Autoreconstruction of the tongue in case of extensive verrucous carcinoma

ABSTRACT
Tongue reconstruction can be simple to complex depending on the size of the defect. Reconstruction of medium-to-large size defect is technically demanding to achieve better esthetic and functional outcome. There are various options in the reconstruction of tongue defect when it comes to the type of flap. Any type of flap has its own advantages and disadvantages. Local flaps seem to be the best option, as it avoids secondary donor site morbidity and has similar tissue characteristics as native tissue, therefore provides better esthetic and functional results. This case report illustrates a case of tongue reconstruction that was performed with the help of tongue base island flap after wide local excision of verrucous carcinoma, which provided us with excellent results.

Keywords: Tongue base island flap, tongue reconstruction, verrucous carcinoma

INTRODUCTION
Verrucous carcinoma is a slow-growing, low-grade, and exophytic variant of oral squamous cell carcinoma. Ackermann in 1948 established it as a clinical and histologic entity. Being a rare tumor, it only represents 3%–4% of all oral carcinomas. It is a slow-growing, painless tumor having verrucous or wart-like growth. Surgery, radiation therapy, chemotherapy, cryotherapy, and treatment with recombinant alpha-interferon are the preferred treatment modalities. Verrucous carcinoma of the tongue is common and surgical excision of the primary lesion remains the treatment of choice. Reconstruction of the tongue follows a ladder pattern. Due to variation in size of the tongue defect, the reconstruction also varies from simple alternatives such as secondary healing, primary closure, and skin grafts to more complex alternatives such as local flaps, regional rotational flaps, and microvascular free flaps. All these flap choices vary according to the surgeon’s preference, size of the defect, consideration of functional and esthetic outcome, donor site morbidity, and secondary sacrifice.

For the reconstruction of medium size defects of the tongue, preference is given to treatment modality, which can be performed intraorally and causes small secondary sacrifice. Primary closure of the tongue defect may lead to deviation of the tongue tip. Preservation of the tongue tip is critical in cases of tongue reconstruction to maintain its normal function. Therefore, local flaps are the most preferred modality of treatment. In the case of partial excision of the anterior tongue, a hemitongue advancement flap is preferred, which was described by Hovey. For tongue defects of around 4 cm–6 cm, sliding and island tongue flaps can be used. The...
tongue base island flap is used for defects involving the middle and anterior tongue.\(^6\)

**CASE REPORT**

A 52-year-old male patient reported to the outpatient department of the oral and maxillofacial surgery unit, with a chief complaint of growth over the tongue. On intraoral examination, an exophytic whitish lesion was found, which was approximately 4 cm × 3 cm (length × width) in size (T2N0M0), located on the lateral border and dorsum of the tongue extending anteriorly up to the midline [Figure 1]. The lesion was well defined, nontender, nonindurated with exophytic wart-like growth. No cervical nodes were palpable. Preoperative incisional biopsy established the final diagnosis of verrucous carcinoma [Figure 2]. After establishing the diagnosis, routine preoperative investigations were done to rule out any systemic comorbidity, and the patient was found fit for surgery.

Wide local excision of verrucous carcinoma followed by reconstruction with tongue-based island flap was planned under general anesthesia. Intraoperatively, wide local excision of the lesion was done [Figure 3] ensuring a 1 cm safety resection margin. Neck dissection was not considered in this case, as the size of the lesion was not more than 4 cm and the fact that verrucous carcinoma is a low-grade variant. After excision, the defect was reconstructed with a tongue base island flap [Figure 4]. Dimensions of the flap were established based on the size and shape of the defect. The flap was marked and harvested. Adequate dissection of the pedicle was done to mobilize the flap and close the defect. Suturing was done with a 3.0 silk suture. The resected mass was sent for histopathological examination. The postoperative histopathological report showed clear margins. The patient was followed regularly for 1 year postoperatively. Healing was found satisfactory with no sign of recurrence until a 1-year follow-up [Figure 5].

**DISCUSSION**

The location and extent of the lesion determine the type of tongue reconstruction. There are no well-defined boundaries between medium- and large-sized defects. The pliability of the tongue and the state of surrounding tissue should be taken into consideration during the reconstruction of a tongue defect.\(^7\) Sufficient oncologic control of verrucous carcinoma ensures a clear margin and reduces the chances of recurrence. A resection margin of more than 1 cm is usually recommended in cases of tongue carcinoma.\(^8\) Verrucous carcinoma has a better prognosis than other kinds of potentially fatal malignancies. Surgery remains the treatment of choice for verrucous carcinoma.

The tongue is a muscular organ responsible for speech, swallowing, and general and special sensation. Quality of life is hampered the most by glossectomy when compared to the excision of any other structure of the oral cavity.\(^9\) Hence, the main objective of tongue reconstruction is to achieve functional rehabilitation and attaining the preoperative tongue condition.\(^4\)

Local flaps mostly sort out the problem of donor site morbidity and are also preferred due to the likeness of tissue. They are also seen to produce excellent esthetic outcomes. However, one of the major drawbacks of local flaps is that it causes a reduction in tongue volume, which compromises the function of the tongue.\(^10\) The posterior part of the tongue requires a sufficient amount of tissue, to act as a platform against which the posterior pharyngeal can work. However, excess tissue at the posterior part of
Defects of the anterior and middle tongue can be reconstructed with a posterior-based sliding tongue flap or tongue base island flap. Tongue base island flap is a local flap based on the dorsal lingual artery. Tongue base island flap differs from posterior-based sliding tongue flap in that instead of mobilizing and advancing the whole posterior hemitongue, only a sufficient amount of myomucosal paddle based on a small pedicle of the dorsal lingual artery is transferred. This method gives a flap that has less tissue bulk and increased mobility. The size of a tongue base island flap should be designed to be 1 cm smaller than the defect to minimize the deformation of the tongue. Primary closure of the donor site can be achieved after raising the tongue base island flap.[10]

The surgeon should have a sound knowledge of the anatomy of the tongue, to prevent any injury to the main trunk of the lingual nerve or lingual artery when performing the surgical excision or when harvesting the flap. Anatomical alteration of the tongue base muscles does not cause any significant compromise in the tongue movement or sensation, and the reason for this might be the spontaneous re-innervations and compensation by remaining tongue structure.

In summary, tongue reconstruction poses a great challenge to the surgeons, and tongue base island flap makes reconstruction much easier as compared to reconstruction with free flaps. Microvascular flaps are technically demanding and require a long duration of surgery; thus, reconstruction of the tongue with tongue base island flap seems to be a better treatment modality for medium-sized tongue defects. Tongue base island flap provides a better functional and esthetic outcome with limited secondary donor site morbidity.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form, the legal guardian has given his consent for images and other clinical information to be reported in the journal. The guardian understands that names and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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