

## **Study of Surgical Management and Locoregional Flap Reconstruction in Oral Malignancies**

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**Abstract:** Head and neck cancers are sixth most common cancers worldwide with cancers of oral cavity and pharynx being most common. In centers lacking adequate plastic surgeons and high patient load, locoregional flaps offer an easy and less time consuming alternative for post ablative surgery reconstruction in head and neck. The objectives of our study were to give a precise description of our experience with surgical based therapy of oral cancer during the study period, to evaluate the use of various locoregional flaps in the reconstruction of post ablation oral defects and the complications associated with it. 20 patients of oral carcinoma were included who underwent excision of tumors with neck dissections and reconstruction with one or multiple locoregional flaps.

**Keywords:** flap complications, locoregional, neck dissection, oral defects, reconstruction

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### **I. Introduction**

There were 14.1 million new cancer cases, 8.2 million cancer deaths and 32.6 million people living with cancer (within 5 years of diagnosis) in 2012 worldwide. 57% (8 million) of new cancer cases, 65% (5.3 million) of the cancer deaths and 48% (15.6 million) of the 5-year prevalent cancer cases occurred in the less developed regions. [1].

Head and neck cancer is the sixth most common cancer worldwide. Worldwide head and neck cancer statistics indicate that there are about 640,000 cases of head and neck cancer per year, resulting in approximately 350,000 deaths per year. Cancers of the oral cavity and pharynx are the most common type of head and neck cancer with approximately 480,000 cases per year. [2]

The primary treatment modality for oral cavity cancer in most countries has been surgery. Post-operative radiotherapy is added for late stage disease but chemotherapy has historically been used in a relatively small proportion. [3]

Defects resulting from extirpation in the oral and maxillofacial region (oral cavity, nasal cavity, maxillary sinus and facial skin) constitute major functional and aesthetic reconstructive challenges due to their complex three-dimensional nature. Various pedicled regional flaps, such as the deltopectoral flap, pectoralis major musculocutaneous flap, and forehead flap, have therefore been advocated. [4]

Operative treatment of head and neck cancer requires radical resection of the tumor with not only severe impairment of important functions like swallowing, speech, and respiration but also aesthetic mutilation because of the exposed character of the head and neck region. [5]

### **II. Materials And Methods**

#### **2.1 Source Of Data**

The study included 20 patients undergoing oral cancer surgeries with/without neck dissections with/without requiring reconstructive procedures to treat various post-surgical oral defects. Various surgical procedures and locoregional flaps that were used for reconstruction of oral defects were evaluated and data regarding them was obtained from the Department of Otorhinolaryngology and Head and Neck Surgery, Grant Medical College and Sir JJ Group of Hospitals, Mumbai.

**2.2 Inclusion criteria**

All patients who underwent surgical treatment for oral malignancies with/without neck dissections and/or locoregional flap transfer for reconstruction of the post-surgical defects.

**2.3 Exclusion criterion:**

Patients who underwent reconstruction with free flaps

**2.4 Method Of Collecting Data (Including sampling procedure, if any)**

The 20 patients undergoing oral cancer surgeries with/without neck dissections with/without requiring reconstructive procedures to treat various post-surgical oral defects were the source of data.

All the patients had a followup postoperatively, at 1 month interval for 2 months from the date of surgery in the Department of Otorhinolaryngology and Head and Neck Surgery. Data concerning the characteristics of patient, surgical procedure for the tumor, neck dissection type, diagnosis of the defect, the modalities of reconstruction and the complications associated, was obtained from the medical records.

Patients were evaluated postoperatively by clinical examination.

**III. Tables**

Table 1: Distribution of patients with oral malignancy who underwent surgery according to age and sex

Age groups	Males		Females		Total	% of patients
	No.	%	No.	%		
0-20	00	00	00	00	00	00
21-40	02	10	00	00	02	10
41-60	07	35	03	15	10	50
61-80	02	10	05	25	07	35
>80	00	00	01	05	01	05
Total	11	55	09	45	20	100

Table 2: Distribution of patients according to site of malignancy in oral cavity

Site of the malignancy	No. of patients (n=20)	% of patients
Buccal mucosa	11	55
Tongue	06	30
Retromolar trigone	01	05
Lip	01	05
Floor of mouth	01	05
Lower alveolus	00	00
Upper alveolus	00	00
Palate	00	00

Table 3: Distribution of patients according to surgical procedure underwent

Surgical procedure done	No. of patients	% of patients
Wide local excision of tumor	04	20
Wide local excision of tumor with neck dissection	04	20
Wide local excision of tumor with neck dissection with locoregional flap reconstruction	12	60

Table 4: Distribution of patients according to type of Neck dissection/Prophylactic RT to neck/no neck dissection or RT

	No. of patients (n=20)		% of patients
Neck dissection	Radical neck dissection	09	45
	Modified neck dissection	01	05
	Selective neck dissection	06	30
Prophylactic RT to neck	02		10
Neck not treated	02		10

**Table 5: Distribution of patients according to type of locoregional reconstruction**

Type of reconstruction/flap used	No.of patients (n=20)	% of patients
Primary closure	08	40
PMMC	02	10
V-Y plasty	01	05
Forehead	01	05
PMMC+DP	08	40

**Table 6: Distribution of patients according to perioperative complications**

Peri operative complications (n=20)	No. of patients	% of patients
Partial flap necrosis	02	10
Wound infection	07	35
Dehiscence	05	25
Total flap failure	02	10
Dribbling of saliva	01	05
Orocutaneous fistula	01	05
Hematoma	01	05
Pneumonia	01	05
Death	00	00

#### **IV. Results And Discussion**

##### 4.1 Table 1

In the present study, the male: female ratio was 1.22: 1. Most of the patients belonged to 41-60 years of age (50%), followed by 61-80 years of age (35%). Youngest patient was 25 year old and oldest was 83 years old. The mean age was  $57.05 \pm 14.1$  S.D.

