

Comparative Study of Disease Progression in Anterior Central Compartment Oral SCC vs. Oral SCC of Other Compartments in Tobacco Consumers

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Abstract: Oral cancer not only accounts for significant mortality, but it is also responsible for extensive disfigurement, loss of function, behavioral changes, and financial and sociologic hardship. The prevalence of oral cancers is high in Asian countries, especially in South and Southeast Asia. Asian distinct cultural practices such as betel-quid chewing, and varying patterns of tobacco use, mostly khaini and alcohol use is important risk factors that predispose to cancer of the oral cavity. Tobacco use by the least educated is in a large measure practiced in ignorance of the health consequences, with a belief in medicinal properties of tobacco e. g., for cleaning teeth, relieving toothache, preventing constipation, and relieving gastric complaints like gas and stomach acidity, and with a desire for a low-cost source of pleasure and satisfaction. Tobacco users, because of their nicotine addiction, prefer spending a disproportionate amount of their often-meager income on tobacco products, often curtailing essential expenditures for food, health care, and education for the family. Very few studies described OSCC of anterior central compartment and its association with the type of oral lesion on clinical presentation, association with khaini user and its management (i. e. surgery followed by reconstruction), and the challenges associated with it.

Keywords: anterior central compartment, tobacco, khaini, head and neck carcinoma, surgical management

1. Introduction

Cancer ranks as a leading cause of death and an important barrier to increasing life expectancy in every country of the world (1). In India among males, of all ages most common cancer is of lip and oral cavity as per Globocan 2020 (2). Oral cancer is more common in the countries of the Pacific and South Asia than in Europe and North America (3). The majorities (95%) of oral cancers that are diagnosed today in the world are oral squamous cell carcinoma (OSCC) (4). Smoking, tobacco chewing (khaini, zarda, gutkha, pan masala), and high alcohol consumption are all major risk factors for OSCC (5-9). Chewing of Areca nut has been strongly linked to OSCC in countries where this habit is common (5, 8). Khaini, a mixture of tobacco, lime, and menthol or aromatic spices and contains the highest levels of TSNA (tobacco specific nitrosamines) (10). In the present study, the habit history of tobacco products has been divided into khaini and non-khaini products, to see the association of anterior central compartment OSCC with the khaini user.

In the present study oral cavity was divided into anterior central, remaining other sites. The lymphatic drainage pathways and various reconstructive procedures are site specific in the oral cavity (11). The outcomes and even the survival does vary with different anatomic subsites of OSCC (12-14). The factors that influence the choice of a particular surgical approach for primary tumors of the oral cavity are the size of the primary tumor, its depth of infiltration, the site of the primary tumor (that is the anterior compartment vs. other compartments of the oral cavity), and the proximity

of the tumor to the mandible (15). Fibula free flap reconstruction is currently the choice of reconstruction for defects following segmental mandibulectomy in any part of the mandible. The fibula provides the maximum length to achieve a satisfactory reconstruction of the lower jaw (16).

Very few studies are available in India based on the oral SCC of the mandibular central arch and its association with smokeless tobacco products. There are very few studies available in India, explaining surgical management of oral SCC of the anterior central compartment, which varies from surgical management of the other compartments.

2. Materials & Methods

This prospective observational study was done to compare the natural history and progression of anterior central compartment oral squamous cell carcinoma vs oral squamous cell carcinoma of other compartments, to evaluate the correlation of khaini and non-khaini tobacco products with oral SCC of anterior central compartment and to study the financial burden of treatment on patients with anterior central compartment oral SCC. The present study included all patients diagnosed with SCC of the oral cavity and having some form of tobacco use as a habit history presenting our hospital and who underwent surgery as per the institutional protocol during the period of 1st January 2018 to 30th September 2021. A total of 100 patients were divided into two groups (group A and B) based on location of primary disease, group A included 33 patients with anterior compartment disease and group B included 77

patients with disease at other location of oral cavity. Comparison between two groups was done.

