

Clinical Profile and Management of Oral Cancer; Is Tobacco Ban the Need of the Hour? An ESIC Tertiary Care Hospital Experience

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ABSTRACT

Background: Oral cancer is the commonest cancer of males in India, and tobacco use is its most common modifiable risk factor. The study was conducted to provide the demographic profile and management outcomes of oral cancer in an exclusive labor-class population in an Employees, State Insurance Corporation (ESIC) Hospital, catering specifically to labor-class insured patients of low-income groups.

Materials and methods: Data of patients presenting to the Surgical Oncology outpatient department (OPD), ESIC Basaidarapur, from the period January 2019 to May 2022 with cancer of the oral cavity were maintained prospectively in our computer database, and a retrospective analysis was done.

Results: A total of 40 patients who presented in Surgical Oncology OPD with cancer of the oral cavity were included in the study. The most common age group affected was the 5th decade, and 52.4% of the patients belonged to the age group of 31–50 years of age. Gender preponderance stands at 5:1, in favor of males. Around 85.7% of the patients had a history of tobacco use. The most common subsite involved was the buccal mucosa (38.1%), followed by the tongue (26.2%), and lip (14.3%). About 76.2% of patients underwent upfront surgery, while 23.8% of patients received induction chemotherapy (ICT) before surgery. There were no postoperative (post-op) complications in 85.7% of the cases. Surgical site infection developed in 9.5% of the cases, while parotid fistula was seen in 4.5% of the cases. None of the cases showed submandibular gland involvement. The median lymph node harvest was 27 nodes. Lymphovascular invasion was seen in 46.1% of the cases. Perineural invasion was seen in 19.2% of the cases. Bone was involved in two out of the 40 cases (5%). As per the final histopathological examination (HPE) report, eight cases belonged to pT1 stage (20%), 17 cases to pT2 stage (42.5%), five cases to pT3 stage (12.5%), and five cases belonged to pT4 stage (12.5%). No residual tumor was found in three cases (7.5%). In 35% of cases, lymph nodes were found to be involved in the final HPE report. A positive margin was identified in only one out of the 40 cases. During follow-up, six out of the 40 cases presented with locoregional recurrence.

Conclusion: Despite having a well-streamlined healthcare system for our insured patients, most presented with locally advanced stages, emphasizing the need for screening and awareness programs. Tobacco use was the single most modifiable risk factor in our study, highlighting the need for tobacco cessation programs and serious thinking for tobacco ban.

Keywords: Buccal mucosa, Demographic, Locally advanced, Oral cancer, Tobacco use.

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INTRODUCTION

Oral cancer is one of the commonest cancers in India, and as per the Globocan 2020 data, it is the most common cancer among Indian males and the second most common cancer in both sexes.¹

Though curable if detected in early stages and also easily accessible by virtue of site for examination, both by a patient as well as healthcare worker, most patients reach in locally advanced and late stages, leading to complex management protocols, poorer treatment outcomes, and increasing health care burden.² Most common risk factor is tobacco usage.^{3–5} In India, rampant usage of various forms of smokeless tobacco like khaini, gutkha is the leading risk factor, others being alcohol consumption, low socioeconomic status, and lack of oral hygiene.

This retrospective study was conducted in a tertiary care hospital and medical college and hospital of ESIC, which is a social security system aimed at the labor class population of India with a budget of 80,000 crore INR (US \$11 billion). This scheme is one of the biggest social security providers in the world and is designed to provide socioeconomic protection to employees in the organized sector, with the provision of medical benefits being its major strength. As the monthly wage ceiling for coverage of an employee

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is 21,000 rupees/month, it caters to the low socioeconomic labor class. In this scheme, the employee's contribution rate is 0.75% of the wages, and that of the employer's is 3.25% of the wages paid/payable in respect of the employees in every wage period, and though the contributions are based on the workers

earning ability as a fixed proportion of their salary, yet the medical benefits provided are based on the individual need and diagnosis without discrimination.

