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Reconstruction of Tongue Defects Following Resection for Squamous Cell Carcinoma: A Retrospective Study

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Abstract

Introduction: Tongue cancer is a type of cancer that starts in the cells of the tongue, and can cause lesions or tumors on tongue. It's a type of head and neck cancer. Tongue cancer can occur on the front of the tongue, which is called oral tongue cancer or it may occur at the base of the tongue, near where it attaches to the bottom of the mouth. Squamous cell carcinoma is the most common type of tongue cancer. Reconstruction following resection of malignant tongue tumors remains one of the most difficult problems in head and neck oncology. There has also been a trend toward restoring innervation to these flaps rather than leaving them insensate. **Aim:** The aim of the study is to analyze the reconstruction options following resection of malignant tongue tumors, with different types of skin flaps and its success rate. **Materials and methods:** The study was held in Saveetha dental college, where the reconstruction of tongue malignancy of 15 patient's records were analyzed. Result was analyzed using SPSS software. The data was collected and analyzed statically. **Results:** Among 15 patients, almost 40% represents posterior dorsal area of tongue reconstruction, 27% represents reconstruction of anterior dorsal area of tongue, 20% represents transverse area of tongue reconstruction, 7% represents tongue tip reconstruction and ventral part of tongue reconstruction. **Conclusion:** Tongue cancer resection and subsequent reconstruction favor an interesting challenge to the surgeon to maximize postoperative function and quality of life. Reconstruction with free flaps is a feasible method to restore the functional outcomes. Attention to the principles of tongue reconstruction and knowledge of the range of available reconstructive options can result in more favorable functional outcomes.

Keywords: Tongue flap, speech, swallowing, novel, innovative, oral squamous cell carcinoma, resection, reconstruction surgery

INTRODUCTION

Tongue cancer is a type of cancer that starts in the cells of the tongue, and can cause lesions or tumors on the tongue. It's a type of head and neck cancer. Tongue cancer can occur on the front of the tongue, which is called oral tongue cancer or it may occur at the base of the tongue, near where it attaches to the bottom of the mouth [1]. Squamous cell carcinoma is the most common type of tongue cancer. The tongue is paramount to natural speech and swallowing, and good tongue function is important in the overall quality of life [2]. Autologous free-flap reconstruction of the tongue after glossectomy allows for adequate speech, swallow, and quality-of-life outcomes in a majority of patients [3].

The post treatment of tongue malignancy would lead to few side effects. There are few problems such as poorer speech and swallowing outcomes following resections involving both oral and base of tongue, regardless of the type of free flap reconstruction [4]. Side effects would overall be influenced by multiple factors including tumor size, area of resection, method of reconstruction and the use of adjuvant therapy. The use of free flaps in the immediate reconstruction of the tongue after tumor resection should aim at the maintenance of the mobility of the residual tongue and restoration of tongue

bulk in order to optimize the recovery of speech and swallowing function [5].

The mortality rate of oral cancer including tongue cancer is not considered to be larger, but its mortality in terms of speech, mastication and swallowing problems are significantly serious issues to be evaluated for the quality of life [6]. Characterized by the relationship between structure and function in the tingle is becoming a core requirement for the clinical diagnosis and scientific studies in the tongue/ speech community [7].

Adequate speech and swallowing are dependent on tongue shape, size, and mobility. These functions can be profoundly disturbed by resection of tumors that involve the oral tongue and/or the base of the tongue [8]. Reconstruction of the tongue after such resections is designed to assist patients achieve an appropriate level of oral function and remains a major challenge for the reconstructive surgeon. Numerous techniques have been used for reconstructing large defects (hemiglossectomy or greater) of the human tongue, including split-thickness skin grafts and locoregional flaps [9].

The aim of the study is to analyze the Reconstruction following resection of malignant tongue tumors, with different types of skin flaps and its success rate.

MATERIALS AND METHODS

In the present study, a total of 15 patients of different age groups and gender who reported with tongue carcinoma at Saveetha Dental College and Hospitals were included. This is a retrospective study in which data of all patients were retrieved from dental information archiving systems, SDC, SIMATS. Approval from the ethical committee was taken before the start of the study. All the case sheets included in this study were approved and verified by the external reviewer. Also, cross verification of data was done by photographs to avoid errors. During data collection, patients of all age groups and gender who reported with tongue carcinoma were included. Parametric and non-parametric correlations were made following which the graphs were made. Non parametric tests were done by running a chi-square test and the parameters considered were statistically analyzed and interpreted.

RESULTS

Among 15 patients, almost 40% represents posterior dorsal area of tongue reconstruction, 27% represents reconstruction of anterior dorsal area of tongue, 20% represents Transverse area of tongue reconstruction, 7% represents Tongue tip reconstruction and ventral part of tongue reconstruction (Figure 1). Both Pectoralis major myocutaneous (PMMC) flaps and free flaps including Radial forearm free flap (RFFF) were used in the reconstruction of post resection defects of the tongue. Figure 2 represents Pectoralis major myocutaneous (PMMC) flap used for reconstruction of tongue carcinoma and figure 3 represents Radial forearm free flap (RFFF) used for reconstruction of tongue carcinoma.

