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PROSTHETIC REHABILITATION OF A PARTIAL GLOSSECTOMY PATIENT WITH LINGUAL AUGMENTATION PROSTHESIS- A CASE REPORT

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ABSTRACT
Oral cancer accounts for about 40% of all cancers inflicting the human beings. Those involving the tongue results in mild to severe deficiencies of phonation, deglutition, mastication, and taste depending upon the degree and extent tissues involved. The prime requisite of a sound and holistic prosthodontic rehabilitation from both the patient's and clinician's perspective is to be able to satiate the yardsticks of function, retention, aesthetics and comfort to the fullest. This article presents a case report of prosthodontic rehabilitation completely edentulous patient, who underwent partial glossectomy following surgical resection of the squamous cell carcinoma involving left lateral borders of the tongue. An attempt was made to restore the comfort and function of the tongue with the help of palatal augmentation prosthesis along with mandibular lingual augmentation prosthesis.

KEYWORDS: Prosthetic rehabilitation, Partial glossectomy, Lingual augmentation.

INTRODUCTION
The excision of malignant tumour of tongue often produces tongue defects that can cause dysphagia and speech difficulties due to altered residual tongue volume and mobility.[1] Patients with partial glossectomy (i.e., < 50% of tongue removed) suffer minimal functional impairment and require no prosthesis. Elimination of more than 50% of the tongue requires restoration with either palatal or lingual augmentation prosthesis.[2] A palatal augmentation prosthesis (PAP) is an intraoral prosthesis used to improve dysarthria and dysphagia by supporting contact between the tongue and palate. A lingual augmentation prosthesis is functional to mandible which results in enhanced swallowing function. This article describes the prosthetic rehabilitation of the completely edentulous patient with partial glossectomy along the left lateral border of the tongue, following surgical resection of the squamous cell carcinoma involving the tongue.

Case
A 64 year old male patient reported with the chief complaint of difficulty in chewing and swallowing due to missing teeth in upper and lower arches and impaired speech due to partial resection of the tongue along the left lateral border following the surgery. The patient had been diagnosed with squamous cell carcinoma involving the left lateral border of the tongue 2 years back. General examination indicated there was collapse of lip and cheek on the left side of the face, due to lack of support of the musculature. Intraorally, completely edentulous well-formed maxillary and partially resorbed mandibular residual alveolar ridges were intact [Figure 1]. The lingual sulcus was almost completely lost on the resected side. The tongue was compromised with resected left lateral border, flaccid, with altered posture, and restricted movements. The treatment plan included maxillary and mandibular complete dentures, using a special impression technique for mandibular arch and palatal surface of maxillary denture to be customized using a palatogram.

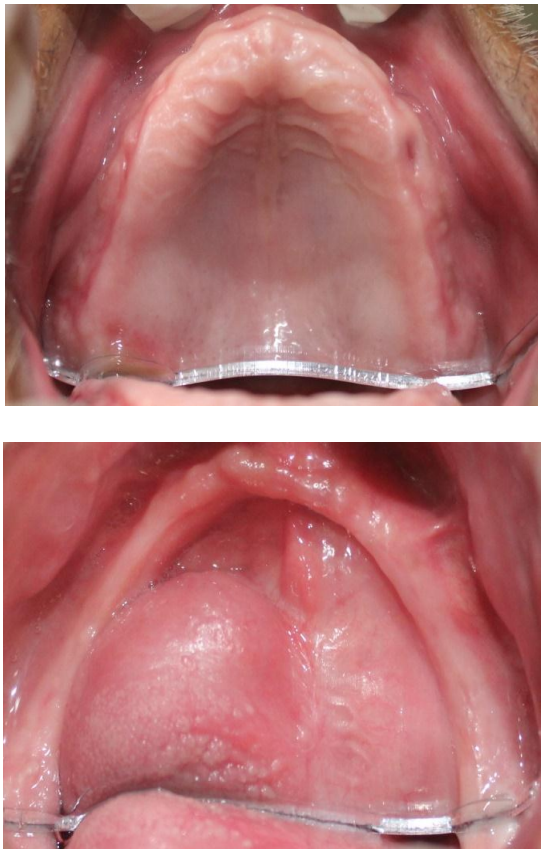

Figure 1: Intraoral photograph of maxillary and mandibular arch.

The maxillary & mandibular metal stock tray were beaded using impression compound and was extended properly for recording the residual alveolar ridge and associated tissues [Figure 2]. The casts were poured with Type III dental stone. Custom trays were fabricated using self-cure resin. Peripheral tracing was done, and the secondary impression was made using zinc oxide eugenol impression paste [Figure 3]. The master cast was poured with type IV die stone. Temporary denture base wax occlusal rims are prepared. Jaw relation was recorded, decreasing the vertical dimension of occlusion slightly by reducing the height of the occlusal plane on the mandibular denture, to allow the residual tongue to more conveniently place the food bolus on the occlusal table. Posterior teeth with reduced buccolingual width and reduced cuspal angle (semi anatomic) were selected. These would aid in providing the stability to the mandibular denture as well as reduce the stress transmitted on to the underlying ridge, hence slow down the further resorption of the bone. The teeth arrangement was done with the anterior teeth arranged closed to prevent the escape of air between them and posterior in lingualized occlusion. Try in was done to verify the retention, stability and aesthetics of the prosthesis [Figure 4].

Figure 2: Maxillary and mandibular preliminary impressions.

