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A clinicopathological study of cheek carcinoma and different types of reconstructive procedure for its treatment in a tertiary care centre in India

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ABSTRACT

Background: The incidence of oral cancer varies globally and regionally and is closely linked with geographical, social, economical, biological, ethnic, dietary and environmental factors. In India, buccal mucosa (cheek) is the most common site for the lesion having 50% of all the oral cavity cancers and the incidence of oral cancers is about 10.6 % of all cancers. The aim of the study was to study the mucosal lesions with regard to mode of presentation, aetiopathology, histopathological aspects, various surgical modalities.

Methods: The prospective observational and descriptive tertiary care institute based case study was undertaken at Medical College, Kolkata. A total of 30 patients were included in the study.

Results: Maximum number of patients was in the 51-60 yr age group and the male: female sex ratio was 7:3. The maximum risk factors were found to be smoking and tobacco. 16.67% patients had premalignant lesions namely leucoplakia whereas 73.33% of the patients presented with oral ulcers as the chief complaint. Most of the patients presented in the late stage. Squamous cell carcinoma was the most common histological type. Out of 30 patients, 6 underwent wide local excision only and the rest underwent neck dissection. Mandibulectomy was done in 14 patients, Pectoralis major myocutaneous flap was the most common reconstructive procedure used (43.33%).

Conclusions: Cancer of the oral cavity has a high incidence in our country due to our social habits. In spite of easy accessibility to early lesion, the number of locally advanced lesion is very high. This can be prevented by creating health awareness.

Keywords: Aetiopathology, Cheek, Carcinoma, Management

INTRODUCTION

The incidence of oral cancer varies globally and regionally and is closely linked with geographical, social, economical, biological, ethnic, dietary and environmental factors. Globally, oral cancer accounts for just over 5% of all cancers in men, and 2.5% of cancers in women while in the South East Asian Region for about 40% of all cancers. The incidence of oral cancers is about 10.6% in India with a peak incidence in 4th and 5th decade, ranks the most common cancer in males, and third most

common in females.³ Despite the purported advancements in surgical techniques and adjuvant therapy, the prognosis for patients with oral cancer remains poor with global 5-year survival rates of 40-50% which have not changed significantly in the last three decades.⁴ Five-year survival in the Indian sub-continent has been estimated even lower, at 30-40%.⁵

The main established risk factors for oral cancers include tobacco use, alcohol consumption and the combination of these behaviours and viral infections. A positive

association between cigarette smoking and oral cancer has consistently been reported around the world.⁵⁻⁷ Rahman and co-workers undertook a meta-analysis of 12 case-control studies investigating bidi smoking. A 3-fold increased estimated risk of oral cancer incidence for bidi smokers was found compared to non smokers.8 From 10 studies with pathology case-series data, in a review by Scully and colleagues, oral leukoplakia is reported as having low malignant transformation.9 Oral submucous fibrosis was considered as a risk factor for oral cancer in a recent review it was noted that it is a relatively common potentially malignant condition in the Indian subcontinent and that chewing the areca nut is associated with increased risk.¹⁰ The histology of oral cancer is almost always squamous cell carcinoma (SCC) -accounting for over 90% of all invasive tumours at this site.5 Oral squamous cell cancer is graded histologically as: well; moderately; or poorly differentiated carcinoma. 11

These cancers often abut or involve the mandible. Most of these cancers are not amenable to per-oral resection owing to inadequate access, which may jeopardise the oncological resection. Per-oral resection is possible in small lesions (usually, 2cm or less), situated anteriorly, with no or minimal mandibular involvement, and with good mouth opening. The decision to resect the mandible as part of the management of oral cancer should be taken on the evidence of clinical examination, periosteal stripping and at least two imaging techniques that complement each other in terms of specificity and sensitivity. The decision to resect the management of oral cancer should be taken on the evidence of clinical examination, periosteal stripping and at least two imaging techniques that complement each other in terms of specificity and sensitivity.

Primary closure is often the treatment of choice for small or medium-sized defects of the cheek, providing an expedient closure, rapid healing time, and excellent aesthetic result. 14 When primary closure of a cheek defect is not possible, a local tissue flap is usually the next best reconstructive option. 14,15 Skin flaps can be categorized in several ways, including based on blood supply (e.g., axial, random), method of flap movement (e.g., advancement, rotation), or shape (e.g., rhombic, bilobe). 15 Commonly used flaps for reconstructive procedure are Forehead flap, microvascular radial free flap, deltopectoral flap, pectoralis major myocutaneous flap. The less commonly used flaps are temporalis flap and rectus abdominus flaps. They provided excellent cover individually and in combination.¹⁶ Mandibulectomy when performed, is reconstructed usually with prosthesis (steel, titanium) or autologous bone grafts (iliac crest, ribs).