It has one of the robust healthcare systems in the country, with its own network of dispensaries and hospitals. The dispensaries work on two shifts so that the workers don't have to lose a day's pay and can visit in their comfort. The patient is first seen in the dispensary and then referred to the appropriate department at the hospital. If a particular modality of treatment is not available at the hospital, private hospitals are impaneled for the same so that the patient's treatment and health are not compromised. Keeping this in mind, this study was undertaken to analyze the demographic profile of oral cancer among our patients, the risk factors associated with it, and also to evaluate the clinicopathological profile of patients, which could help in key strategic planning for prevention and treatment.

METHODS AND MATERIALS

Patient Selection

Data of patients presenting to Surgical Oncology OPD, ESIC Basaidarapur, from the period January 2019 to May 2022 with cancer of the oral cavity were maintained prospectively in our computer database, and a retrospective analysis was done.

Initial Evaluation

A detailed history of the patients was recorded, which included family, addiction, occupational, and environmental history, in addition to the history of current illness. Patients were initially evaluated by clinical examination followed by a biopsy to confirm the diagnosis. The most frequent imaging modality used was contrast-enhanced computed tomography (CECT) scan of the face, neck, and chest. Magnetic resonance imaging was used wherever applicable for local staging. Positron emission tomography CT (PETCT) was advised in cases with equivocal findings in initial imaging and where there was clinicoradiological disparity.

Treatment Plan

Cases with very advanced local disease were administered three cycles of ICT, after which they were reevaluated for the possibility of curative surgery. Patients with resectable disease were posted for upfront surgery.

Induction Chemotherapy (ICT) Regimen

The most commonly used ICT regimen was three cycles of docetaxel (75 mg/m²) + cisplatin (75 mg/m²) + 5-fluorouracil (5FU) (750 mg/m² day 1–day 5), administered every 21 days.

Surgery

Surgery was individualized based on the subsite involved, the extent of involvement, and the reconstruction procedure required. Adequate 1 cm margins were taken. Sample of margins on all sides, including deep margin, were sent for analysis. Bone and skin margins were sent for analysis wherever applicable. Modified radical neck dissection (MRND) was done in all cases. Reconstruction techniques used included pectoralis major myocutaneous (PMMC) flap, nasolabial flap, karapandzic flap, and split-thickness skin graft (STSG).

In cases with post-op complications, they were managed conservatively. Adjuvant treatment was based on the final histopathology report and as per the National Comprehensive Cancer Network (NCCN) guidelines. Posttreatment surveillance was done with clinical examination, complete blood count reports,

serum thyroid stimulating hormone, and PETCT reports at intervals according to the NCCN guidelines. Cases with suspected locoregional and metastatic recurrences were confirmed with fine-needle aspiration cytology or biopsy. Cases with recurrences were treated with systemic chemotherapy. The regimen used in our study was six cycles of [carboplatin (area under the curve five) + docetaxel (75 mg/m²)] every 21 days + cetuximab (400 mg/m²) loading dose followed by 250 mg/m² weekly. After six cycles, patients were kept on cetuximab 500 mg/m² every 14 days until disease progression.

RESULTS

A total of 40 patients who presented in Surgical Oncology OPD with cancer of the oral cavity were included in the study.

Demography

The most common age group affected was the 5th decade, and 52.4% of the patients belonged to the age group of 31–50 years of age. Gender preponderance stands at 5:1 in favor of males. Around 85.7% of the patients had a history of tobacco use. About 52.4% of patients were addicted to smokeless forms of tobacco, and 35.4% of patients were addicted to smoking. In addition to tobacco use, alcohol abuse was observed in 14.3% of patients (Table 1).

Clinical Presentation

The most common subsite involved was the buccal mucosa (38.1%), followed by the tongue (26.2%), and lip (14.3%). The entire details of the subsite involvement are listed in Table 2.

Upon analyzing the T stage at presentation, we found that 42.9% of patients presented at the cT4 stage, 9.3% at cT2, 42.9% at cT1, and 2.4% at cT0 stages. This meant that 52.2% of patients presented with locally advanced disease at presentation. Also, 38.1% of patients presented with locoregional nodal metastasis at the first visit.

