



OCCURRENCE OF ORAL SQUAMOUS CELL CARCINOMA IN YOUNG ADULTS: A STUDY OF TOTAL 395 CASES

Oncology

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ABSTRACT

Background & Aims: Cancer of the oral region is a major health problem in India and across the world. It is a lifestyle related cancer mainly associated with use of tobacco, alcohol, betel nut, poor oral hygiene etc. Incidence of oral squamous cell carcinoma is increasing in individuals less than 40 years so early screening and diagnosis of premalignant and malignant lesions is important to improve patient outcome. Histopathological examination of the biopsies remains the gold standard for diagnosis. This study aims to evaluate and analyze the risk factors and outcomes of oral squamous cell carcinoma in patients less than 40 years of age in our center. **Materials & Methods:** This was a retrospective study carried out over a period of two and a half years i.e., 2022 to 2024 in the Department of Pathology at Shree M.P. Shah Medical College, Jamnagar, Gujarat. A total of 395 cases of histopathologically diagnosed oral squamous cell carcinoma were studied with parameters such as sex, site involved, presence of risk factors (e.g., use of tobacco). These parameters of patients aged ≤ 40 years were compared to patients aged ≥ 40 years. **Results:** Out of 395 cases of OSCC studied, 98 (24.8%) young patients ≤ 40 years were reported and most of them were males. The Male: Female ratio was found to be 3:1. Tobacco chewing is the most common risk factor for both the age groups. **Conclusion:** Oral squamous cell carcinoma are increasing in numbers in young adults and highly prevalent in males. It is associated with lifestyle related factors such as tobacco use, smoking etc.

KEYWORDS

oral squamous cell carcinoma, young adults, tobacco chewing, prevalence

INTRODUCTION:

Oral cancer is the sixth most common type of cancer across the world with India contributing to almost one-third of the total burden of cases.[1] Globally over 300,000 new cases of oral cancer are diagnosed annually, with particularly high incidence rates in Asia.[2] It ranks among the top three types of cancer in the country.[3] India has the most number of oral cancer cases than any other nation worldwide and recently came to be known as "The Oral Cancer Capital of the World".[4]

The oral cavity is at continuous exposure to both inhaled and consumed carcinogens. Therefore, it is one of the most common sites for origin of malignant neoplasms.[5] The most common malignancy of oral region is squamous cell carcinoma which is typically preceded by a premalignant oral epithelial lesion. The most widely accepted marker to assess the risk of a premalignant lesion eventually undergoing malignant transformation is the presence and grade of dysplasia in the lesion.[6]

Oral squamous cell carcinoma usually occurs during the sixth and seventh decades of life.[7] The use of tobacco and alcohol are strongly associated with the occurrence of this malignancy.[8] Unfortunately, despite progress in treatment protocols the prognosis still remains poor. Furthermore, now a days several reports have described an increased incidence of oral squamous cell carcinoma in young people majority of them affecting tongue.[9]

Aims & Objectives:

- To study occurrence of oral squamous cell carcinoma in young adults ≤ 40 years of age.
- To analyze the risk factors and outcomes of oral squamous cell carcinoma in those patients and compare it with patients aged ≥ 40 years.

MATERIALS & METHODS:

This study was carried out in the Department of pathology at Shree M.P. Shah Medical College and Guru Govind Singh General Hospital, Jamnagar. It was a retrospective study from 2022 to 2024 (2.5 years). The data was manually retrieved yearwise from the records maintained in the department of pathology and compiled in an Excel sheet and analyzed for parameters such as age, sex, site of lesion, presence of tobacco exposure and histopathological diagnosis.

Inclusion Criteria: All cases of oral biopsies that were histopathologically confirmed as squamous cell carcinoma were included in the study.

Exclusion Criteria: All cases of Premalignant, Inflammatory, Non-

neoplastic lesions such as developmental cysts and neoplastic lesions of benign nature, soft tissue tumors, epithelial tumors originating from sites other than the squamous epithelial lining (for eg: tumors of minor salivary glands) were excluded from the study.

RESULTS:

A total of 395 cases of oral squamous cell carcinoma were noted in this institute during the study period of 2022 – 2024. Out of 395 patients with OSCC diagnosed at our institute in 2022 – 2024, 98 patients (24.8%) were ≤ 40 years and another 297 patients (75.2%) were ≥ 40 years. A year-wise breakdown showed that OSCC numbers had increased (Table 1). The data showed that the overall incidence of OSCC increased from 2022 to 2024. This study showed an average rate of occurrence of OSCC in young patients of 24.8% during the past 2.5 years.

Table 2 shows a significant difference in gender between these two study groups. In both young and old patients, the percentages of males (65% and 69%, respectively) were higher than those of females (35% and 31%, respectively). Average male to female ratio is 3:1 in both the age groups. Cases of oral cancer in young patients were mostly seen in the 4th decade of life. The youngest patient was a 25-year-old male, with tobacco chewing habits.

Table 1: year wise distribution

Year	Total no. Of OSCC patients	Young Patients (≤ 40 years)	Old Patients (≥ 40 years)
2022	140	31	109
2023	159	45	114
2024(6 months)	96	22	74
	395	98	297

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Table 2: Age wise distribution

	Young Patients (≤ 40 years)	Old Patients (≥ 40 years)
Males	65 (65%)	205 (69%)
Females	33 (35%)	92 (31%)

Table 3: site wise distribution

	Young Patients (≤ 40 years)	Old Patients (≥ 40 years)
Lip	06	14

Gingivo buccal sulcus	07	33
Tongue	37	97
Buccal mucosa	35	138
Soft & hard palate	08	11
Retro-molar trigone	01	04
	98	297

There was a significant difference in the sites of occurrence in the young and old populations. Table 3 shows that the tongue and buccal mucosa were the most frequently affected site in the young group, whereas in the old group, lesions were observed in the buccal mucous followed by tongue and gingivo buccal sulcus. This difference may have been due to younger patients often using commercially available pan-tobacco products which have a generalized effect on the oral mucosa.