The management of neck for buccal cancers depends on whether the neck is clinically node negative or node-positive. In patients with clinically positive lymph nodes (NI, N2, N3), radical neck dissection has been the gold standard. However, there is mounting evidence that radical neck dissection should not be the only therapeutic option for the clinically positive neck. ¹⁷⁻¹⁹ In patients with clinical N1 disease and selected N2 disease, a modified radical neck dissection may be done for better cosmetic and functional results. ²⁰ A supraomohyoid neck

dissection, clearance of level I, II and III nodes plus postoperative radiation therapy has been advocated by a few authors for N1, level I disease. ²⁰⁻²⁵

Occult nodal metastatic disease is present in 5-26% of gingivobuccal complex cancers depending on the T-status and grade. 26-29 Management of the clinically negative is thus an important issue.³⁰ Patients with T1/T2 cancers (low risk, <20% risk of nodal metastasis) do not require elective neck treatment. Supraomohyoid neck dissection should be performed in patients with T3/T4 primary (high risk. >20% risk of nodal metastasis), if entering the neck to resect the primary, short-necked individuals who require a bulky flap for oral reconstruction (to create space in neck) and patients who are unreliable for followup. 25,31 Patients with positive lymph nodes, diagnosed on histopathology following supraomohyoid neck dissection, should either undergo radical or modified radical neck dissection or postoperative radiotherapy.^{22,24,32-38} Patients with a single positive, level I node only, without extracapsular spread, may not need additional treatment.34,35

Aims and objectives

The aim of the study was to study the mucosal lesions with regard to mode of presentation, aetiopathology, histopathological aspects. The study was also done to consider the various surgical modalities for the management of the primary, the metastatic cervical nodes, the mandible and the resultant defects created with special reference to various types of flaps used for reconstruction and their immediate complications in our set up.

METHODS

The prospective observational and descriptive tertiary care institute based case study was undertaken in department of General Surgery and the Department of Plastic Surgery at Medical College, Kolkata for a period of 2 years. Outpatients and inpatients with cheek carcinoma were included in the study. Total number of patients with cheek carcinoma fulfilling the inclusion criteria being treated by us in the study period (purposive sampling size) was 30. Patients fulfilling the following inclusion and exclusion criteria were included in the study on the basis of random sampling procedure

Inclusion criteria

Resectable buccal cancers including recurrent cases when seen on first visit.

Exclusion criteria

Patients with advanced disease (both systemically and locally) and patients who do not wish to undergo surgical treatment.

Parameters studied

A detailed history including age, sex, habits of tobacco/paan chewing, smoking, alcohol was taken. Gross appearance of the growth, site, size, invasion into adjacent site, premalignant lesions will be examined. Neck was examined for group and level of cervical lymph nodes palpable, size, consistency, differentiation and Staging as per TNM classification. The surgical technique followed that is resection, neck dissection and reconstruction and complications was noted. Recurrence of the tumor within the study period was noted. Corelation of the results with other studies were done comparing the results.

RESULTS

Age of presentations

Maximum number of patients i.e. 36.67% patients were in the 51-60 yr age group and the least in the >70 yr group. The mean age of presentation was 52.1 yrs±8.94 SD, minimum age was 36yr and maximum was 72 yr.

Sex

According to our study, 70% were males and 30%% were females the sex ratio was 7:3.

Habits

The maximum risk factors were found to be smoking and tobacco i.e. 50% each and 80% had some form of tobacco intake either smoking or tobacco chewing as shown in the table. Pan and betel nut chewing were also found to be significant risk factors (Figure 1).

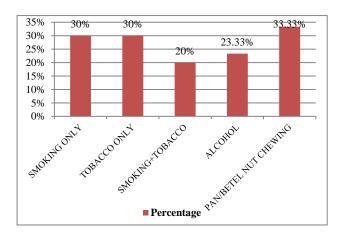


Figure 1: Showing the addiction habits in our patients.

Premalignant lesions

Only 5 patients out of 30 (16.67%) had premalignant lesions namely leucoplakia (4) and submucosal fibrosis (1).

Clinical features

Maximum i.e. 73.33% of the patients presented with oral ulcers as the chief complaint. Other common presentations were swelling (33.33%) and trismus (53.33%). Few presented with pus discharge (6.67%).

Duration of illness

Most of the patients presented after 6 months of illness i.e. 73.33% as shown in the table. Minimum duration of presentation was 2 months and maximum duration was 30 months with an average of 11.7 months±7.14 SD.

Site of lesion

Lesions on the right side (57.67%) were commoner than those on the left (43.33%) side.

