

# The Gulf Journal of Oncology



Indexed By PubMed and Medline Database

Issue 26, January 2018  
ISSN No. 2078-2101



The Official Journal of the Gulf Federation For Cancer Control

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## Case Report

# Tumor Recurrence at Donor Site of Pectoralis Major Myocutaneous Flap with Tumor-free Primary Oral Carcinoma

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## Abstract

Pectoralis major myocutaneous flap is an important option for post onco reconstruction in head and neck region. Among the several complications mentioned in the literature, tumor recurrence at the donor site of flap is late and rare complication. Tumor implantation at the donor site of flap is a possible explanation. The occurrence of this type case is rare. We are reporting a case of tumor

recurrences of pectoralis major myocutaneous flap donor site without presence of index tumor or detectable systemic disease. The recurrence was operated in our case. Clinicians should be aware of this condition for better management of patients with similar presentation.

**Keywords:** Pectoralis major flap; Pectoralis major myocutaneous flap; Flap complication; tumor recurrence; Head and neck reconstruction.

## Introduction

In the era of microvascular reconstruction pectoralis major myocutaneous flap is still considered as a work horse flap for head and neck reconstruction. The various factors due to which this flap is still preferred are ease of dissection, reliable vascular supply, with little donor site morbidity and cost effective in austere condition. However, this flap can present with common complications like flap hematoma, necrosis and dehiscence. But recurrence of tumor at the donor site of flap along its margin is a rare complication. Although the mechanism of tumor recurrence is unknown, tumor implantation is the possible cause of this pathology.<sup>(1,2)</sup>

## Case Report

A 50-year-old male with diagnosis of moderately differentiated squamous cell carcinoma of right side floor of mouth was operated with wide local excision of carcinoma, segmental mandibulectomy and type 1 right side modified radical neck dissection.

This gentleman with 2-month history of an ulceroproliferative mass in right side of floor of mouth presented to our center. On examination patient had no palpable neck nodes or any external visible swelling over neck. Mouth opening was normal. Tongue was normal and mobile. The lesion was ulceroproliferative type and of size 2x3 cm present over right side floor of mouth. Clinically, it appeared to involve the tooth socket and mandible margin

covered with sloughs. Palate, uvula and anterior pillar was normal. Nasoendoscopy, laryngoscopy was normal

After CT scan and other relevant investigations patient was planned for surgery. Patient has undergone wide local excision of tumor and type 1 MRND in December 2016 using modified Schobinger incision. Tumor along with 2 cm normal tissue margin was taken during excision and segmental mandibulectomy done. Level I, II, III, IV, V, VI lymph node groups were removed. Specimens were sent for histopathology. Post resection the defect was reconstructed with microvascular fibula flap reconstruction.

On 3rd post-operative day, free fibula flap showed congestion and even after exploration flap could not be salvaged. Debridement of the necrotic flap and reconstruction plate was removed.

After 1 week of initial surgery the mucosal defect was covered with pedicle pectoralis major myocutaneous flap. Wound healed in 2 weeks. Patient was consulted with oncologist for adjuvant therapy.

Histology of the tumor showed moderately differentiating squamous cell carcinoma of right alveolus.

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**Figure 1. Tumor recurrence at the base of the PMMC flap. It is a mobile hanging swelling from the flap margin. The scar line can be seen over the swelling.**

Resection margins were free and no lymph node was found to be involved. Pathological stage was assigned as T2N0.

Three months postoperatively, after 4 cycles of radiotherapy, the patient presented to us. On examination there was swelling in the midline between medial borders of clavicles in suprasternal area along the flap margin. This mass was mobile not attached to underlying structures. The size of swelling was about 4x 4 cm. The patient had also trouble in extension of neck due to tissue bands of pectoralis major myocutaneous flap. (Figure 1) Oral examination shows mucosalization of flap. No intraoral swelling or indurations was palpable. FNAC from the lesion was suggestive of squamous cell malignancy. CT scan of the thorax did not have mass lesion or enlarged lymph node. Panendoscopy was normal.

