



PROSTHODONTIC REHABILITATION WITH FUNCTIONAL PALATAL DUPLICATION PROSTHESIS OF COMPLETELY EDENTULOUS PATIENT WITH PARTIAL GLOSSECTOMY.

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ABSTRACT Oral cancer accounts for about 40% of all cancers inflicting the human beings which is found on the lip, floor of mouth, cheek lining, gingiva, palate or in the tongue. Those involving the tongue results in mild to severe deficiencies of phonation, deglutition, mastication, and taste depending upon the degree and extent of the tissues involved. This article presents a case report of prosthodontic rehabilitation of completely edentulous patient, who underwent partial glossectomy following surgical resection of squamous cell carcinoma involving right lateral borders of the tongue. An attempt was made to restore speech first with rugae duplication after which the patient presented with phonation and swallowing difficulty. A functional duplication prosthesis was fabricated to restore the speech and oral function.

KEYWORDS : Rugae Duplication, Palatal Duplication Prosthesis, Glossectomy.

INTRODUCTION

Malignancies involving the tongue account for 18% of all oral cancer cases with the highest involvement of the posterior two-thirds and lateral borders followed by dorsum, ventral surface and tip of the tongue. Postoperatively, these patients encounter speech, chewing, and swallowing problems. In such cases, voice quality, resonance & articulation are affected because of altered residual tongue volume and mobility [1].

This article describes the prosthetic rehabilitation of a completely edentulous patient with partial glossectomy along the right lateral border of the tongue following surgical resection of the squamous cell carcinoma involving the tongue.

Case Presentation

A 54-year-old female patient reported to the department of prosthodontics with the chief complaint of difficulty in chewing food due to missing teeth in the upper and lower arch. The patient also complained of impaired speech due to partial resection of the tongue along the right lateral border following the surgery. The patient was diagnosed with squamous cell carcinoma involving the right lateral border of the tongue 6 years back.



Figure 1: Intraorally, completely edentulous high well rounded maxillary arch.

The floor of the mouth was altered and compromised with musculature partially covering the mandibular residual alveolar ridge on the left posterior region [Figure 2].

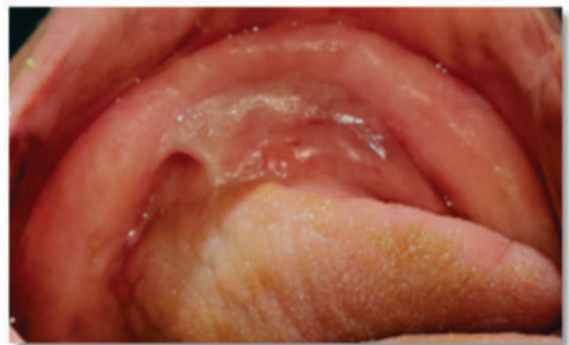


Figure 2: Deviation of tongue towards the left.

The tongue showed restricted movements, flaccidity with altered posture due to resection of right lateral border.

The treatment plan included maxillary and mandibular complete dentures, using a rugae duplication technique for maxillary arch and modified occlusal scheme for mandibular arch.

Primary impressions of maxillary and mandibular arches were made using impression compound (Y Dents, MDM Corporation, Delhi).

The primary casts were poured with type II Dental Plaster (Kaldent, Kalabhai). Custom trays were fabricated using autopolymerizing acrylic resin DPI, India). Border molding was done using low fusing impression compound (DPI Pinnacle, The Bombay Burmah Trading Corporation Limited, Mumbai, India) and wash impression was made with medium body addition silicone impression material (AvueGum) [Figure 4, 5].



Figure 4: Final impression of mandibular arch.



Figure 5: Final impression of maxillary arch.

The master casts were poured with type IV die stone.

Record bases were fabricated using autopolymerising resin on both the casts having a uniform thickness of 2mm. Face bow record and transfer was done [Figure 6].



Figure 6: Facebow transfer.

The height of the occlusal plane on the mandibular denture was reduced to allow the residual tongue to place the bolus on the occlusal table. Mounting of master cast was done in centric relation on a semiadjustable articulator (Bioart A7 Plus, Flourida, US).

The anterior teeth were arranged closed to the ridge to prevent air escape between them and posteriors were arranged in lingualized occlusion. Semi anatomic posterior teeth with reduced cuspal angle and buccolingual width were selected. Rugae duplication was done for the maxillary denture [Figure 7].



Figure 7: Rugae duplication on the trial denture.

Try-in was done to verify the retention, stability, and esthetics of the prosthesis. The denture was cured, finished, polished, and delivered to the patient.

The follow-up was done after 24 hrs, 1 week, and 3 week. It was observed that the patient was not satisfied with speech and articulation. So an attempt to improvise speech was made with a functional duplication appliance.

The patient was instructed to functionally manipulate the modeling compound with the tongue by repeating the lingual velar sounds “k and g” for the posterior palatal tracing, and the lingual alveolar sounds “t and d” for the anterior palatal tracing [Figure 8].



Figure 8: Palatal duplication trial denture.

This enabled the tongue to make palatal articulations. An additional compound was added to the anterior palatal region, allowing the Mandibular anterior teeth to indent into the compound. This resulted in a significant improvement for the fricative and affricative (hard) palatal lingual sounds s, sh, z, zh. For tracing the swallowing patterns, the patient was asked to swallow a blenderized, soft diet like upma. The marked traced area was processed with heat cure acrylic polymer resin to improve the efficiency of the prosthesis [Figure 9].



Figure 9: Heat cured palatal duplication prosthesis.

After insertion of a denture, follow-up was done after 24 h, 1 week, 1 month, and periodically after every 6 months. The patient expressed satisfaction and gratitude for the rehabilitation efforts.

CASE DISCUSSION

The aim of rehabilitation of glossectomy patient is to reduce the size of the oral cavity and improve the resonance thereby, developing altered articulating surface which would alter the speech and deglutition related deficiencies.[2]

Palatal duplication prosthesis improves the quality of sound by reducing the size of the oral cavity with the prosthesis. It is bulky therefore difficult to adjust.[[3,4]

Greven, Meijer, and Tiwari suggested modifying other aspects of speech, such as the rhythm, speech rate and intonation apart from improvising areas of articulation.[5]

The rehabilitation of total glossectomy patient usually requires a mandibular tongue prosthesis while patients with partial tongue resection can be rehabilitated with palatal augmentation prosthesis.

Glossectomy hampers the production of linguoalveolar, linguopalatal, and linguovelar sounds. This basic knowledge was applied to the functional wax technique. [5]

CONCLUSIONS

Total and partial glossectomy causes reduced mobility of the tongue during deglutition and speech.

Palatal duplication prosthesis in partial glossectomy patients lowers the palate and restores tongue-palate contact.

Phonetics can also be used to re-evaluate speech after prosthetic rehabilitation and to diagnose the regions deficient in tongue-palate contact[6]. A functional impression is important in the fabrication and proper placement of palatal augmentation prosthesis. Speech therapy also plays a pivotal role in rehabilitation of speech.

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