

# Cancers of upper gingivobuccal sulcus, hard palate and maxilla: A tertiary care centre study in North India

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## ABSTRACT

**Introduction:** Oral cancer is the sixth most common malignancy in the world, and the third most common in southeast Asia. Cancers of the upper gingivo-buccal complex are uncommon and reported infrequently. In this article, we have assessed the clinicopathological features of such cancers and their optimal management. **Materials and Methods:** We studied 64 patients with cancer of the upper gingivobuccal sulcus (GBS), hard palate, and maxilla seen between February 2009 and 2013 over a span of 4 years. **Results:** Of the 64 patients studied, 45 were male. The mean age at presentation was 50.59 years (24-80 years). Of the 64, 48 patients (75%) had a history of substance abuse in the form of tobacco chewing, smoking or alcohol. On presentation, 48 of the 64 patients (75%) had T4 disease, eight had T3, six had T2 lesion, one had T1 lesion, and 1 patient had a neck recurrence with distant metastatic disease (Tx). Out of the 64 patients, 31 had clinically palpable neck disease and two patients had distant metastatic disease. Of the 64 patients, 58 had squamous cell carcinoma, two had adenoid cystic carcinoma of the hard palate and one patient each had melanoma, sarcoma, neuroendocrine tumor, and mucoepidermoid carcinoma. Following imaging, 18 patients (28.13%) underwent upfront surgery and six following neoadjuvant chemotherapy. 14 of the 24 patients operated had simultaneous neck dissection. 2 patients with distant metastasis and 1 with cavernous sinus thrombosis received palliative chemotherapy. Out of the 64 patients, the other 24 who were inoperable were referred to radiotherapy. **Conclusion:** Upper GBS, hard palate and maxilla cancers are uncommon and are diagnosed at an advanced stage due to delay in presentation and ignorance of our population. Surgery offers the best form of treatment. NACT may be tried to downstage the disease in selected patients with borderline operable disease. However, generous margins should be taken post chemotherapy with concomitant neck dissection. Adjuvant radiotherapy is recommended in selected patients after surgery.

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## INTRODUCTION

Oral cancer is the sixth most common malignancy in the

world and the third most common in southeast Asia. In India, Bhopal has the highest age adjusted incidence rates of 9.6 of 100,000 males for oral cancer.<sup>[1]</sup> The prevalence varies with ethnicity, geographic distribution, and socio-economic differences. The disproportionately higher prevalence of head and neck neoplasm in India may be due to the use of tobacco in various forms, alcohol abuse, poor oral hygiene, deficient diet or viral infections like human papilloma virus (HPV).<sup>[2,3]</sup> The incidence is two to three times more frequent in men than women owing to increased tobacco and alcohol abuse.

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Cancers of the upper gingivo–buccal complex include cancers of upper gingiva, comprising upper alveolar ridge mucosa (International Classification of Diseases (ICD-10; C03.0)); the upper gingivo–buccal sulcus (GBS - ICD-10; C06.1) and the upper part of the buccal mucosa (ICD-10; C06.0).<sup>[4]</sup> Much research has been published about various sub sites of oral cancer, with a little mention of tumors of upper alveolar ridge and hard palate because of lower incidence rate of these tumors. In one study, upper gingival cancers accounted for just 3.5% of all oral cancers.<sup>[5]</sup> Upper GBS cancers are more aggressive than lower GBS cancers, which have a better prognosis even in advanced stages.<sup>[6]</sup>

Oral cavity cancers require multimodality therapy. Several prognostic factors may influence the survival of patients with oral cancers including race, time of diagnosis, gender, age at diagnosis, anatomic site, morphologic type, stage, and type of therapy.<sup>[7-11]</sup>

Cancers of the upper alveolus, hard palate and maxilla have been infrequently studied with few publications. We have analyzed the records of patients with oral cavity cancers over a period of 4 years and reported the epidemiology, presentation and management of cancers of upper alveolar ridge, hard palate, and maxilla.

## MATERIALS AND METHODS

We conducted a retrospective study of patients with cancer of the upper GBS and hard palate admitted in our department over a period of 4 years from February 2009 to 2013. We studied 64 patients of which 33 patients had cancer of upper GBS, 16 had cancer of maxilla, and 15 had cancer of hard palate. All patients with biopsy proven malignancy of upper GBS, hard palate, and maxilla were included. Detailed history and examination was carried out on all patients. Selected patients had a contrast enhanced computerized tomography (CECT) scan. Based on the clinical and radiological findings, patients were staged and underwent surgery (primary or following neoadjuvant chemotherapy (NACT)), chemotherapy (neoadjuvant or palliative) and radiotherapy (adjuvant or definitive) as per institution protocol.