3. Results

Mean age in group A was 57.65 while in group B was 52.71 years. Group A had 20 males and 3 females, group B had 61 males and 16 females. Group A had 17 out of 23 patients with history of Khaini use while group B had 29 patients out of 77 with history of khaini use. In group A, 10 patients had ulceroinfiltrative (UIG) type and 13 patients had ulceroproliferative (UPG) type while group B had 42 patients with UIG type and 35 patients had UPG type. Mean duration of presentation in group A was 4.57 months while in group B was 3.92 months. Mean size of primary lesion in group A was 3.37cm while in group B was 3.51cm. Well differentiated squamous cell carcinoma (WDSCC) was the most common histological grade in both the groups.

Most common site involved in anterior central compartment in our study was gingivolabial sulcus. Most common site in group B and overall, was buccal mucosa (BM) i. e. lateral compartment. Reconstruction in group A was done with free fibula flap in 11 patients and with loco-regional flap in 12 patients, while in group B with free fibula in 10 patients, with local flap in 11 patients and with loco-regional flap in 56 patients. All the patients of group A underwent tracheostomy as elective procedure; while in group B, 19 out of 77 patients underwent elective tracheostomy. Patients belonging to group A had more post operative hospital stay with mean duration of 6.48 days as compared to patients of group B with mean duration of 3.88 days. In group A 14 out of 23 patients had post operative complications while in group B 13 out of 77 patients had post operative complications. Post operative complications were seen more in group A.

4. Discussion

Oral squamous cell cancer (SCC) ranks amongst top three most common cancers in India (17). Surgical resection is an essential component for the curative treatment for most patients (18). However, in India, most patients present in an advanced stage and require multimodality treatment in the form of radiotherapy and chemotherapy apart from surgery. Elderly males (age group of 55 to 60yr) were mainly associated with oral SCC of the anteriorcentral compartment. In India gutka and khaini are the most used smokeless form of tobacco products (19). The present study showed that khaini users had a strong association with anterior central compartment involvement compared to non-khaini users. Several studies have already established the cytotoxic and genotoxic effects of khaini on the oral mucosa (20, 21). The most common clinical pattern of OSCC in the anterior central compartment was UPG lesion and the most common grade was WDSCC. Patients with oral SCC of the anterior central compartment, on presentation despite being small sized malignant lesions, clinicoradiologically were found to be advanced stage i. e. progression of the stage was noted. Patients in group A presented late. The late presentation has been related to poor awareness, lack of dedicated oncology centers, and poor socio economic status (22). In contrast to the western world, the cancers of the

Gingivo-buccal complex (buccalmucosa, gingivobuccal sulcus both superior and inferior) of the oral cavity, are relatively more common than cancers of the tongue and the floor of the mouth in India (23). In the present study, the most common site involved in the oral cavity was buccal mucosa (BM) i. e. lateral compartment. Because of advanced disease patient underwent radical surgery with major reconstruction with either microvascular free flap or loco regional pedicled flap i. e. pectoralis myocutaneous flap with covering tracheostomy. A major surgical procedure in oral SCC of the anterior central compartment was associated with increased postoperative complications, and postoperative hospital stay as compared to oral SCC of other oral compartments. Recurrent admissions have been seen more in patients with oral SCC of the anterior central compartment compared to oral SCC of other oral compartments. Postoperative complications and recurrent admissions of oral SCC of the anterior central compartment increased the financial burden on the patient. GM de Melo et al, explained that the stage of disease of oral SCC, type of surgery (including the type of neck dissection), and type of reconstruction was strongly associated with postoperative complications (24). Chenn MM et al, explained early readmissions were associated with surgical complications, and lower socio economic status, and each readmission increases the financial burden on the patient and the patient's family. (25)

5. Conclusion

Malignancy of anterior compartment of oral cavity are difficult to treat than other sites. Anterior compartment disease requires prolonged hospital stay, more financial burden, more complication rates. These patients generally present at an later stage. Khaini as a form of tobacco intake is associated with more incidence of anterior compartment disease. Thus, anterior compartment cancers of oral cavity require special consideration at all levels of treatment i. e. from diagnosis to management

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