in premolar region (fig 5). Then the assembly was processed in heat cured denture base resin. Laboratory remounting procedure, followed by finishing and polishing of guiding flange was carried out (fig 6).The prosthesis was disinfection with 4% Gluteraldehyde before surgery.

PLACEMENT OF TRAINING FLANGE AT THE TIME OF SURGERY

Wide excision of the proliferative lesion (hemimandibulectomy from left first premolar to posterior mandible, sparing the condyles and radical neck dissection). The remaining unrestorable retained teeth were extracted, leaving the patient completely edentulous. To maintain the correct centric occlusion position the training flange was secured in patient's mouth at the time of surgery. The upper flange was secured by per-alveolar wiring and lower flange was secured in place by circummandibular wiring. Re-evaluation of its position in mouth and regular follow-up was carried out for 15 days (fig 7). The intearch wirring, peralveolar and circummandibular wiring was removed before radiation therapy.

FABRICATION OF INTERIM COMPLETE DENTURE PROSTHESIS

After the radiation therapy it was decided to fabricate interim complete denture.

Preliminary impression of upper and lower arch was made using irreversible hydrocolloids impression material and study casts were made in type III dental stone (fig 8). Border molding and final impression (low fusing compound and non-eugenol zinc oxide impression paste) was made.

Record bases were fabricated in autopolymerising resin and occlusal rims in modelling wax. During jaw relation, vertical relation was recorded using "modified Niswongers method" and verified by phonetics and esthetics, and centric relation using "check bite" method. The position of the mandibular record base and occlusal rims were evaluated and modified in the mouth until stability was achieved during functional movement. Jaw relation was then transferred to an articulator. On completion of teeth arrangement and waxing carving the trial denture was evaluated in the patient's mouth (fig 9).

To prevent lateral displacement of the dentures during function, a 3mm thick and 8mm long wax block was placed in the left maxillary premolar region. Similarly an extension from the lower wax rim, distal of left canine coinciding with the vertical wax extension was made as, an interlocking mechanism.

Then the assembly was processed in heat cure denture base resin. Laboratory remount and finishing and polishing of dentures were done. Occlusion at centric and eccentric positions was evaluated and adjusted intra-orally6 (fig10). As the tissues were irradiated, the upper and lower dentures were relined with permanent soft liner. Esthetic, Comfort and functional result was satisfactory to the patient on periodic recall visit (fig 12).

DISCUSSION

Loss of mandibular continuity causes deviation of the remaining mandibular segment towards the defect and vertical rotation of mandibular plane inferiorly. Mandibular deviation occurs mainly on defect side due to loss of tissue involved in the surgical resection. Loss of continuity also results in vertical rotation of residual mandibular segment in an inferior direction. The functional results of deviation and rotation of mandible are facial disfigurement and loss of occlusal contact between remaining teeth. Treatment for mandibular deviation

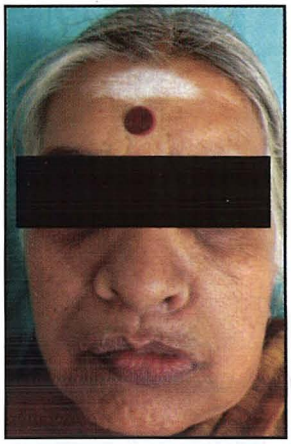


Fig. 1:Pre-operative extra oral frontal view.

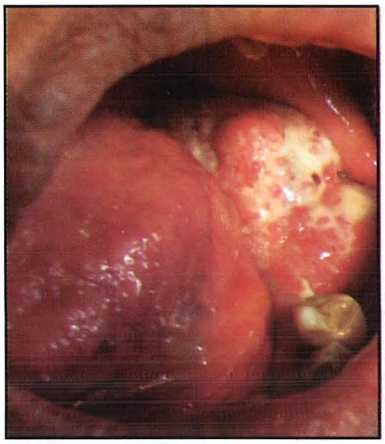


Fig. 2: Intraoral view showing lesion.



Fig. 3: CT-Scan showing extent of lesion.



Fig. 4: Mock surgery.

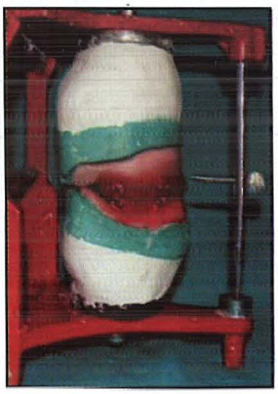


Fig. 5: Lateral view showing articulated maxillary and mandibular occlusal rims with stainless steel hooks.