The commonly identifiable etiological factors for OSCC were the use of pan-tobacco chewing and smoking. Tobacco products are major risk factors implicated in oral cancer with numerous studies pointing to their role in the carcinogenic mechanism. The risk is directly related to the duration, frequency, and form of tobacco/pan-tobacco usage. In this study, we found that approximately 90% of young patients with OSCC had used tobacco/pan-tobacco products, among which 51% were only pan-tobacco chewers, 14% of them were tobacco smokers, and the remaining 25% of OSCC patients had a combination of habits. The percentage of pan-tobacco chewers with a lesion was much higher in young patients (51%) than old patients (40%)

Table 4: Risk factor distribution		
Tobacco consumption	Young Patients (≤ 40 years)	Old Patients (≥ 40 years)
Smoking	14%	25%
Chewing	51%	40%
Smoking + Chewing	25%	17%
No history	10%	18%

DISCUSSION:

The incidence of oral cancer shows considerable geographic variation.[10] The incidence of oral cancer at any age is comparatively low in Western countries at 2–6% of all malignancies; in the Indian subcontinent, the rate is as high as 30–40%.[11] In 1999, Gupta[12] suggested that oral cancer may now be considered a “new epidemic” as the incidence rates are reaching high proportions, possibly due to the availability of manufactured areca products. This rising incidence is also reflected in the population under 40 years of age who, it is estimated, make up 16–28% of all oral cancer patients seen at various institutions in India.[13] This shows an alarming rise in the incidence rate in younger people.

We retrospectively analyzed the patients of OSCC to find occurrence of OSCC in young adults. In this study, patients with OSCC who were ≤40 years represented 98(24.8%) of the total number of 395 OSCC patients who were diagnosed in 2022–2024. The proportion of younger patients in the present study was larger primarily because of early and habitual exposure to tobacco chewing. Perhaps, early beginning of the habits in younger individuals indicates greater susceptibility. It was reported that oral cancer is increasing in India due to young people chewing pan masala products often containing tobacco, which is responsible for the carcinogenicity.[11]

Tobacco is considered the most potent risk factor for oral cancer. A recent International Agency for Research on Cancer evaluation affirmed that chewing betel quid without tobacco is also carcinogenic to humans, and the areca nut, a common component of many chewing habits, is carcinogenic to humans. Use of new products, blends such as pan masala and gutkha, is increasing not only among men but also among children, teenagers, and women.[14] There are at least 50 different brands in the Indian market.[15] All forms of tobacco use are associated with oral cancer. However, maximum risk was found among smokeless tobacco users, and it was reported that smokeless tobacco has a higher risk factor than smoking tobacco. It was interesting to note that among patients who consumed smokeless tobacco, the risk was strongly determined by gutkha followed by tobacco flake consumption. This is probably due to the combined effect of the ingredients present in them. The risks attached to the use of many of these products are very high, because most of the ingredients are extracts and concentrates. In the last few decades, small, attractive, inexpensive sachets of betel quid substitutes have become widely available. Aggressively advertised and marketed, and often claiming

to be safer products, they are consumed by the very young and old alike, particularly in India.[16] Smokeless tobacco/pan-tobacco chewing has a stronger effect than smoking types because of the direct contact of tobacco carcinogens with the oral epithelium as the chewing tobacco products are chewed or kept in the mouth. The smokeless form of tobacco emerged as a strong independent risk factor for oral cancer.[14]

In spite of the demonstration by some studies that the same etiological factors are present in both age ranges, the possibility of the existence of carcinogenic actions of tobacco and alcohol in young patient is low, given that in this group, exposure times are relatively short for the establishment of a cause-effect relation. Genetic predisposition, previous viral infection, feeding habits, a state of immunodeficiency, occupational exposure to carcinogenic factors, socioeconomic conditions, and oral hygiene are factors which should be investigated in order to explain SCC etiology in young patients.[17] Since this was a retrospective study, limited information regarding the above factors were available in the records for inclusion in the analysis. In the present study, most of young OSCC patients habitually engaged in risky behaviors, so we consider exposure at a very young age and the use of tobacco chewing products as the foremost causes of OSCC in this region.

In this study, the male/female ratio was 3:1 for young patients. Some previous studies suggested that there is a slight predominance of females in younger groups but most have reported a similar higher number of males.[18] Analysis by site showed that the tongue was the most frequently affected in the young group. However, 50% of oral cancers (regardless of age) in India occur in the buccal mucosa, in contrast to <5% in many Western countries, which points to a salient effect of chewing tobacco.[19] Regional variations in the development of head and neck cancers may be strongly related to habitual and cultural risk factors, which are prevalent in these areas.[20]

CONCLUSION:

Incidence of Oral squamous cell carcinoma is increasing in younger population. Increased habit of chewing commercial preparations of tobacco & smoking are the commonly associated risk factors. This is inspite of the awareness being created about the harmful effects of tobacco consumption by the government on various platforms such as social-media, launching tobacco control programme, ban on tobacco chewing and smoking in public places. As an conventional Oral squamous cell carcinoma prevention, early detection and timely intervention might reduce the disease burden in early age onset oral cancer too. Creating proper awareness in the general population regarding the risk factors is the key to prevention of Oral squamous cell carcinoma in majority of young adults.

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