Clinical staging

Most of the patients presented in the late stage i.e. IV (40%) and III (33.33%). Only 10% of patients presented in the early stage

Histopathology

Squamous cell carcinoma was the most common histological type and was found in 96.67% of the patients with buccal cancer. Amongst them, most of them i.e. 46.67% had well differentiated type and verrucous cell carcinoma, a subtype of squamous cell carcinoma was present in 13.33% of the cases. Only 1 patient presented with adenoid cystic carcinoma

Surgical methods

Table 1: The different types of surgery performed.

Surgical methods	No.
Wide local excision	6
Wide local excision + supraomohyoid lymph node dissection	2
Wide local excicion + modified radical lymph node dissection	9
Wide local excision +marginal mandibulectomy + modified radical lymph node dissection	3
Wide local excision + segmental mandibulectomy + modified radical lymph node dissection	8
Wide local excision + Hemi mandibulectomy. + Modified radical lymph node dissection	1
Wide local excision + upper alveolotomy + segmental mandibulectomy + modified radical lymph node dissection	2

Out of 30 patients, 6 underwent wide local excision only and the rest underwent neck dissection. Selective node dissection was done in 2 out of the remaining 24 patients and modified radical node dissection in the others. Mandibulectomy was done in 14 patients, amongst which 1 underwent hemi-mandibulectomy and the rest had partial mandibulectomies (either segmental or marginal). Two patients had upper alveolectomy (basal maxillectomy) along with partial mandibulectomy (Table 1).

Reconstruction

Pectoralis major myocutaneous flap was the most common reconstructive procedure used (43.33%) either alone or with split skin grafting or deltopectoralis flap or Recon plate. Other common flaps used were the forehead and tongue flaps which were used in 6 and 3 cases respectively. Less commonly used flaps were deltopectoralis flap, Narayanan flap and trapezius flap. Primary closure was possible in only 2 patients and only skin grafting was used for covering in 3 patients. Recon plate was used in only 1 patient (Table 2 and Figures 2-5).

Table 2: Different reconstruction procedures done.

Reconstructive methods	No.
Primary closure	2
Split skin grafting	3
Pectoralis major myocutaneous (PMMC) flap	7
Pectoralis major myocutaneous (PMMC) flap+Split skin grafting	3
PMMC+Deltopectoral flap	2
PMMC flap+ Recon plate	1
Tongue flap	3
Forehead flap	6
Narayanan flap	1
Trapezius flap	1
Deltopectoral flap	1



Figure 2 (A and B): Trapezius flap.



Figure 3(A and B): Forehead flap.



Figure 4(A and B): Deltopectoral pectoral flap.

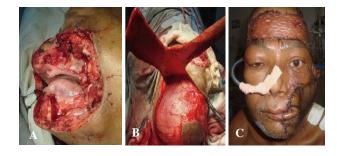


Figure 5(A and B): Narayan flap.

Complications

Infection and necrosis were found to be the commonest complications in post-operative patients (23.33% and 20% respectively). Only 3% had recurrences during the study period. There were 2 mortalities, one due to medical complications namely cardiac arrest occurring in an elderly patient with medical comorbidities (hypertension and diabetes) died on 1st post-operative day and the other who underwent extensive surgery for late stage cancer and had bleeding occurring on the 1st post-operative day, died on 2nd post-operative day. Maximum complication occured in pectoralis major myocutaneous flap including partial necrosis, infecion, oro-cutaneos fistula and recurrence (Table 3).

Necrosis (%)	Infection (%)	Fistula (%)	Bleeding/ Hematoma (%)	Recurrence (%)	Mortality (%)	
4 (31)	6 (46)	2 (15.4)	1 (8)	1 (8)	0	
1 (16)	0	1 (16)	0	0	1 (16)	

1 (33)

1 (100)

0

0

Table 3: Complications in relation to different flaps.

0

0

0

1 (50)

DISCUSSION

Tongue flap

Flaps

Pectoralis major myocutaneous flap Forehead flap

Deltopectoral flap

Trapezius flap

Narayanan flap

Cancer of head and neck have aroused great interest and attained a special epidemiological significance in India. Oral cancer is highly prevalent in a few developing countries particularly those of South East Asia and the Indian subcontinent, with the disease accounting for up to 40% of all malignancies in these areas. Inspite of advancements in surgical techniques and adjuvant therapy, the prognosis for patients with oral cancer remains poor with global 5 year survival rates of 40-50% which have not changed significantly in the last three decades.4 Five-year survival in the Indian sub-continent has been estimated to be even lower, at 30-40%.³⁷ This study was done in order to view the scenario of buccal cancer in our institute, the various clinico-pathological presentations and various modes of treatment mainly surgical reconstructive procedures which are being done and their early complications.