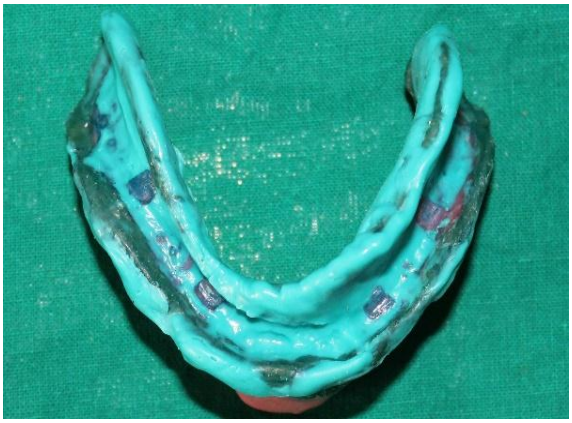

Figure 3: Mandibular final impression.

Figure 4: Waxed up trial dentures.

Palatal augmentation of maxillary denture - It is observed that tongue comes in contact with the palate while producing palatolingual consonants such as *s, t, d,n* and *l.* while mandibular try in denture was remained in mouth, a thin layer of zinc oxide eugenol impression paste was applied on palatal aspect of maxillary denture base that was in contact with the patients tongue. When the initial setting of paste began the denture base was inserted in patients mouth. He was then guided to read out aloud the sounds such as *ch, j, sh, z, t, d, n* and *s* in a deliberate manner. When the material was set the denture was removed. The surface of the material on the palatal

surface of the denture was checked visually for uniform contact [Figure 5]. The final assessment was made by making the patient read all the sentences in the presence of neutral observer. The resultant palatogram recording of customised palatal surface ensured a uniform thin layer of material. The waxed up denture was then flasked and processed. The final prosthesis was finished and polished. The prosthesis was inserted into the patients mouth and speech was recorded. Patient was kept on follow up and seemed comfortable with the treatment [Figure 6].

Figure 5: Palatogram recording with ZOE paste.

Figure 6: Finished Maxillary Prosthesis.

Mandibular lingual augmentation prosthesis

This prosthesis was given to decrease the gap present between residual tongue tissue and alveolar ridge on left side. The mandibular try-in denture base was kept inside the patient's mouth. Moulded modelling wax strip was placed on lingual side of alveolar ridge to compensate the gap. Zinc oxide eugenol impression paste was painted on surface of added wax which was placed in to cover up the defect [Figure 7]. The functional impression of the tongue was made during swallowing. The denture base was inspected so as all the waxed up area was covered by zinc oxide eugenol paste. If wax is exposed, this indicates excess wax in that area which is trimmed of and impression paste was painted and functional impression with zinc oxide eugenol impression paste is repeated. The denture base was than flasked and cured. The prosthesis was then inserted to patient [Figure 8]. Now the prosthesis had filled the gap between tongue and lingual surface of denture base and teeth, the patient was able to transfer entire boluses of food to his pharynx during swallowing. The amount of residual food left on oral floor was markedly less.

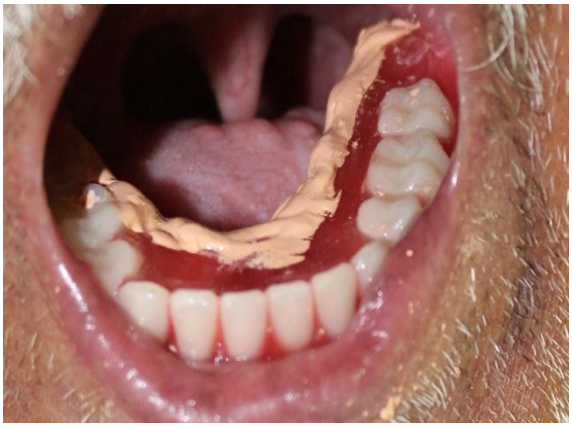

Figure 7

Figure 8: Finished Mandibular Prosthesis.

DISCUSSION

Tongue movements modify the shape of the oral cavity and change the resonance characteristics that produce different consonants. The synchronization of the muscle and nerve is reduced in glossectomy patients even after reconstruction by flap.[3] In the present report, the LAP (Lingual augmentation prosthesis) was defined as a mandibular prosthesis that assists the tongue to overcome the disabling defect of oral defects. A LAP was inserted in a patient who experienced food transportation problems and the collections of bolus residues on the oral floor after swallowing, typical symptoms of dysphagia after tongue resection for malignant tongue cancer. As a result of prosthesis given the swallowing function of the patient was improved. The palatal augmentation prosthesis permits remodelling of the hard and/or soft palate to increase tongue/palate contact during speech and swallowing. This could be a removable partial denture or complete denture prosthesis.[4] Palatal contour remains the sole factor influencing speech, when other factors such as teeth positioning, occlusal plane, vertical dimensions, work on tandem and ensure optimum phonetics in complete denture. Proper pronunciations

require precise approximation of tongue with the palatal outline.[5] Palatograms serve as a guiding force for alterations and customization of palatal contours, such that, speech deficiencies of sibilant sounds are corrected, or the period of adaptation to new prosthesis gets reduced.[6] The prosthodontic management of patients with partial tongue resection often should include lowering the palatal vault and filling out the tongue defect to allow the tongue to function alongside it during speech and swallowing.[7] Georgian, Logemann, and Fisher suggested that speech therapy also helps the patients develop compensatory strategies to produce speech sounds in an altered way.[8] Strategies for improving communicative efficiency such as maintaining good eye contact with listeners and speaking at a slower rate and bring a positive change in the prognosis of the prosthesis.[9]

CONCLUSION

Careful observation and evaluation of residual oral functions played a key role in the prosthetic rehabilitation of this patient with partial glossectomy. Factors such as the type of reconstruction, extent of the surgical resection, the mobility of the residual oral and paraoral tissues, mental proficiency, neuromuscular coordination and motivation dictate the degree to which the patient's impaired oral functions may be rehabilitated and were kept in mind while rehabilitating this patient.

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