Talabani et al[6],in their study, found that females were generally less affected than males and the highest affected age groups were those above 60 years, the peak of total malignant oral tumor was seen in their 6th decades of life (27.4%, 20 cases). Male to female ratio was 1.5:1.

In their study of 45 cases, Musani et al [7] found that 28 were females and 17 were males, with male to female ratio of 1:1.3. It was more common in 41–50 years age group, and average age was 40 years. Significant number of cases were seen below 30 years and the youngest patient was of 27 years of age. Kokemueller et al [8] found average age at diagnosis was 58.8 years, ranging between 19.2 and 96.5 years. There were 226 men and 115 women (male/female ratio = 2:1).

##### 4.2 Table 2:

In the present study, majority of patients of oral malignancy presented with malignancy of buccal mucosa (55%), followed by tongue (30%), retromolar trigone(5%), lips (5%) and floor of mouth (5%).

Cancer cases of the lip represented the highest affected site for oral cancer (43.84%, 32 cases) in the study conducted by Talabani et al [6] followed by tongue (21.92%, 16 cases). Kokemueller et al[8] found that tumors were located in the following sites: 34 on the base of the tongue (6.4%),138 on the oral tongue (26.0%), 52 on the gums (9.8%), 129 on the floor of the mouth (24.3%), 14 on the palate (2.7%), 71 on other parts of the mouth (13.5%), 84 on the tonsils (15.8%), and 8 on the oropharynx (1.5%) in their study.

##### 4.3 Table 3 and 4:

In the present study, 60% patients underwent wide local excision of tumor with neck dissection with locoregional flap reconstruction, 20 % underwent wide local excision of tumour with neck dissection only and 20 % underwent only wide local excision of the tumor

In the present study, 16 (80%) patients underwent neck dissection , of which 9(45%) patients had radical neck dissection, 6(30%) had selective neck dissection and 1(5%) had modified neck dissection.

Prophylactic radiation was given to 2(10%) node negative patients with carcinoma and neck was left untreated in 2(10%) patients of verrucous and sarcomatous oral tumors.

Musani et al[7] did primary surgical excision in all the cases along with various kinds ofmandibulectomies and maxillectomies in patients with their involvement. Radical neck dissection was done in 10/45 patients and supraomohyoid neck dissection was done in 29/45 patients. Postoperative radiotherapy was given to all the patients and they were kept in constant follow up.

In study conducted by Kokemueller et al[8], on the ipsilateral neck, 44% of the operated patients received a comprehensive neck dissection, while 38.2% only received lymphadenectomy of level I-III and 17.8% no surgical therapy. On the contralateral neck, only 1.3% of these patients received a comprehensive neck dissection, while 36.6% still received lymphadenectomy of level I-III and the majority of 62.1% no surgical therapy. 19.5% of patients in the surgical group received postoperative radiation due to unclear

margins, extensive tumour growth at the primary site, massive lymph node involvement or extracapsular spread, reflecting the scope of changing indications for radiotherapy during the past 30 years.

All patients underwent surgery as the primary treatment, and 330 patients were exposed to radiation as adjuvant therapy in the study conducted by Ribeiro et al [9]. Four hundred seventy-eight patients also underwent neck dissection as a part of the initial treatment.

#### 4.4 Table 5

In the present study, 8(40%) patients underwent primary closure after excision of oral malignancy, 8(40%) had a pectoralis major with deltopectoral flap, 2(10%) underwent pectoralis major myocutaneous flap only, and 1(5%) each of V-Y advancement and forehead flap for reconstruction after excision of malignancy.

In the study conducted by Musani et al[7], 26/45 underwent primary closure, 24.4% underwent PMMC, 06.6% underwent DP flap, 06.6% underwent forehead flap, followed by nasolabial (4.4%), lingual flap(4.4%), split skin graft (22.2%) and k-wire in 08.8%

In the study conducted by Ribeiro et al[9] primary closure was done in 40.8%, local flaps in 2.8%, skin grafts in 1.5%, tongue flaps in 16% ,PMMC in 25.1% .

#### 4.5 Table 6

In the present study, wound infection (35%), followed by wound dehiscence (25%) were the most common postoperative complications. The incidence of perioperative complications was 58.9% in study conducted by Ribeiro et al[9] . Wound infection (32.5%) and dehiscence (26.2%) were the most frequent events. Postoperative mortality was 2.6%.

### V. Summary And Conclusion

Males were more commonly affected than females . Most of the patients were affected after 4<sup>th</sup> decade of their life.

Most of the patients with malignancies of oral cavity underwent neck dissections after tumor removal along with some or other type of locoregional reconstruction to cover the defect.

Out of patients undergoing neck dissections, majority underwent ipsilateral radical and selective neck dissections.

Most commonly used locoregional technique for reconstruction was with PMMC and DP flap to provide both external and internal lining after ablative surgery.

Wound infection and wound dehiscence were the most common postoperative complications.

Oral malignancy is a commoner entity among males than females in our region with middle aged and elderly being affected the most. The disease has been showing an increase in young and among women as well, due to habit of tobacco chewing and from an early age.

Surgical management still remains the primary modality of treatment for patients of oral cavity malignancy, often neck also being addressed due to high incidence of occult metastasis to neck nodes.

In today's world of microvascular flaps, in spite of associated complications, locoregional flaps play a crucial role at oncology centers where skilled plastic surgeons are few and most surgeries are carried out by Head and neck surgeons. They offer an easier, faster, reliable option for reconstruction post ablative surgeries in head and neck region.

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