ORIGINAL ARTICLE

PECTORALIS MAJOR MYOCUTANEOUS FLAP SUCCESS RATE IN THE SURGICAL MANAGEMENT OF ORAL CANCER

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Background: The recurrence rate of Oral squamous cell carcinoma is between 26.5% and 56.3% of cases. The majority of handling failures are confined & local-regional. However, there is debate regarding the best course of action for these patients with recurring oral Malignancy**.** The objective of the study was to assess the efficacy of the flap in the reconstruction of oral cancer patients and the complications that can result from it. **Methods:** The study was conducted in Zia-Uddin Hospital, Karachi, Pakistan from 2020 to 2022. Forty patients of recurrent oral cancer, who underwent salvage surgery with a pectoralis major myocutaneous flap were included in the study. Information was taken from the case notes, & the clinical follow-up of the patients were done between one month and one year. **Results:** The surgery had an 80% overall success rate. Twenty patients (57.1%) experienced difficulties, including 17 (48.6%) who had flap-related issues. Seven patients (20%) experienced problems unrelated to the flap, such as temporomandibular joint pain and haemorrhage of the chest incision. 9 patients (25.7%) experienced major difficulties, compared to 8 patients (22.9%) who experienced minor complications. **Conclusion:** For the dependable restoration of significant soft tissue abnormalities brought on by the excision of recurrent oral cancer, the pectoralis major myocutaneous flap was found to be a good option. The main issues were related to the reconstruction site. Salvage surgery helps a lot of patients, and some of them can live for two to four years after the procedure.

Keywords: Salvage reconstruction; Pectoralis major; Myocutaneous flap

Citation: Shah SU, Jabeen H, Waseem F, Dilawar H. Pectoralis major myocutaneous flap success rate in the surgical management of oral cancer. J Ayub Med Coll Abbottabad 2024;36(1):131–4.

DOI: 10.55519/JAMC-01-12841

INTRODUCTION

The pectoralis major myocutaneous flap (PMMF), was invented by Ariyan in 1979 and has been employed as a workhorse flap for the reconstruction of head and neck deformities during the subsequent three decades.[1] This flap has many benefits, such as an easy harvest, a huge paddle of skin, a lot of soft tissue volume, relative adaptability, high reliability, and a quick operating time. However, the PMMF's disadvantages were exacerbated by the introduction of microvascular procedures and the widespread use of free tissue transfers, which lowered its use in head and neck reconstruction in recent decades.[2] The PMMF has drawbacks such as excessive mass in some circumstances, distortion of the thoracic wall, impairment of neck and shoulder function, high incidence of comorbidities, partial necrosis of its skin paddle, and potentially poor recipient site performance. The PMMF is now more widely employed in underdeveloped nations with inadequate medical resources than in Western nations where access to microsurgical methods is more common.[3] In the era of free flaps, it appears that the PMMF's function in head and neck reconstruction has changed from that of a "workhorse flap" to that of a "salvage flap." Even though free flaps are our primary toolkit for the repair of head and neck deformities, we discovered in our practice that the PMMF's function cannot be replaced. It can be used safely as a primary procedure in patients who were predictably high risk candidates for a free flap, in situations where bulky flaps are required, and in situations where simultaneous protection of the major vessels of the neck is necessary.[4] It can also be used as a "salvage flap" in cases with flap failure or complications. Additionally, improvements to the flap harvesting procedure not only increase its dependability but also lessen the functional damage at the donor location.