## RESULTS

Sixty four patients were included in the study. 45 patients were male with male: Female ratio of 2.36:1. The mean age at presentation was 50.59 years with a range between 24 and 80 years. Out of 64 patients, 54 presented with an ulcer in the oral cavity as a chief complaint. The remaining had a swelling in the region of maxilla. Out of

**Table 1: Clinical characteristics**

Parameters	Subgroups	Number of patients (%)
Age	Mean (range)	50.59 (24-80)
	≤50 years	33 (39.6)
	>50 years	31 (60.93)
Sex	Male	45 (70.31)
	Female	19 (29.68)
Substance abuse	Total	48 (75)
	Smokeless tobacco	33 (68.75)
	Smoking	19 (39.58)
	Alcohol	6 (12.5)
Delay in presentation	Pan masala	30 (62.5)
	Range	15 days-48 months
	Mean	6.7 months
Primary site	Upper GBS	33 (51.56)
	Maxilla	16 (25)
	Hard palate	15 (23.43)
T Stage	T4	48 (75)
	T3	08 (12.5)
	T2	06 (9.37)
	T1	01 (1.56)
	Tx	01 (1.56)
	N Stage	N0
	N1	31 (48.43)

GBS: Gingivobuccal sulcus

the 64, 48 (75%) had a history of substance abuse in the form of tobacco chewing, smoking or alcohol [Table 1].

At presentation, 48 of the 64 patients (75%) had T4 disease, eight had T3, six had T2 and one had T1 lesions. Thirty one of the 64 patients had clinically palpable neck disease. Two patients had metastatic disease and one had carcinoma of hard palate with cavernous sinus thrombosis. One of the patients with metastatic disease had undergone maxillectomy for cancer of upper GBS elsewhere and had presented to us with neck recurrence and liver metastasis. The other patient had cancer of the maxilla with brain metastasis. Preoperative biopsy revealed squamous cell carcinoma (SCC) in 58 patients, melanoma in one, sarcoma in one, mucoepidermoid carcinoma in one, adenoid cystic carcinoma in two and neuroendocrine tumor in one patient. CECT scan was carried out in 59 of the 64 patients. Following imaging, 18 patients (28.13%) underwent upfront surgery. Twenty three patients (35.94%) were inoperable on CT scan and received induction chemotherapy. Of them, eight patients defaulted and the remaining were referred for radiotherapy. Twenty one patients (32.81%) were borderline operable on CT scan and received NACT. Eight of the 21 patients who received NACT (38.09%) had good response and were advised surgery. Two patients refused surgery and were referred to radiotherapy while the remaining six were operated upon. Five of the 21 patients defaulted and 6 of the 21 who did not show a significant response to NACT were referred to radiotherapy. Two patients are currently receiving NACT. In all, 13 patients defaulted (20.31%). Of 24 patients who underwent surgery, 14 underwent simultaneous neck dissection. Partial maxillectomy was carried out in

13 patients, total maxillectomy in four patients, upper alveolectomy in six patients and wide local excision of the lesion in one patient with T1 lesion. Four patients underwent reconstruction. In the final histopathological examination, one of the six patients who were operated post NACT had complete pathological response. Eight out of the 14 who underwent neck dissection had positive neck disease. All patients except the one with T1 lesion received adjuvant radiotherapy. The two patients with metastatic disease and patient with cavernous sinus thrombosis received palliative chemotherapy. The patient with brain metastases also received palliative radiotherapy. The 2 patients who had clinically impalpable neck disease did not undergo concomitant neck dissection, and because of it developed neck recurrence within 2 months of surgery and underwent neck dissection [Table 2].

## DISCUSSION

Tumor of upper alveolar ridge and hard palate is not very common with upper gingival cancers constituting nearly 3.5% of all oral malignancies.<sup>[5]</sup> Shenoi *et al.*<sup>[12]</sup> demonstrated that oral cancers are more common in males with a male female ratio of 4.1:1. However, in our study, 45 of the 64 (70.3%) patients were male with a sex ratio of 2.36:1 reflecting a high incidence of oral cancers in females also owing to the practice of tobacco and pan masala use.