Management

Upon analyzing the T stage at presentation, we found that 42.9% of patients presented at the cT4 stage, 9.3% at cT2, 42.9% at cT1, and 2.4% at cT0 stages. This meant that 52.2% of patients presented with locally advanced disease at presentation. Also, 38.1% of patients presented with locoregional nodal metastasis at the first visit.

Table 1: Demography

Age	
Most common age-group	5th decade
Percentage of cases belonging to 31–50 years of age-group	52.4%
Sex	
Male:female	5:1
Religion	
Hindu	83.3%
Muslim	16.7%
Etiology/risk factors	
Tobacco abuse	85.7%
Smokeless tobacco	52.4%
Smoking	35.7%
Associated alcohol abuse	14.3%

Table 2: Clinical presentation

Subsite involved	
Buccal mucosa	38.1%
Tongue	26.2%
Lip	14.3%
Floor of mouth	4.8%
Alveolus	4.8%
Mandible	2.4%
Hard palate	2.4%
Central arch	2.4%
Neck	2.4%
Gingiva	2.4%
T stage at presentation	
T4	42.9%
T3	9.3%
T2	42.9%
T1	2.4%
T0	2.4%
Patients presenting with locally advanced tumor	52.2%
Patients presenting with nodal metastasis at presentation	38.1%

Imaging

Contrast-enhanced computed tomography (CECT) was the imaging modality of choice.

Surgery

About 2% of patients underwent upfront surgery, while 23.8% of patients received ICT before surgery. The type of surgeries performed, along with the respective frequencies, are listed in Table 3. Reconstruction was done with PMMC flap, nasolabial flap, karapandzic flap, and STSG based on individual cases. There were no post-op complications in 85.7% of cases. Surgical site infection developed in 9.5% of cases, while parotid fistula was seen in 4.5% of cases. Post-op complications were managed conservatively in all the affected cases (Table 4).

Induction Chemotherapy (ICT)

The most commonly used ICT regimen was three cycles of docetaxel (75 mg/m²) + cisplatin (75 mg/m²) + 5FU (750 mg/m² day 1–day 5), administered every 21 days. Surgery was performed within 6 weeks of completing ICT.

Histopathology Report

None of the cases showed submandibular gland involvement. The median lymph node harvest was 27 nodes. The highest lymph node yield in a single case was 55 nodes. Lymphovascular invasion was seen in 46.1% of cases. Perineural invasion was seen in 19.2% of cases. Bone was involved in two out of the 40 cases (5%). As per the final HPE report, eight cases belonged to the pT1 stage (20%), 17 cases to the pT2 stage (42.5%), five cases to the pT3 stage (12.5%), and five cases belonged to the pT4 stage (12.5%). No residual tumor was found in three cases (7.5%). In one case of carcinoma of unknown primary with palpable neck node, MRND was done, and in the HPE report, three out of eight lymph nodes were positive. In 35% of cases, lymph nodes were found to be involved in the final HPE report. A positive margin was identified in only one out of the 40 cases (Table 5).

Table 3: Management

<i>Investigation</i>		
Most frequent imaging modality used	CECT	90.5%
Plan of treatment		
Upfront surgery		76.2%
ICT followed by surgery		23.8%
<i>Surgery</i>		
<i>Name of surgery</i>		<i>Number of cases</i>
Right composite resection + MRND + PMMC flap		8
Left composite resection + MRND + PMMC flap		5
Wide local excision + STSG + MRND		3
Wide local excision + nasolabial flap + MRND		3
Right partial glossectomy + MRND		4
Left partial glossectomy + MRND		5
Subtotal glossectomy		1
Wide local excision + primary repair + MRND		4
Wide local excision + marginal mandibulectomy + MRND		3
Wide local excision + karapandzic flap + MRND		1
Wide local excision		1
MRND		1
<i>Adjuvant treatment</i>		
<i>Modality</i>		<i>Number of cases</i>
CCRT		21
Radiation therapy		13
CT		4

Adjuvant Treatment

Around 38 out of the 40 patients required adjuvant treatment, which was based on the histopathology report. About 21 patients received adjuvant concurrent chemoradiotherapy (CCRT), 13 patients received adjuvant radiotherapy, and four patients received adjuvant chemotherapy.