Oral squamous cell carcinoma is said to recur in 26.5% and 56.3% of cases. The majority of handling failures are confined & local-regional.[5] However, there is debate regarding the best course of action for these patients with recurring oral malignancy. Although several doctors are unwilling to recommend extremely invasive procedures, radiation therapy has limited effectiveness in advanced tumour stages.[6] A global epidemic that affects a growing number of patients, oral cancer affects people from all socioeconomic backgrounds. High prevalence and late

reporting of oro-pharyngeal cancer are caused by the extensive use of tobacco and related products in the lowest socioeconomic categories, illiteracy, poverty, and the ensuing poor oral hygiene awareness. The best defence against oral cancer continues to be early detection and multidisciplinary treatment.[7] However, a lot of patients report having advanced disease, and one of the things stopping them from getting the best care is still money. Whether combined with or without adjuvant chemotherapy, radiation, or both, surgery is still regarded as the mainstay treatment [8]. Various patients get radiotherapy as the symptomatic treatment, in part because of the lack of knowledge about salvage surgery for advanced-stage recurrent oral malignancies.[9] This current study details our experience with 35 persons who had salvage surgery and head and neck reconstruction after developing recurrent oral malignancies.

The study aimed to assess the efficacy of the flap in the reconstruction of oral cancer patients and the complications that can result from it.

MATERIAL AND METHODS

At the Zia uddin Hospital in Karachi, a retrospective study of 40 cases of recurrent oral cancer patients who underwent salvage surgery with a pectoralis major myocutaneous flap rebuilding the defects during a three-year period from 2020 to 2022 was done after approval from the institutional review board. Information was taken from the case notes, & the clinical sequel lasted anywhere between one month and one year. Due to the lack of follow-up information in five cases, they were not taken into consideration. The remaining 35 patients were made up of 10 women and 25 men, with ages ranging from 28 to 67.

The International Union against Cancer's (IUC) TNM (Tumour, Nodes, Metastasis) system was used to restage the patients.[10] Stages III and IV of severe recurrent disease were identified in 22 individuals. Postoperative pathology supported every patient's diagnosis.[11] To ascertain the degree of the recurring tumour, lymph node metastasis, and distant metastases, each patient underwent a chest x-ray investigation, complete physical examination, head and neck area x-ray or CT scan, and abdomen sonography before surgery.[12] According to the WHO histological classification of cancer and pre-cancer of the oral mucosa, histopathological grading was performed.[13] Patients' gender, age, initial and recurrent TNM stages, pathological grades, drinking and smoking patterns, and system diseases (such as diabetes & hypertension) were recorded. Twelve of the patients had previously received radiotherapy, and twenty-two had at least one unsuccessful surgery in the past (ranging from one to five times). Only failed radiotherapy had previously been administered to the 10 patients who remained. The range of the prior radiotherapy dose was 20–70 Gy. The time between treatment and the last procedure varied from three to thirty months. Every patient underwent salvage surgery, and the tumours were removed with a safe margin of at least 1 cm.

Due to the tumours' considerable involvement, 18 individuals underwent partial mandibulectomy and 2 underwent partial maxillectomy. A selective neck dissection was performed on 16 patients due to clinically suspect lymph nodes. Following the removal of the recurrent tumours, pectoralis major myocutaneous flaps were used to rebuild the oral and facial soft tissue abnormalities in all patients. Ten flaps were employed to restore the cutaneous deficiencies, and 18 flaps were mostly used for the mucosal lining of the mouth. The size of the skin paddle varies from 4 cm-5cm to 9.5 cm -13 cm.

If a tumour was discovered more than three months after the operation, it was regarded as having recurred. The follow-up period was determined to be from the first day following surgery to the final day of follow-up or until death. If there were no significant difficulties, the procedure was deemed successful.

To analyze the data, the SPSS version 26.0 was used. To evaluate the relationship among major complications& clinical parameters, binary logistic regression was performed. The Kaplan-Meier method was employed to evaluate the existence results. A P value of.05 or less was considered significant.

