

# Changing trends in oral cancer

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## Abstract

**CONTEXT:** No study highlighting the incidence of oral squamous cell carcinoma (OSCC) in young adults has been reported from North Kerala until now. **AIMS:** To study the cases of OSCC reported at our institution, with emphasis on the clinicopathologic variables in young adults. **SETTINGS AND DESIGN:** This was a retrospective study of OSCC cases reported from 2002 to 2007. **MATERIALS AND METHODS:** Data of oral cancer cases reported between 2002 and 2007 were retrieved from the records. The cases in patients below 40 years of age formed a separate study group. The data obtained was tabulated and comparisons drawn on the observed variables between the two groups. **RESULTS:** Results showed a high incidence of OSCC among young adults. The demographic and anatomic location of these cases showed significant variations from cases of oral cancer in older patients. In addition, a significant number of these cases failed to show any relation with the commonly implicated etiologic agents of oral cancer. **CONCLUSION:** The findings of our study indicate a high incidence of oral cancer among young adults in our region. The tongue is the most common site in these cases with a significant number showing no possible etiological factors.

**Key words:** Histopathology, oral squamous cell carcinoma, tongue cancer

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## Introduction

Oral squamous cell carcinoma (OSCC) is a major health problem across the world. It is among the most common cancers seen in both Indian men and women as can be gauged from the records of the National Cancer Registry Programme.<sup>[1]</sup>

Traditionally, oral cancer is a disease mainly affecting the older age group. This has generally been attributed to indiscriminate substance abuse, particularly the use of tobacco and related products, over a considerable period of time.

Recent studies have however shown an increasing incidence of oral cancer among young adults.<sup>[2,3]</sup> The reasons for this are largely uncertain and the explanations offered are mostly speculative. The present study therefore intended to study the cases of OSCC reported at our department with emphasis on the clinicopathologic variables of oral cancer in young adults.

## Materials and Methods

Clinical and histopathological data of OSCC cases

reported between 2002 and 2007 were retrieved from the files of our department. The cases were grouped by age, with cases in patients below 40 years of age forming a separate study group. The age, sex, site, clinical presentation and histological characteristics of these cases were tabulated and analyzed. The histories of the patients in the study group were studied in detail for the presence of any deleterious oral habits or any other predisposing factors.

The data obtained was tabulated and comparisons drawn on the various observed variables between the two groups: older patients (40 years of age or older) and younger patients (under 40 years of age).

## Results

The data obtained showed that the overall incidence of OSCC increased from 63 cases in 2002, to 119 cases in 2007 [Table 1]. Comparisons showed that from 17% of the total number of biopsied cases in 2002, the number of cases had increased to 25% in 2007.

A total of 606 cases of oral cancer were reported during the study period. Of these, 44 cases were

those in younger patients under 40 years of age. The year-wise break-up showed that from a steady number of 6 cases each year during 2002, 2003 and 2004, the number increased to 10 cases in 2005, and 8 cases each year in 2006 and 2007 [Table 1]. The mean incidence of OSCC in young patients during this period is 7.5%, which is very high compared to previous literature.<sup>[2,3,4]</sup>

The cases of oral cancer in young patients were mostly seen in the fourth decade of life. The disease did not show any sex predilection in the older age group. However, oral cancer in young adults showed a 3.5 times higher incidence in males [Table 2]. No major difference in the mean age could be observed between the sexes.

The most common site for oral cancer in the older age group was the buccal mucosa (37%), followed by tongue (21%) and gingiva (20%). In the younger age group, OSCC was most commonly seen on the tongue (47%), followed by buccal mucosa (22%), gingiva (14%) and floor of mouth (11%) [Table 3].

The probable etiologic agents associated with oral cancer were investigated in cases below 40 years of age. Tobacco use in either smoking or chewing form was present in 29 of the 44 cases. The mean duration of the habit in these cases was 10.2 years at an average frequency of 3 to 5 times per day. Significantly, no history of tobacco or alcohol use could be established in 15 of the cases. The etiology in these cases is therefore uncertain.

Moderately differentiated OSCC was the most common histologic type in both the older and younger age groups. In the older age group, it formed 63% of the cases while in young adults it accounted for 67% of the cases. Well-differentiated OSCC formed 23% and 20% of the cases in the older and young age groups respectively. Poorly differentiated OSCC accounted for the remaining cases, i.e., 14% and 13% respectively.

Overall, our results showed a high incidence of oral cancer in young adults. The demographic and site-wise distribution of these cases showed significant variations from those in OSCC of older patients. In addition, a significant number of these cases failed to show any relation with the commonly implicated agents for oral cancer.

### Discussion

OSCC as a disease has generally been associated with old age. However, the increased incidence of oral cancer among young adults was first highlighted by oral

and maxillofacial as well as head and neck healthcare professionals in the late 1970's. Later, the fact that head and neck cancer, particularly tongue cancer, was escalating in young adults in North America and internationally, began to be recognized from retrospective studies performed in the late 1980's.<sup>[5,6]</sup> In the United States, studies performed during a 20 year period beginning in the 1960's revealed that there was a near four-fold increase of oral cancer in males ages 30-39 in the State of Connecticut.<sup>[3]</sup> Similarly, studies by Ribeiro *et al*<sup>[7]</sup> and Iamaroon *et al*,<sup>[8]</sup> also suggest high incidence of oral cancer in young adults

This work was intended to study the demographic, clinical and histologic characteristics of oral cancer cases among young adults, reported at our institution. The results showed that the overall incidence of oral cancer has been increasing over the last six years. This is in contradiction to reports from the West, where a decreasing or steady trend for OSCC has been observed.<sup>[3]</sup> This points to the extent of the problem in our region and can be largely attributed to the rampant use of tobacco and related products prevalent here.

