



Prosthodontic Rehabilitation of a Partially Edentulous Hemiglossectomy Patient: A Clinical Report

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ABSTRACT

Squamous cell carcinoma is one of the most common malignant lesions in the oral cavity. This lesion can present itself on the tongue and may be treated by a combination of surgery, radiation therapy, and chemotherapy. When present on the lateral border of the tongue hemiglossectomy of the affected side is required. This results in altered functional movements, posture and adaptation of the tongue. This condition can be aggravated by deficient alveolar ridge, suturing of the flap across the crest of the ridge, high tissue attachments, altered floor of the mouth and loss of buccal and lingual sulcus. Prosthetic management in such cases includes an unconventional procedure to treat the patient. This article presents a clinical report on the rehabilitation of a partially edentulous patient with right sided hemiglossectomy with maxillary cast partial denture and mandibular flexible denture.

Keywords: Hemiglossectomy, Flexible denture, Rehabilitation.

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INTRODUCTION

Squamous cell carcinoma of the lateral border of the tongue and the floor of the mouth may be treated by a combination of surgery, radiation therapy and chemotherapy. Surgical resection of this tumor often includes a partial mandibular resection, a partial glossectomy, a partial resection of the floor of the mouth, and a radical neck dissection.¹ Rehabilitation efforts may include secondary surgical management, prosthodontic treatment, speech therapy, and psychologic care. The presence or absence of natural teeth and their position and periodontal status often determines the treatment approach. Several authors have described the rationale for the treatment of edentulous mandibular resection patients.²⁻⁴ Prosthetic management of patients undergoing glossectomy with a collapsed lower lip and obliterated mandibular

ridge anatomy may require an unconventional procedure for the fabrication of prostheses.⁵ A partially edentulous hemiglossectomy patient can be treated with implants,⁶ removable partial dentures¹ or overdentures.⁷ The selection of treatment plan depends on the surrounding teeth, tissues, the patient's need and financial status. This clinical report presents the prosthetic rehabilitation of a partially edentulous hemiglossectomy patient with a maxillary cast partial denture and mandibular flexible denture.

CLINICAL REPORT

A 62-year-old male patient reported to the Department of Prosthodontics MGM Dental College and Hospital, Navi Mumbai, with a chief complaint of difficulty in chewing due to missing teeth in the upper right and left and lower right posterior region. The patient had been diagnosed with squamous cell carcinoma on the right lateral border of the tongue 1 year back and had undergone hemiglossectomy with radical neck dissection for the same. The lower border of the mandible and alveolar ridge were intact. The patient did not undergo any radiotherapy.

On extraoral examination the patient had an ovoid face. There was no deviation of the mandible and the symmetry was maintained. There was however, slight collapse of the lip and cheek on the right side. The intraoral examination revealed the resulting compromise of the right half of the tongue and musculature of the floor of the mouth (Fig. 1). The tongue was flaccid with altered posture and the tongue movements were limited. The residual alveolar ridge was not included in the surgical resection of the tongue. The flap however was sutured to the buccal mucosa across the ridge



Fig. 1: Preoperative mandibular arch

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making placement of any prosthesis over it difficult, as the movement of the tongue or buccal mucosa would result in dislodgement of the prosthesis. The teeth present in the maxillary arch were 11, 12, 13, 21, 22, 23, 26 and the teeth present in the mandibular arch were 32, 33, 34, 35, 36, 42, 43 (Figs 2 and 3). On radiographic examination 48 was seen to be impacted and 26 had undergone endodontic treatment



Fig. 2: Preoperative maxillary arch



Fig. 3: Preoperative occlusion



Fig. 4: Orthopantomogram (OPG)

(Fig. 4). The teeth 32 and 42 were rotated and there was no space for the replacement of missing 31 and 41. The lower anterior teeth showed recession with bone loss and lingual tissue undercuts. The lingual sulcus on the resected side was lost. The patient had never used any removable prosthesis previously. The oral hygiene of the patient was poor. The mouth opening was 30 mm.

The patient was subjected to oral prophylactic procedures and instructions were given on the maintenance of oral hygiene. The treatment plan included Cast partial denture for the maxillary arch and flexible denture for the mandibular arch. A flexible denture was planned for the mandibular arch considering the weak abutments and the rotated teeth and tissue undercuts lingual to the anterior teeth. The patient was advised myofunctional therapy to improve the functional capacity, posture and adaptation of the musculature of the tongue. This was advised before, during and after the fabrication of the prostheses.⁸

The maxillary diagnostic impression was made in irreversible hydrocolloid (Tropicalgin, Zhermack) in a stock metal tray. The mandibular stock metal tray was