Recurrence

About six out of the 40 cases presented with locoregional recurrence. None of the cases reported systemic recurrence. The second primary was observed in one case.

DISCUSSION

Tobacco consumption is one of the most common and also most modifiable risk factors associated with oral cancer. Tobacco use was seen in 85% of our study population, out of which smokeless tobacco use was seen in 52.4% of cases. The same has been shown in various studies.^{4,6–8}

The most common age group affected in our study was the 5th decade (40–49 years). The total percentage of insured IPs in the age group 30–60 was 69.2%. This is in accordance with several other studies.^{3,7,10} Men predominated over women with male to female ratio of 5:1. Our findings are similar to several other studies.¹¹ This high male preponderance could be attributed to the sociocultural environment in our country, where it is considered normal for males to be indulging in these vices, and also the fact that most of our study population are laborers and workers at factories and mills, where tobacco use could be attributed to the stress of long and hard-working hours.

Table 4: Post-op complications

Type of complication	Clavien–Dindo classification	
None	1	85.7%
Surgical site infection	2	9.5%
Parotid fistula	3A	4.8%

Table 5: Histopathology report analysis

Pathological T stage		
pT1		22.5%
pT2		42.5%
pT3		12.5%
pT4		12.5%
No residual tumor		7.5%
Nodal status		
Positive lymph node(s)		35%
Median lymph node harvest		28 nodes
Highest lymph node harvest in one case		55 nodes
Other important features		
Submandibular gland involvement		0/40 cases
Bone involvement		5%
Lymphovascular invasion		46.1%
Perineural invasion		19.2%
Positive margin		1/40 cases

Despite having such a robust and streamlined health care system of ESIC, most of our patients had presented in locally advanced stages (52.9%), which though similar to most of the studies,² but is a point of concern for us at ESIC, and will require further strengthening of our screening and awareness programs.

The most common subsite was buccal mucosa (38.1%), followed by the lateral border of the tongue (26.2%). This can be attributed to the increased usage of smokeless tobacco in various forms in the Indian subcontinent, where the tobacco quid is kept on the side of the mouth or under the lips for a prolonged period.^{9,10,12,13}

Most of our patients required some form of mandibular resections so as to ensure R0 resection and negative margins. Our resection rates are comparable to the study done by Shukla et al.¹⁴

Pectoralis major myocutaneous (PMMC) was the most common reconstruction option used by us, and there was no incidence of partial or complete flap dehiscence, which shows that it is a robust and sturdy flap, and is a workhorse of resource-constrained settings.^{14,15}

The clinical nodal involvement and pathological nodal positivity in our series were 38.1% and 35%, respectively, which shows that neck was adequately addressed in our series. Niu et al. reported a positive nodal metastasis rate of 43.9%.¹⁶ Several other series have reported neck disease rates of approximately 24–38%.^{14,17}

Though the submandibular gland is routinely sacrificed in curative surgeries for oral cancer, it is increasingly considered an innocent bystander in neck dissection, and preservation of the gland is being advocated by many.^{18,19} The gland involvement in oral squamous cell cancers is extremely rare and varies from 0 to 5%.²⁰ In our series, the gland was not involved in any case. The authors are of the opinion that preservation of the submandibular gland could be considered in early T1–2 cases with N0 neck.

Limitations of the present study include a retrospective nature and lack of survival data.

ETHICAL STATEMENT

This study is exempt for ethical approval and patient consent due to the retrospective nature of the study and the data analyzed were collected as part of routine diagnosis and treatment. All the procedures were conducted according to the Declaration of Helsinki (revised in 2013).

CONCLUSION

Oral cancer is one of the commonest cancers in India, affecting the prime workforce of the nation. Despite various health care programs and cancer screening programs, there is a lack of awareness regarding oral cancer and the role of tobacco as an etiological factor. Strategies, including a complete ban on tobacco products and effective oral health and screening programs, must be made and enforced to increase awareness among the masses about this cancer, and also to enable early detection and management of oral cancer.

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