The reported incidence of oral cancer among young adults varies from 0.4-5.5%.<sup>[2,5]</sup> Our study showed an average incidence rate of 7.5% during the last six years. This suggests a very high rate of oral cancer in this region, which should be a cause for concern. A study

**Table 1: Total OSCC cases from 2002 to 2007 (Total number of cases: 606)**

Year	2002	2003	2004	2005	2006	2007
Total cases of OSCC	63	87	94	131	112	119
OSCC cases in younger age group	6	6	6	10	8	8

OSCC: Oral squamous cell carcinoma

**Table 2: Sex distribution of the oral squamous cell carcinoma cases in older patients (age 40 and above) and younger patients (below age 40)**

Gender	Males%	Females%
Older age group	54	46
Younger age group	78	22

**Table 3: Anatomic location of oral squamous cell carcinoma cases in the two groups**

Site	Buccal mucosa%	Tongue %	Gingiva %	Floor of mouth%	Others %
Older age group	37	21	20	7	15
Younger age group	22	47	14	11	6

at Regional Cancer Centre, Thiruvananthapuram during 2001 put the incidence of OSCC among patients below 35 years at 2.8%.<sup>[2]</sup> We observed a much higher incidence than this, but the difference in the patients' age-groups between the two studies has to be taken into account.

Demographic comparisons show that while oral cancer in older persons showed an almost equal sex distribution, in young adults there tended to be a marked male predilection. Previous reports also suggest a similar male predominance for oral cancer in young adults.<sup>[2,3]</sup>

Clinically, the most common site for OSCC in young adults was seen to be the tongue, accounting for 47% of the cases, followed by the buccal mucosa (23%). This finding is in agreement with the previous literature on the subject.<sup>[2-4,9]</sup>

The etiology of oral cancer in young is still poorly understood. Studies by Iype *et al.*<sup>[2,9]</sup> and Schantz *et al.*<sup>[3]</sup> showed that a significant percentage of cases of OSCC in young adults were non-habitues. Our findings also point to this trend with 34% of the cases not showing any tobacco/alcohol related habits. A look at the recognized and emerging risk factors for oral cancer is therefore important.

Tobacco is the major risk factor implicated in oral cancer with numerous studies pointing to its role in the carcinogenic mechanism. The risk is directly related to the duration, frequency and form of tobacco usage. A very significant problem in our country is the increasing use of smokeless tobacco and related products, as pointed out by Gupta *et al.*<sup>[10]</sup> Their study showed that male chewers of betel quid with tobacco in case-control studies in India had relative risks of oral cancer varying between 1.8-5.8. Oral submucous fibrosis was also seen to be increasing due to the use of processed areca nut products.<sup>[10]</sup> Alcohol consumption is also a recognized risk factor for oral cancer, particularly when combined with tobacco usage, where it has an additive effect. Rodriguez *et al.*<sup>[11]</sup> found that oral cancer was associated with alcohol drinking in never smokers, and with tobacco smoking in moderate drinkers. They also suggested that heavy consumption of both alcohol and tobacco produced almost 48-fold increased risk in young people. However, the role of tobacco and alcohol in OSCC of young adults needs further validation. Moreover, the fact that many of the young patients do not show these habits forces us to look for other possible risk factors in this age group.

Human Papilloma Virus (HPV) is one such emerging risk factor associated with oral cancer. Studies by Li

*et al* and Zhang *et al*, have suggested the role of HPV in oral cancer.<sup>[12,13]</sup> Mostly, the high-risk strains like HPV 16/18 are implicated with high malignant potential,<sup>[14]</sup> and their role needs to be understood better before conclusive assumptions can be made. Similarly, unlike certain other malignancies, the role of hereditary factors in oral cancer of young is debatable. The low incidence of family history of cancer in the study by Chitapanarux I *et al* also points to this effect.<sup>[15]</sup> The possible influence of lifestyle and dietary factors on oral cancer risk is also an area of interest. The study of dietary factors by Rodriguez T *et al*, showed that green vegetables, fresh fruits and  $\beta$ -carotene had a favorable effect on upper digestive tract cancers. The estimated population attributable risks in their study group were 52% for low vegetable, 12% for low fruit, and 26% for low  $\beta$ -carotene intake.<sup>[11]</sup>

The role of all these known and emerging risk factors for OSCC in young has to be further established. It is however highly unlikely that only a single cause can be implicated and most cases in the young probably involve a combination of two or more of these factors.

The histopathologic analysis of the cases showed that majority of the cases had a moderately differentiated phenotype in both the older and young age groups. This suggests that histologically, OSCC in young adults is not very different from that in older patients. Some authors have suggested that cancer in young adults tends to be more frequently anaplastic resulting in a more aggressive behavior and poor prognosis.<sup>[16]</sup> Garavello *et al*, found that tongue cancer in young patients was associated with significantly higher rates of recurrence and poorer survival rates.<sup>[17]</sup> However, findings of Iype *et al* suggest that survival among young patients is almost similar to that in older patients and prognosis was more related to the TNM stage of the disease at diagnosis rather than the histologic grade.<sup>[2]</sup>

## Summary and Conclusion

The findings of our study indicate a high incidence of OSCC among young adults in our region. Tongue is the most common site in these cases with a significant number showing no possible etiological factors. Speculations abound regarding the possible etiology in these cases and this should be the area for further studies.

The problem of OSCC is very rampant in our country. The true extent of this can only be a matter of speculation as most studies on the subject are on a smaller scale and usually institution-based. Larger studies, both institution and community-based, will

help to understand the true spectrum and nature of this disease and probably help devise effective strategies at controlling it.

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