Patient was planned for excision of the swelling and release of contracture bands. Swelling was excised



**Figure 3. Post z plasty and tumor excision. The extension of neck improved.**



**Figure 2. Excision of the tumor from neck during z plasty. The Tumor is well circumscribed mass in subcutaneous plane with no extension in deeper structure. The smooth undersurface (red arrow) can be seen in the picture.**

(Figure 2) and Z plasty was done. Swelling was limited to the subcutaneous fat layer. Post operatively, patient recovered uneventfully. (Figure 3). Tissue histopathology show moderately differentiating squamous cell carcinoma with same pathological features as of primary tumor. Patient was followed up and reviewed for further management.

## Discussion

The pectoralis major myocutaneous flap is a commonly used flap in head and neck oncoreconstruction. Due to ease of raising the flap, predictable blood supply, less time consuming and cost effective, this flap is still popular among surgeons. Among the complications related to this flap is tumor recurrence at flap site, and it is one of the rare and least reported complications. This recurrence at the flap site is associated with rapid dissemination and poor prognosis.<sup>(2,3)</sup>

The exact mechanism of recurrence of tumor at the flap donor site is not clearly understood but various theories were put forward for explanation: blood borne metastases through lymphatic, contiguous invasion in tissue planes and lastly tumor implantations are the possible ways of recurrence in the donor areas of flap. Jog<sup>(4)</sup> in his article reported 2 cases of recurrence in flap donor site without any apparent index tumor, which also occurred in our case. They attributed the tumor implantation theory for this type of occurrence, which seems to be the plausible explanation in the absence of tumor at index site and systemic gross disease.<sup>(3,4)</sup>

Kroll described a case of flap site tumor spread<sup>(5)</sup>. Similarly, Kartikeyan in his article reported a case recurrence to pectoralis major donor site from oral squamous cell carcinoma.<sup>(6)</sup>

Besides pectoralis flap, deltopectoral flap and temporalis flap were also reported for tumor recurrence over flap site. The tumor cells circulating in systemic circulation get entrapped in the surgically created hyper vascular area of the flap donor sites demonstrated in experimental models supporting the hematogenous theory. In cases where there is no index tumor present at time of recurrence in flap site, tumor implantation seems more probable. Invasion in the contiguous planes lead to extensive lesions. <sup>(3,7,8)</sup>

Previously reported literature has described different methods to reduce the chance of tumor recurrence, like proper hemostasis, wounds irrigation and changing gloves and instruments, post resection to prevent tumor implantation in surrounding areas. Unfortunately, there are no strict guidelines or scientific data regarding supporting these methods.

For patients receiving adjuvant radiotherapy, the flap donor site should be included in the field as suggested by some authors. Flap areas should be examined for recurrences in follow ups. Suspicious mass if found, should be evaluated with tissue biopsy or FNAC. Some cases may need to be evaluated with imaging studies to determine systemic disease burden and resectability. Those cases without systemic disease and primary tumor recurrence should be resected to increase the survival of patient. <sup>(8,9)</sup>

## Conclusion

Tumor recurrence at flap donor site is a rare but late complication in case of pectoralis major myocutaneous flap. In this case there is recurrence in the flap donor site without recurrence at index site or detectable systemic disease. We have excised the tumor. When there is no index primary tumor or systematic spread the flap site recurrence should be excised. Tumor seed implantation may be the possible mechanism for this pathology although other explanations cannot be ruled out. Careful intraoperative methods like proper hemostasis, changing gloves and instruments and wound irrigation measure should be taken to prevent possible tumor dissemination. Post-surgical follow up should assess the flap and its donor site for possible recurrence. Inclusion of flap donor site in the radiotherapy field was also suggested. Keeping this rare possibility in mind will help the clinician to approach the condition more carefully and rationally. <sup>(3,9)</sup>

## Declaration of Consent

Informed consent of the patient has been taken; additional consent of patient has been taken for facial photographs.

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