

A Study of the Incidence, Demographic Distribution, Predisposing Factors of Malignancies of the Oral Cavity at a Tertiary Care Center, South India

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Abstract

Background: In this study, we wanted to determine the incidence of malignancies in individual sites and its relation to age & sex. We also wanted to determine the predisposing factors and their relation to individual sites.

Methods: The study was done at the Department of Otolaryngology – Head and Neck Surgery, Travancore Medical College, Kollam, spanning over a five-years period from January 2017 to December 2021. 325 patients who presented with malignancies of the oral cavity were evaluated. The tumours of the salivary glands were excluded. All patients were thoroughly examined. A detailed account of the tobacco and alcohol habits was documented. All patients were appropriately investigated.

Results: Males were most commonly affected in all sites and the male to female ratio was 2.3: 1. Subjects in the 41 - 60 years age group were most commonly affected with a mean age of 55 years. A significant proportion of the patients consumed tobacco or alcohol. 76.6 % of patients presented in an advanced stage (stage III or stage IV). Majority of the patients presented with complaints of ulcer, pain or local swelling. 39 % of the patients had anaemia on presentation.

Conclusion: A well-coordinated effect is necessary for the prevention, early detection and treatment to tackle the growing incidence of malignancies of the oral cavity and its associated mortality and morbidity.

Keywords: Incidence, Demographic Distribution, Predisposing Factors, Malignancies, Oral Cavity, South India.

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Introduction

Oral cancer is a major cause of death all over the world accounting for about 3,20,000 deaths every year. [1] It is a major problem in India and accounts for as high as 50 % of all the cancers diagnosed as compared to 2 - 3 % in UK and USA. The disease affects vital functions people

use to define themselves in society. Speech, swallowing and appearance are substantially impaired by both the malignancy and its treatment. Despite advances in therapy, survival data has not shown appreciable change in decades. Seventy-five percent of all head and neck

cancers begin in the oral cavity. According to the National Cancer Institute's Surveillance, Epidemiology, and Ends Results program in the USA, 30 percent of oral cancers originate in the tongue, 17 percent in the lip, and 14 percent in the floor of the mouth. [2]

Objectives

To determine the incidence of malignancies in individual sites and its relation to age & sex.

To determine the predisposing factors and their relation to individual sites.

Methods

This study was conducted at the Department of Otolaryngology – Head and Neck Surgery, Travancore Medical College, Kollam, spanning over a five-years period from the January 2017 to December 2021. During this period, 325 patients who presented to us with malignancies of the oral cavity were studied. Patients who presented to this hospital with clinical features suggestive of malignancies of the lips, buccal mucosa, alveolus, tongue, floor of the mouth, hard palate, retromolar trigone were included in the study. Patients with malignancies of the salivary glands have been excluded.

Results

325 patients with malignancies of the oral cavity presented to our hospital from the year 2017 to 2021. The sub-sites included

in the study are: Lip, Buccal mucosa (BM), Alveolus (Alv), Tongue (T), Floor of mouth (FOM), Hard palate (HP), Retromolar trigone (RMT).

Age & Sex Incidence

Among the 325 cases, 227 (69.85 %) were males and 98 (30.15 %) were females with a male to female ratio of 2.3: 1. This was the case with all the sub-sites in the oral cavity and the male to female ratio was maximum in the floor of mouth (19.5:1) and hard palate (5: 1). Male to female ratio was 1: 1 in case of alveolar malignancy. The most commonly affected age group was 41 - 60 years (179 cases, 55.08 %) followed by 61 - 80 years (102 cases, 31.38 %). The youngest case was a two-year-old girl with rhabdomyosarcoma of the lip and the oldest was a 95-year-old man with carcinoma of the hard palate.

Presenting Symptoms in Study Population

Ulcer was the most common presenting symptom (179 cases, 55.08 %) in the oral cavity malignancies followed by pain (45.85 %) and local swelling (29.23 %). Burning sensation, restriction in mouth opening, difficulty in articulation and difficulty in chewing and swallowing, blood-stained saliva were the other presenting symptoms. Pain radiating to the ear was seen in 8.31% of the patients. This was more in cases with malignancy of the retromolar trigone (15.79 %).

