



Postoperative Morbidity in Squamous Cell Carcinoma of Oral Cavity

KEYWORDS

Oral cavity, Squamous cell carcinoma, Morbidity.

Dr Hemant Lekawale	Dr Kanchan R. Raikwar	Dr Monali Ghodke
MS, DNB General Surgery, DNB Surgical Oncology Associate Professor, Department Of Surgery, Shrimati Kashibai Navale Medical College and General Hospital, Narhe, Pune 411041, Maharashtra, India.	MDS, Reader Oral and Maxillofacial Surgery.	MDS, Sr.Lecturer Oral and Maxillofacial Surgery.
Dr Pushkar Gawande	Dr Vikramsinh Deshmukh	Dr Janardan B. Garde
MDS, Reader Oral and Maxillofacial Surgery.	MDS, Reader Oral and Maxillofacial Surgery.	MDS, Professor and Head, Department of Oral and Maxillofacial Surgery, Sinhgad Dental College and Hospital, Vadgaon (BK), Pune, 411041, India.

ABSTRACT Aim of Study : To evaluate the post operative morbidity in oral cancer surgery and the associated risk factors.

Materials and Methods : A retrospective study of 83 patients operated between January 2010 to December 2015 for oral cavity cancer subsites was done. The demographic data was collected and recorded in the proforma. It included age, gender, primary site of tumour, habits, clinical staging, operative procedure, method of reconstruction, post-operative complications and the length of hospital stay.

Results : The male-to-female ratio was 1.8:1. The mean age was 58.6 years. Most of the patients were of fifth and sixth decade of life. The tumors primarily involved gingivo-buccal sulcus (65.56%) and buccal mucosa (12.04%). Majority of the patients (97.59%) had habit of tobacco consumption. The overall complication rate was 34.93% with minor complications in 18 patients (21.68%) and major complications in 11 patients (13.25%).

Conclusions : In our study we observed acceptable rates of post-operative morbidity. Patients with advanced clinical stage and co-morbidities had high risk of developing post-operative complications.

Introduction

Squamous cell carcinoma is the most frequent malignancy of the upper aerodigestive tract and diagnosed in clinically advanced stages with a high risk of locoregional recurrence after the treatment [1-4]. Surgery and radiotherapy are the two primary modalities of treatment with a curative potential, and may be used alone or in combination. Surgery involves three dimensional monobloc wide local excision of the tumour with ipsilateral and occasionally contralateral cervical lymph node dissection. The original operation of radical neck dissection for management of the "positive" neck as described by Crile involved removal of all deep cervical lymph nodes (levels I-V) as well as the accessory nerve, internal jugular vein and sternocleidomastoid muscle. Modifications to preserve some of these anatomical structures have since been advocated, in order to reduce the morbidity associated with this procedure. Despite these surgical advances, oral cancer resection, still results in the functional and aesthetic compromise. The availability of various reconstructive options including loco-regional flaps, free tissue transfers with implants, have contributed to the overall significant improvements in functional and aesthetic outcomes.

The aim of the present study was to review 83 cases of

operated oral cavity squamous cell carcinoma for the incidence of postoperative morbidity and the associated risk factors.

Patients and Methods

This retrospective study was conducted at Sinhgad Dental College and General Hospital, Narhe, Pune, from January 2010 December 2015. Eighty three patients with biopsy proven squamous cell carcinoma of oral cavity who presented to the outpatient department of Oral and Maxillofacial Surgery were included in the study. We recorded demographic data, including age, sex, tobacco and alcohol use, prior treatment, tumour site and stage, and the adjuvant treatment received. Surgical information collected included the levels of neck dissection, type of reconstruction done, postoperative complications and the length of hospital stay. For the purpose of analysis the post-operative complications were classified as major and minor. Complications requiring surgical interventions in the form of debridement and secondary suturing were termed as major complications like oro-cutaneous fistula and flap necrosis. Minor complications included those which did not require any significant intervention and were managed conservatively. The study analysis was done by collecting data from the case records and entering into the proforma

of the study. At the end of study, the entire data of these patients was analyzed.

Results:

This study included 83 patients of age ranging from 24 years to 80 years. While evaluating the profile of the patients included in the study, oral cancer was more prevalent in males [54 patients (65%)]. The average age being 58.6 years. Maximum patients were of the age ranging from 40 years to 49 years [17 patients (46%)] and with the majority between 40 and 69 years of age (47%). Mean age was 56.7 in males and 63.6 in females. Amongst primary site of tumor, gingivo-buccal sulcus was the most frequently involved site, accounting for 54 cases (65.06%), followed by the buccal mucosa in 10 patients (12.04%), retromolar trigone in 8 patients (9.63%), tongue in 6 patients (7.22%), floor of mouth in 3 patients (3.66%) and hard palate in 2 patients (2.40%).