RESULTS

The surgery had an 80% overall success rate. Twenty patients (57.1%) experienced difficulties, including 17 (48.6%) who had flap-related issues. Seven patients (20%) experienced problems unrelated to the flap, such as temporomandibular joint pain and haemorrhage of the chest incision. Nine patients (25.7%) experienced major difficulties, compared to 8 patients (22.9%) who experienced minor complications. Three patients had large-area flap skin necrosis (<40%) and six had partial skin necrosis (<40%), which were the main consequences. One patient had necrosis of the flap's tip, two had necrosis of the flap's marginal skin, and seven had wounds that took longer than usual to heal. Only 2 of the 15 patients who had Pectoralis major flaps utilized for cutaneous defect restoration showed 20% necrosis of the flap. In comparison to the other instances, this group's major complication rate (10%) was noticeably lower.

Table-1: Characteristics of 35 oral cancer patients in general

Patients	Number of cases
Gender (M/F)	25/10
Mean age±SD	48.67±10.44
Initial N stages (N0/N1/N2/N3)	21/7/5/2
Initial M stages (M0/M1)	35/0
Initial T stages (T1/T2/T3/T4)	7/20/7/1
Recurrent N stages (N0/N1/N2/N3)	25/5/0/5
Recurrent T stages (T1/T2/T3/T4)	2/5/15/13
Pathological grades (grade1/2/3)	15/10/10
Recurrent M stages (M0/M1)	35/0
Hypertension (Yes/No)	2/33
Habits of smoking (Yes/No)	20/15
Habit of pan/chewing tobacco (Yes/No)	25/10
Weight loss (Yes/No)	27/8

Table 2: 35 Continuing oral cancers' site of primary involvement

Lesions Site	Cases
Oral and facial region	13
Tongue/floor of the mouth/oropharynx	9/7/3
Gingiva	3
Buccal mucosa	2

DISCUSSION

The advanced stages of recurrent oral cancer in many people make radiation therapy ineffective. Salvage surgery is allegedly the most effective management for recurrent head and neck malignancies, and radical excision trailed by rebuilding is crucial to the course of treatment. In our experience, the 1-, 3-, and Five-year overall survival rates for 35 patients with recurrent oral cancer who underwent salvage surgery were, respectively, 80%, 35%, and 21%. When compared to the findings of Pazdrowski *et al*[9] which showed a 48% 5-year absolute survival rate for patients with recurrent oral cancer, these results demonstrated the progressive phases of the patients and the intricacy of prior management. Numerous individuals experienced failed operation or radiotherapy twice or three times, as well as a 2- to 3-fold recurrence of the underlying tumour.[13] These risky and challenging circumstances offered many difficulties. According to previous research. The survival rate in these circumstances is respectable. After receiving salvage therapy, some patients can live for two to four years, and none of them experience serious consequences.[14] The first year following surgery is when the tumours are most likely to return or spread. Therefore, vigilant monitoring is crucial during this time after the salvage therapy. Large defects left after the removal of head and neck cancers have been thought to be potential candidates for reconstruction using the pectoralis major myocutaneous pedicled flap. When vascularized soft tissue covering is required in a variety of clinical scenarios, it can be quickly mobilised and dependable. In our study, 9 patients had major issues with flap as compared to only 2 flaps (9%) out of twenty-two patients who underwent pectoralis major flap reconstruction failed, according to research by Alalaway[15] who concluded that the pectoralis major flap was an excellent option for head and neck reconstruction, particularly in older patients with compromised health. Other researchers concurred with their assessment.[16] The higher complication rate in our study could be because of the higher age group and site of recurrence. The recurrence rate in our study was lower with pectoralis flap which was also mentioned by other studies comparing submental and pectoralis graft.[14,17]

CONCLUSION

For the dependable restoration of significant soft tissue abnormalities brought on by the excision of recurrent oral cancer, the pectoralis major myocutaneous flap is a good option. The main issues are related to the reconstruction site. Salvage surgery helps a lot of patients, and some of them can live for two to four years after the procedure.

AUTHORS' CONTRIBUTION

SUS: Conceptualization of the study design. SUS, HJ, FW, HD: Data collection, data analysis, data interpretation, write-up, proofreading.

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Submitted: January 13, 2024	*Revised: February 23, 2024*	*Accepted: February 26, 2024*

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