Fig. 5: Modified tray for impression



Fig. 6: Mandibular impression

modified on the right side by cutting the lingual flange since the attachment of the floor of the mouth was high and insertion of the tray was difficult. The tray was loaded with impression compound on the defect side so that it could be extended properly for recording the floor of the mouth and exact anatomy of the lingual tissues (Fig. 5). This modified tray was then loaded with irreversible hydrocolloid and impression was made (Fig. 6). The casts were poured in type III dental stone (Kaldent, Kalabhai). The primary surveying of the maxillary diagnostic cast was done. A full metal crown with mesial rest seat was planned for 26 which was endodontically treated. The tooth 26 was prepared, and a mesial rest seat was incorporated in the wax pattern, the crown was fabricated and cemented with zinc phosphate cement (Fig. 7). After the cementation of the crown an impression was made with irreversible hydrocolloid in a stock metal tray. The cast was poured in type III dental stone. The definitive surveying was carried out for designing of the cast partial denture. The intraoral tooth preparation was carried out which included cingulum rests on 13 and 23, guiding planes on 13 and 23. The impression was made

with putty and light viscosity polyvinylsiloxane impression material (3M ESPE) (Fig. 8) and poured in type IV Dental stone to obtain a master cast. The cast was duplicated to obtain a refractory cast. The wax pattern for the cast partial denture was made, invested, casted with Chrome-cobalt alloy using the conventional technique. This was retrieved, finished and polished. The metal framework was tried in the mouth to check its fit (Fig. 9). The temporary base was adapted onto the metal framework and wax occlusal rim was made. The undercuts on the lingual surface of the mandibular cast were blocked with plaster and pumice and a temporary base was fabricated and wax rim was made for recording the jaw relation. The vertical and centric jaw relation was recorded (Fig. 10). The posterior teeth with reduced buccolingual width and reduced cuspal angles were selected. These would have more stability and less stresses on the lower ridge. The teeth were arranged and waxed up. The try-in was carried out. The vertical and centric relations were verified. The esthetics, occlusion, speech and comfort of the patient were also assessed. The wax up was done for the maxillary trial denture and it was processed with heat



Fig. 7: Crown cemented on 26



Fig. 9: Framework try-in



Fig. 8: Maxillary impression



Fig. 10: Jaw relation

cure acrylic resin in conventional manner (Fig. 11). The mandibular denture was processed with nylon resin (Valplast) (Fig. 12). The dentures were finished, polished and inserted (Figs 13 to 17). The occlusion was assessed. The patient was given instructions on use and maintenance. The recall was done after 24 hours, 1 week and 1 month. The patient is kept on long-term recall.

DISCUSSION

The resection of the tongue due to malignancy or tumor results in altered functional movements, posture and adaptation of the tongue.⁸ This condition is aggravated sometimes by deficient alveolar ridge, suturing of the flap across the crest of the ridge, high tissue attachments, altered floor of the mouth and loss of buccal and lingual sulcus.⁹ Different techniques, such as modified functional impression technique,¹⁰ implant-retained prostheses,^{6,11} palatal augmentation prosthesis,¹² neutral zone technique,¹³ and mandibular resection prosthesis, have been described for the prosthodontic management of patients after glossectomy. The patient in this case presented with hemiglossectomy

of the right side and missing teeth in the maxillary and the mandibular arches and poor oral hygiene. A cast partial denture was planned for the maxillary arch. The mandibular arch showed anterior teeth which had recession and bone loss. These teeth also showed rotation. There was obliteration of the lingual vestibule. This was due to the hemiglossectomy



Fig. 13: Postoperative right intraoral



Fig. 11: Maxillary cast partial denture



Fig. 14: Postoperative left intraoral



Fig. 12: Mandibular flexible denture



Fig. 15: Maxillary cast partial denture



Fig. 16: Mandibular flexible denture



Fig. 17: Postoperative view

and the suturing of the floor of the mouth to the buccal mucosa across the ridge. The retention was to be gained from the lingual undercut in the left lingual vestibule. This would not have been possible with the conventional denture as it would cause trauma to the tissues on the left lingual slope. Due to the attachment, the tray needed to be modified as there was no sulcus on the right side of the mandible. The tray was cut on the right side to fit the surgically compromised tissues and impression was made. The teeth selected were narrow with reduced cuspal angles to increase the stability of the denture which was expected to be poor due to the deficient sulcus. Flexible denture for the mandibular arch was advised to take advantage of the undercut which would otherwise not be approximated with hard acrylic as it would cause trauma and pain to the patient. The mandibular flexible denture was retentive, comfortable to the patient, easier to insert and remove inspite of the reduced mouth opening and economical. Hence, selection of flexible denture served the purpose.

CONCLUSION

The management of a patient with hemiglossectomy is challenging due to the altered musculature, reduced depth of the sulcus and high tissue attachments. In this clinical report a partially edentulous patient with right sided hemiglossectomy was successfully rehabilitated with maxillary cast partial denture and mandibular flexible denture.

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