Table 01: Distribution of patients according to site of malignancy in oral cavity

Site of malignancy	No: of patients (n=83)	Percentage
Buccal mucosa	10	12.04%
Tongue	06	7.22%
Retromolar trigone	08	9.63%
Lip	00	00%
Floor of mouth	03	3.61%
Gingivo buccal sulcus and lower alveolus	54	65.06%
Hard Palate	02	2.40%

The association of habits of tobacco consumption was present in the majority of the patients [68 patients (81.92%)], followed by tobacco and alcohol consumption [13 patients (15.66%)]. Two patients (2.40%) did not report any of these habits. Associated co-morbidity was present in 27 patients (32.53%) which included 8 patients (9.63%) with diabetes, 17 patients (20.48%) with hypertension and 02 (2.4%) patients had diabetes with hypertension, while other 56 patients (67.46%) had no co-morbidities.

Table 02: Distribution of patients according to associated comorbidity

Comorbidity	Patients (n=83)	Percentage
Diabetes	08	9.63%
Hypertension	17	20.48%
Diabetics with Hypertension	02	2.4%
Total patients with comorbidities	27	32.53%
Patients without comorbidity	58	67.46%
Patients with comorbidity developing complications	19	22.89%
Patients without comorbidity developing complications	06	7.22%

Patients were clinically staged as per TNM classification. Six patients (7.22%) had clinical stage I, 15 patients (18.07%) had clinical stage II, 21 patients (25.30%) had clinical stage III and 41 patients (49.39%) had clinical stage IV disease. Composite resections were performed in 64 patients (77.1%) and wide local excision was done in 19 patients (22.89%). Surgical defect reconstruction included

primary closure in 19 patients (22.89%), pectoralis major myocutaneous flaps in 62 patients (74.69%) and free fibula flaps in 02 patients (2.4%). Modified radical neck dissection (MRND) Type II was done in 60 patients (72.28%), MRND Type III in 5 patients (6.02%), radical neck dissection (RND) in 2 patients (2.40%), extended supraomohyoid neck dissection (ESOHND) in 10 patients (12.04%) and supraomohyoid neck dissection (SOHND) in 6 patients (7.22%).

Overall complications were seen in 29 patients (34.93%). Eighteen patients (21.68%) had minor complications and 11 patients (13.25%) had major complications. The most frequent complication was wound infection seen in 10 patients (12.04%). Wound dehiscence was seen in 09 patients (10.84%) and oro-cutaneous fistula in 7 patients (8.43%). Partial flap necrosis in 2 patients (2.4%) and total flap necrosis in 01 patient (1.2%). Total flap failure occurred in one patient in whom free fibula graft was done.

Table 03: Distribution of patients according to post-operative complications

Post operative complications	No of patients	Percentage
Wound infection	10	12.04%
Wound dehiscence	09	10.84%
Oro-cutaneous fistula	07	8.43%
Partial flap necrosis	02	2.40%
Total flap failure	01	1.20%
Hematoma	00	00%

Systemic complications included pneumonia in two patients. Mortality was seen with four patients (4.81%). The cause of death was acute respiratory distress syndrome in 3 patients and pulmonary embolism in 1 patient. Seven patients (8.43%) were with clinical stage-III disease and 21 patients (25.30%) with clinical stage-IV were those who reported with post-operative complications. In addition 19 patients (22.89%) with comorbidities developed post-operative complications.

Hospital stay of the patient without complications ranged from 09 to 13 days with a mean of 11.37 days. Length of stay for minor complication was 13.76 days and for major complications was 25.54 days. All the patients were on nasogastric feeding during post-operative period for period of 5 days in non complicated cases while patients with major complications nasogastric feeding continued from 8 days to 20 days. Long term morbidities that include scar contracture, restriction of shoulder movements, neck pain and recurrences were not evaluated in this study.

Discussion:

The primary treatment modality for squamous cell carcinoma of oral cavity is surgery and or radiotherapy. Postoperative radiotherapy is added for advanced stage disease and chemotherapy is used along with radiotherapy [5]. Surgical defects resulting from resection of 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 and pectoralis major musculocutaneous flap have therefore been advocated. 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 [6].