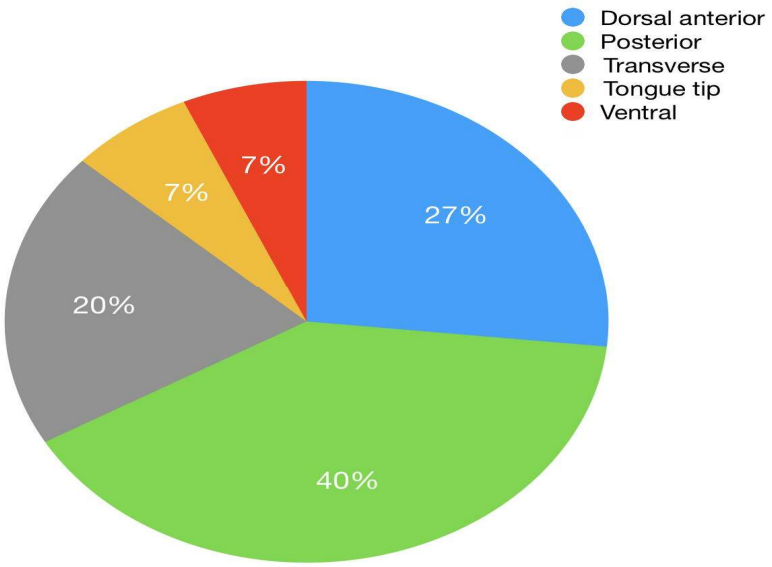

Figure 1: Pie chart representing the percentage distribution of patients who have undergone different tongue reconstruction based on their site of carcinoma and the percentage of flaps done to that site.

Figure 2: Pectoralis major myocutaneous flap used for reconstruction of tongue carcinoma

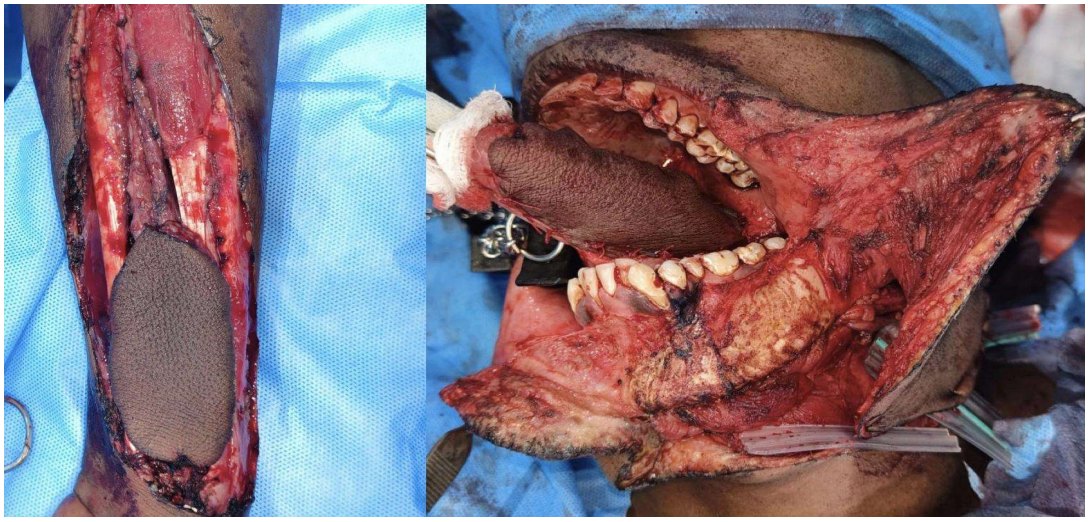

Figure 3: Radial forearm free flap used for reconstruction of tongue carcinoma

DISCUSSION

Recent study reveals that secondary intention appears to be the most appropriate option after partial glossectomy [10]. However, flap reconstruction is necessary to restore tongue volume and function in patients who undergo a resection of more than half of the tongue volume. Some minor deficits exist in swallowing and tongue mobility after RFFF reconstruction, it appears that these problems are no longer evident 12 months postoperatively [11]. Reconstruction with free flaps is a feasible method to restore the functional outcomes in speech and deglutition among patients who undergo total or nearly total glossectomy with laryngeal preservation [12,13].

Parameters assessed were overall well-being, food intake, speech intelligibility, dryness of mouth, tongue mobility, sensibility disturbances within the reconstructed region and oral competence. All of the assessed parameters in our study were better with free flaps when compared to pectoralis major myocutaneous flap in patients operated for tongue squamous cell carcinoma and the results were in accordance with other similar studies [14-16]. Overall results revealed that patients' quality of life was more or less disturbed. Among them, patients reconstructed with myocutaneous flaps and patients with larger post-excisional defects had a poorer quality of life. Thus, patients with tongue carcinoma reconstructed with free flaps showed good functional outcomes.

CONCLUSION

Reconstruction with free flaps is a feasible method to restore the functional outcomes. However larger study population and vast study material has to be analyzed for accurate outcome.

Financial support
Nil

Conflicts of Interest
None declared.

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