Fig. 6: Laboratory remounted surgical stent & guiding flange in heat cure acrylic.

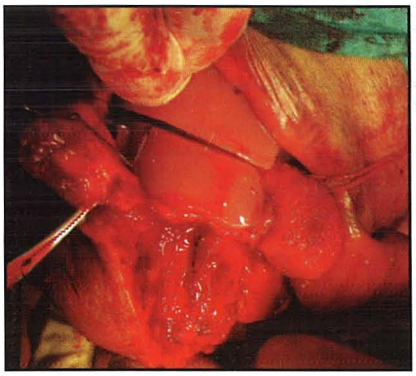


Fig. 7: Intraoral securing of stent during surgery.



Fig. 8: a) Completely edentulous maxillary final cast.



b) Completely edentulous mandibular final cast.

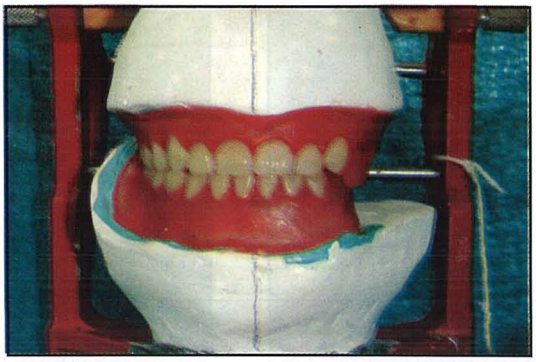


Fig. 9: Completed teeth arrangement & wax-up.

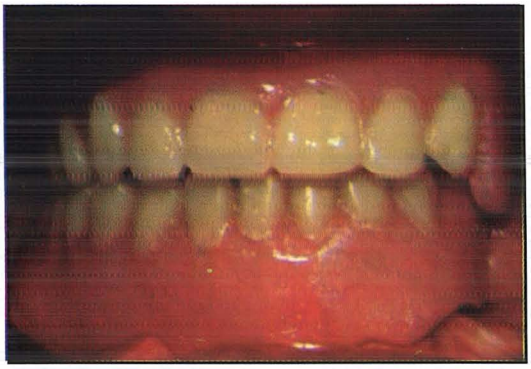


Fig. 10: Intraoral view on denture insertion.





Fig. 11: a) Deviation of mandible prior to denture insertion.

b) Correction of deviation after denture insertion.

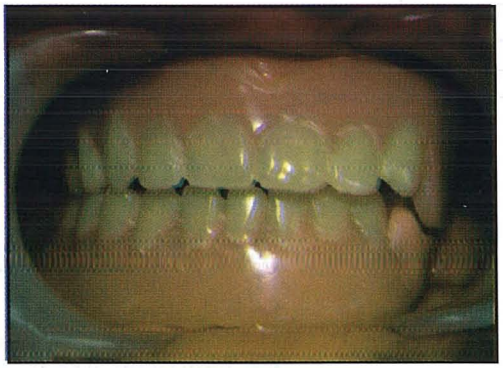


Fig. 12: a) Maxillary and mandibular dentures in occlusion after 3 months of Denture Insertion.



b) Maxillary and mandibular dentures in lateral occlusal view after 3 months of Denture Insertion.

and rotation can be best done by reconstruction through osseous grafting. When surgical reconstruction is not possible, training flange or mandibular resection guidance prostheses followed by removable prosthesis is an option. Early post resection physical therapy is indicated to reposition the mandibular fragment towards a more normal position and to minimize the effect of scar formation. Delaying the physical therapy during the healing phase results in scar contracture which will lead to difficulty in repositioning of the mandible.

The training flange is fabricated depending upon the severity of mandibular deviation. The problem of training flange is further complicated in edentulous patients.

In the above case the training flange in the form of interlocking rims was fabricated for the edentulous jaws and held by circum mandibular wiring and per-alveolar wiring in maxillary arch, followed by interarch fixation with the help of stainless steel hooks at the time of the surgery. As no time was lost post surgical, the mandibular deviation was minimized. Early intervention by the prosthodontist at the treatment planning phase and the team approach helped to rehabilitate the patient with mandibular defect satisfactorily.

CONCLUSION

The success of maxillofacial prosthodontic treatment involves a team approach. The complete rehabilitation of the patient with intraoral defect is only possible when the prosthodontist is involved at the initial stage of the treatment planning.

In developing country where these patients are generally left untreated or partially treated the prosthodontist needs to create awareness amongst the other speciality & finding methods to rehabilitate these patients with minimum material & facilities.

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Continued from Page 126

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