The aim of the present study was to evaluate patient profile of the squamous cell carcinoma of oral cavity along with the incidence of postoperative complications and associated risk factors. In the present study, the male: female ratio was 1.86: 1, which was significantly higher than other studies [7,8,9]. Pinholt et al. observed almost equivalent numbers between men and women (1.2:1) [10]. Most of the patients (47%) belonged to fourth, fifth and sixth decade. Oral squamous cell carcinoma has long been considered to be a tumor of the elderly and has been seen only sporadically before the third decade of life. In our study, the mean age being 58.2 years, is in agreement with the study of Oliver et al [7], even though it was lower than the data reported by Krutchkoff et al [11]. When the average age were compared between sexes, the result was similar to that of the literature [9,10,12]. Men showed an incidence peak at younger ages than women.

In the present study, majority of patients presented with malignancy of gingivo-buccal sulcus complex. 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 [13] followed by tongue (21.92%, 16 cases). Kokemueller et al [14] found that tumors were located with majority on the oral tongue (26.0%) followed by floor of mouth (24.3%). Epidemiological studies have shown that the sites of occurrence for oral cancer differ widely. Tongue, lip and floor of the mouth are the most frequent sites of lesions of squamous cell carcinoma in the oral cavity. Our study is not in agreement with the literature [7,8,11,15,16] since the gingivo-buccal sulcus complex was the most frequent site which could be due to the common habit of placing the tobacco quid in this region. In our study, the tumor size (T) in approximately half were in the T4 stage which represents lesions involving adjacent structures at the time of presentation. Since oral cavity is an anatomical region easy to examine, patients reported to hospital at advanced stage due to socio-economic status. Such patients have poor outcome and more complex treatment.

In the present study, wound infection (12.04%) and wound dehiscence (10.84%) followed by salivary fistula (8.43%) were the most common postoperative complications. Post-operative mortality was 4.81%. Post-operative complications after oral cancer have often been reported by many authors. The incidence of perioperative complications was 58.9% in study conducted by Ribeiro et al [17] which was high as compared to our study. Wound infection (32.5%) and dehiscence (26.2%) were the most frequent events. However, postoperative mortality was low as compared to our study which was 2.6%. Girod et al [18] reviewed 120 cases where the complication rate was 62.9% with post-operative mortality of 1.2%. Ivan et al in their study of perioperative complications in 124 patients found the complication rate was 53.2% with post-operative mortality of 3.2%. The incidence of higher mortality rate in our study can be attributed to combination of advanced clinical stage IV and associated co-morbidities in all the 4 patients.

Factors which could be used to predict post-operative complications include pre-existing cardiovascular disease and respiratory disease, alcohol consumption, stage of disease, scale and duration of surgery, tracheostomy, poor differentiation of tumor and presence of extracapsular

spread of tumor. Postoperative complications often result in prolonged hospital stay and reduced quality of life in affected patients which was clearly evident in our study. Our study revealed that patients with co-morbidities are at high risk of developing complications.

Evidence has been presented showing that patients with diabetes are at high risk of developing complications [19]. In some studies of head and neck cancer patients, no significant correlation between diabetes and surgical infection was found [20,21,22,23]. Further investigations are necessary to clarify the effect of co-morbidity on patients who undergo oral cancer surgery. Post-operative complications increase the hospital stay of the patient which was evident from results of our study with considerable difference of mean length of hospital stay in patients with complications and without complications. Postoperative oral hygiene is considered necessary for patients who have been operated for oral cancer surgery. Difficulty in maintaining oral hygiene due to surgical damage leads to the surgical site infection. Recently, oral health care has become recognized as essential to decrease postoperative complications in head and neck cancer, as well as other patients with cancer [23,24]. Proper wound care and oral hygiene maintenance can reduce the risk of postoperative complications in cases of oral surgery.

Studies have identified significant associations of operative time and blood loss with surgical infection in patients who underwent head and neck surgery [22,23]. However, no significant relationships between those in head and neck cancer patients was reported in one of the study [21]. The topic still remains controversial whether operative time and blood loss are important risk factors for complications following oral surgery but, it is important to minimize blood loss and reduce operative time. Wound closure without tension with the use of well vascularised myocutaneous flap or a free tissue transfer along with adequate nutritional support appears to be imperative for a good surgical result. Perioperative complications can also be minimized by glycaemic control in diabetic patients, proper wound care, early ambulation with neck and upper limb physiotherapy and above all reinforcing positiveness in patients which already have a low morale due to their socio-economic status which can be effectively done by counseling.

Conclusion:

In our study we observed acceptable rates of post-operative complications. Patients with advance clinical stage and patients with co-morbidities had a high risk of developing post-operative complications.

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