0

0

1

0

0

0

0

1 (50)

The study included 30 patients who presented in the General surgery and Plastic surgery department at our hospital during a period of one and a half years either as out-patients or as in-patients. In this study maximum number of patients i.e. 36.67% patients were in the 51-60 yr age group and the least in the >70 yr group. The mean age of presentation was 52.1 yrs ± 8.94 SD, minimum age was 37yr and maximum was 72 yr. In most countries, oral cancer is rare in both men and women below the age of $45.^{1.2}$ The age-specific rates for oral cancer, as with most cancers demonstrate the marked increase in incidence with increasing age.

The maximum risk factors were found to be smoking and tobacco i.e. 50% each and 80% had some form of tobacco intake either smoking or tobacco chewing. Pan and betel nut chewing (33.33%) were also found to be significant risk factors. Similarly, in studies like tobacco use was widely considered the most important and dominant risk factor for oral cancer.⁵⁻⁷ In another widely quoted study, Rothman's estimated that approximately 75% of all oral cancers were attributed to the use of tobacco. In Asian countries, while cigarette consumption is high and increasing, traditional smoked forms, including bidi smoking is also prevalent; and smokeless forms include: betel quids (pan), and gutka.³⁸ A positive association

between cigarette smoking and oral cancer has consistently been reported around the world.⁵⁻⁷ The association with betel chewing to be nearly 3-fold without tobacco included in the quid, compared to a nearly 7-fold increase when tobacco was included.³⁹

0

0

0

0

1 (33)

0

0

0

Only 5 patients out of 30(16.67%) had premalignant lesions namely leucoplakia (13.33%) and submucosal fibrosis (3.33%). From 10 studies with pathology caseseries data, in a review, oral leukoplakia was reported as having low malignant transformation (although it is the most commonly present potentially malignant oral lesion).40 Oral submucous fibrosis was considered as a risk factor for oral cancer in a recent review by Tilakaratne et al. 10 They noted that it is a relatively common potentially malignant condition in the Indian subcontinent and that chewing the areca nut was associated with increased risk. They also found from summarising the findings of three case-series follow-up studies that the malignant transformation rate varied by study population, between 7 and 26% and that it exhibited a moderate malignant potential - in between that of leukoplakia and erythroplakia. Maximum i.e. 73.33% of our patients presented with oral ulcers as the chief complaint. Other common presentations were swelling (33.33%) and trismus (53.33%). Few presented with pus discharge (6.67%). Similarly in a study, ulcer was the chief presenting complaint (54%), others were swelling and trismus.³

As oral cancers spread through the lymphatic system, lymph nodes in the submandibular region and deep cervical chain may be palpable. It should be noted that cancers may show ipsilateral, contralateral or bilateral lymphatic spread. 41

In our study, we found squamous cell carcinoma was the most common histological type and was found in 96.67% of the patients with buccal cancer. These findings are supported by Mayne et al, study that showed the histology of oral cancer was almost always squamous cell carcinoma (SCC) –accounting for over 90% of all invasive tumours at this site. This information is an important part of pathological reporting of oral cancer, although there is limited evidence of an association between differentiation status and clinical outcome or

treatment response. 42 Pectoralis major myocutaneous flap (PMMC) was the most common reconstructive procedure used (43.33%) either alone or with split skin grafting or deltopectoralis flap or recon plate as it is a workhorse of head and neck reconstructive surgery. 43 Complication rate was higher [partial necrosis (31%), infection (45%), fistula (16%) and recurrence (8%)] in our study as compared to international data.⁴⁴ Primary closure is often the treatment of choice for small or medium-sized defects of the cheek, providing an expedient closure, rapid healing time, and excellent aesthetic result In another study, commonly used flaps for reconstructive procedures were forehead flap, microvascular radial free flap, pectoralis major myocutaneous flap, deltopectoral flap and the less commonly used flaps were temporalis flap and rectus abdominis flaps.⁵ They provided excellent cover individually and in combination.⁷

CONCLUSION

Cancer of the oral cavity accounts for a high incidence in our country due to our social habits. In spite of easy accessibility to early lesion, the number of locally advanced lesion is very high. This can be prevented by creating health awareness, and holding cancer detection clinics in rural and urban areas. Combined modality of treatment would be a better approach to deal with advanced lesions as it offers a good loco regional control and survival rate.

The tumour size and extent of the tumour, type and grade, the pattern of infiltration, the tumour thickness, the neck node status, and the status of excision margins, do affect the surgical prognosis and the survival rate. Since the disease and its surgery deforms the exposed parts of the body such as the face and jaws, the functional and cosmetic impact must be recognized and considered while resorting to reconstructive procedures. Thus attention can be focused on restoration of the patient to a purposeful, presentable quality of life.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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