Table 1: Age and Sex Incidence

	0 – 20		21 - 40		41 -60		61 -80		81 - 100		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Lip	-	1	-	-	4	4	3	-	-	1	13
BM	-	-	1	3	15	9	17	12	1	1	59
Alv	-	1	-	2	6	4	4	4	1	-	22
Tongue	-	-	15	7	65	23	30	13	2	1	156
FOM	-	-	4	1	24	1	11	-	-	-	41
HP	-	-	-	-	6	4	3	1	1	-	15
RMT	-	-	1	-	10	4	3	1	-	-	19
TOT	-	2	21	13	130	49	71	31	5	3	325

Table 2: Presenting Symptoms in Study Population

	U	Bur	Pn	SwL	RMO	ExS	LOT	Dp/ Od	BI	RnE	SSp, Dar, DPT	SwN	F(wk)	total
Lip	4	1	2	9	-	-	2	-	-	-	-	1	1	20
BM	36	11	23	22	7	-	-	-	-	-	-	-	2	101
Alv	13	-	10	10	1	1	6	-	-	-	-	-	2	43
T	93	8	76	34	4	4		27	5	20	26	15	3	315
FOM	18	-	23	9	2	-	3	6	1	3	7	5	2	79
HP	7	-	6	7	3	-	2	2	1	1	-	2	1	32
RMT	8	1	9	4	10	-	3	2	2	3	-	-	1	43
TOT	179	21	149	95	27	5	16	37	9	27	33	23	12	-

Tobacco and alcohol habits

153 patients (47.08 %) gave history of tobacco smoking for a minimum period of 15 years with beedi being the commonest type. Habitual alcohol consumption was

present in 96 patients (29.54 %). History of paan or gutkha chewing was obtained from 129 (39.69 %) of the cases. 116 patients (35.69 %) had addictions with multiple substances mentioned above.

Table 3: Tobacco and Alcohol Habits

Sub-site	Smoking		Alcohol		Paan/Gutkha		Multiple Habits	
	No	%		%		%		%
Lip	4	30.77 %	3	23.08 %	4	30.77 %	3	23.08 %
Buccal Mucosa	24	40.68 %	15	25.42 %	35	59.32 %	18	30.51 %
Alveolus	7	31.82 %	6	27.27 %	7	31.82 %	6	27.27 %
Tongue	75	48.08 %	41	26.28 %	56	35.89 %	52	33.33 %
Floor of Mouth	31	75.61 %	21	51.22 %	11	26.83 %	25	60.98 %
Hard Palate	7	46.67 %	6	40 %	7	46.67 %	7	46.67 %
Retromolar Trigone	5	26.32 %	4	21.05 %	9	47.37 %	5	26.32 %
Total	153	47.08 %	96	29.54 %	129	39.69 %	116	35.69 %

Comorbid conditions

Anaemia was the most common co-morbid condition encountered in our study population (127 cases, 39.08 %) followed by hypertension and ischemic heart disease

(62 cases, 19.02 %). Diabetes mellitus was seen in 8.62 % of the cases. COPD was seen in 8 cases and 3 patients had past history of tuberculosis. Five cases (1.54 %) had other co-existing malignancies.

Table 4: Co-morbid Conditions

	Anaemia	HTN & IHD	DM	BA	TB (past)	COPD	Other cancer	Gastritis
Lip	3	2		1				
Buccal Mucosa	23	17	7	1				1
Alveolus	14	6	2		2	1	2	
Tongue	59	29	18	3	1	4	2	2
Floor of Mouth	11	4	1	1		1	1	1
Hard Palate	9	2				2		
Retro Molar Trigone	8	2						
Total	127	62	28	6	3	8	5	4
% age	39.08%	19.02%	8.62%	1.85%	0.92%	2.46%	1.54%	1.23%

Discussion

The tumours of the oral cavity are a poorly understood and devastating group of lesions. The profound functional and cosmetic deformities associated with the disease process and its treatment, combined with poor survival rates, heighten its importance.

The disease is more commonly seen in the 6th and 7th decades of life. The incidence is more in the males but the disparity is decreasing progressively. There has been a significant increase in the proportion of female patients, presumably due to the increased intake of alcohol and tobacco by women in the recent decade.