Age of presentation varied from 24 to 80 years with a mean age of 50.59 years. In the West, the mean age of diagnosis of oral cancer is in the seventh decade. Many

epidemiological studies from India have observed that the peak-age frequency of oral cancer in India is a decade earlier than that described in the western literature. This may be attributed to the high prevalence of tobacco abuse in young male and female in our country and the ease of availability of such products. Tobacco abuse was seen to be associated in 47 of the 64 (73.43%) patients of our study which is in accordance with a study by Johnson.<sup>[3,13]</sup>

Most common presenting symptom in our study was non-healing oral ulcer (54 out of 64). This was in contrast to a similar article from the west where most of the patients presented with pain.<sup>[14]</sup> Four patients had pain and a small ulcer for more than 8 months, but presentation was delayed till the patients developed non healing ulceration. This may reflect the ignorance to health related issues in our population. The average delay in the presentation was around 6.7 months (ranging from 15 days to 48 months). This finding is similar to other studies which stressed on the fact that patients with oral cancer have delayed presentation which makes the treatment difficult and sometimes unsuccessful.<sup>[15,16]</sup> In our study, 75% of the patients had T4 disease, reflecting late presentation with advanced disease.

The tumors of the upper GBS, hard palate and maxilla may have varied histology. In our study, 58 patients had SCC, two had adenoid cystic carcinoma and only one patient each had melanoma and mucoepidermoid carcinoma. One patient each had sarcoma and neuroendocrine tumor of the maxillary region. Melanoma of oral mucosa is a rare tumor, but when it does occur, the most common locations are the palate and maxillary gingiva.<sup>[17]</sup>

Majority of patients underwent CECT scan which formed the basis of treatment planning. 18 patients underwent upfront surgery as they were resectable on imaging and 23 of the 64 patients had inoperable disease and were given induction chemotherapy. NACT is not an established modality of treatment in oral cancers, but may be tried in selected subset of patients with borderline operable disease. In our study, 21 patients received NACT of whom 8 (38.09%) had good response.

Thirteen of our 64 patients defaulted (20.13%) reflecting lack of awareness of our population towards health.

Of the six patients operated post-NACT, two had close margins and one patient had a positive margin. Of the 14 who underwent neck dissection, eight had positive neck disease stressing the importance of concomitant neck dissection.<sup>[18]</sup> The final histopathology revealed malignant melanoma, leiomyosarcoma and adenoid cystic carcinoma in one patient each. All SCC patients

**Table 2: Pathology and treatment characteristics**

Parameter	Subgroups	Number	Total
NACT	Surgery	06	21
	Radiotherapy	08	
	Currently receiving NACT	02	
	Lost to follow-up	05	
Induction chemotherapy	Radiotherapy	15	23
	Lost to follow-up	08	
Surgery	Upfront	18	24
	Post NACT	06	
Surgical procedure	Total maxillectomy	04	24
	Partial maxillectomy	13	
	Upper alveolectomy	06	
	Wide local excision	01	
	Neck dissection	14	
Final histopathology	Squamous cell carcinoma	20	24
	Adenoid cystic carcinoma	01	
	Melanoma	01	
	Leiomyosarcoma	01	
	Complete pathological response	01	
Margins	Negative	21	24
	Involved	01	
	Close	02	
N stage	NO	06	14
	N1	08	

NACT: Neoadjuvant chemotherapy

after surgery, received adjuvant radiotherapy, the role of which has been demonstrated in several studies.<sup>[19]</sup> Two patients who underwent only primary tumor excision without neck dissection developed a neck recurrence in the following 2 months and underwent neck dissection. This further emphasizes the importance of simultaneous neck dissection.

Of the 24 operated patients, 23 are on regular follow-up. One patient developed local recurrence and died of the disease. This patient had received NACT followed by surgery including neck dissection. The final pathology revealed T4N2 disease with involved margin. The patient further received adjuvant radiotherapy.

## CONCLUSION

Upper GBS, hard palate and maxilla cancers are uncommon and are diagnosed at an advanced stage due to delay in presentation and ignorance of our population. They also present at an earlier age in our population due to consumption of smokeless tobacco and pan masala. Owing to rarity of the site of the disease, there are only a few case reports and case series discussing the management of these tumors. Most cancers are locally advanced, but surgery offers the best form of treatment. The role of NACT is not clear, but may be tried to downstage the disease in selected patients with borderline operable disease. However, generous margins should be taken post chemotherapy with concomitant neck dissection. Adjuvant radiotherapy is recommended in selected patients after surgery. Furthermore, patient counseling should be an integral part of treatment to ensure patient compliance and reduce loss to follow-up.

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