Tobacco and alcohol have been confirmed as aetiological factors in different studies. Oral malignancy is more in the regions where tobacco consumption is more, especially the smokeless varieties such as paan. They also have a role in prognosis of cases with established cancer. 5-year overall survival rates were 69 % for non-smokers compared with 43 % for smokers. [3] There was a significantly higher relapse-free survival at 5 and 10 years (63 %) in those who did not chew tobacco compared with 42 % and 28 % among those who did. [3]

Age and sex incidence

In the series by Jinkun Chen et al. [4] (n = 6181), the ages of all oral cavity malignancies ranged from 8 years to 102 years with most in between 50 and 80 years with a mean of 63 years. In a study by Rich AM et al. [5] (n = 244), the range was between 22 to 92 years with a highest prevalence in the 6th and 7th decade with a mean of 61 years. In Schnetler et al.'s [6] series (n-96), the mean age was of 66 years. Conley J et al. [7] in their study on cases with SCC of buccal mucosa (n-90) reported a mean age of 50 years. Urist MM et al. [8] in another series of buccal mucosa cancers (n-89) showed an age range from 43 to 90 years with a mean of 71 years. Our series (n-325) showed an age range of 2 to 95 years with maximum incidence in the 5th and 6th decades with a mean age of 55 years.

In the series by Jinkun Chen et al. [4] (n-6181) 75.25 % were males and 25.75 % females with a male to female ratio of 3: 1. Patel et al. [9] in their series of 504 patients also had a male preponderance (75 % males and 25 % females) with a ratio of 3: 1. Rich AM et al. [5] reported a male preponderance but with a lower male to female ratio of 1.3: 1 (males-57 %, females-43 %). El-Husseiny G et al. [3]

and Schnetlet JFC et al. [6] also had similar male to female ratios of 1.78:1 and 1.7: 1. Our series showed a male preponderance with percentages of 69.85

% & 30.15 % respectively for males & females and a ratio of 2.32:1.

Table 5: Age and Sex Incidence Compared with the Other Authors

	Mean Age (in Years)	Male: Female Ratio
Jinkun Chen et al.[4] (n-6181)	63	3:1
J.F.CSchnetler et al[6] (n-96)	66	1.7:1
UristM.M et al[8](n-89)	71	—
Rich AM et al[5] (n-244)	61	1.3:1
Conley J et al[7] (n- 90)	50	2.03:1
Patel MM et al[9](n-504)	—	3:1
El-Husseiny G et al[3](n-77)	55	1.78:1
Our series (n-325)	55	2.32:1

Incidence in different sites in the oral cavity

The tongue was the most commonly involved site in the oral cavity in the series by Jinkun Chen et al. [4] (43.49 %) followed by the floor of mouth (25.54 %). Schnetler JFC et al's [6] series from UK shows the floor of mouth to be the most commonly affected site (22.92 %) followed by the tongue (18.75 %). In the series by Mashberg A et al. [10] from United States (n-222) also, there was a

preponderance of floor of mouth malignancies (51.41 %) followed by tongue (21.17 %). In our series from South India, (n = 325) tongue (48 %) was the most commonly affected site followed by the buccal mucosa (18.15 %) and the floor of mouth (12.61 %). A variation in the sites of incidence could be explained by the environmental factors such as habits and the genetic makeup of the local population.

Table 6: Incidence in Different Sites Compared with Other Authors

	Lip	BM	Alv	T	FOM	HP	RMT
Schnetler JFC et al.[6]	11.46%	9.38%	16.67%	18.75%	22.92%	9.38%	11.46%
Jinkun Chen et al. [4]	—	6.44%	9.82%	43.49%	25.54%	11.62%	2.85%
Mashberg A et al. [10]	8.82%	1.17 %	1.76%	21.17%	59.41%	0.58%	7.05%
Our Study	4%	18.15%	6.77%	48%	12.61%	4.62%	5.85%

Tobacco & alcohol habits

Subjects who smoked or consumed alcohol or both was marginally lower in our study when compared to the series by Rich AM et al. [5], O'Brian PH et al. [11], Siczka E et al. [12]and Luukkaa M [13] done in the developed countries. But in the Indian population especially in rural India, the habit of paan chewing is widely prevalent & is considered to be a major risk factor for the causation of oral malignancies as seen in our series where 39.69 % of the

subjects chewed paan. The study by El-Husseiny G et al. [3] conducted in the Middle East had similar figures for tobacco chewing (35 %) and no significant users of alcohol.

Conclusion

A well-coordinated effect is necessary for the prevention, early detection and treatment to tackle the growing incidence of malignancies of the oral cavity and its associated mortality and morbidity.

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