Role of Dental Public Health Personnel in Effective Diagnosis and Follow up in the Treatment and Prognosis of an Oral Cancer Patient

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Abstract

Oral cancer is of significant public health importance to India owing to its high prevalence. Early detection of oral cancer offers the best chance for long term survival and has the potential to improve treatment outcomes and make healthcare affordable. The objective of this paper is to report a case on similar difficulty faced in public health care scenario and to create awareness among services sector on focusing the incidence of disease in the country highlighting the significance of a community dentist's role in guidance of betterment of life an individual who was ignorant and asymptomatic. Hence an attempt to project this case report with two year follow-up and a quality of life.

Key Words: *Awareness, Diagnosis, Oral Cancer, Oral Public Health, Verrucous Carcinoma.*

Introduction

India is the second most densely populated country with 1,369 million residents. The Government of India has adopted several growth oriented policies witnessing an annual increase of 5.44% public health expenditure. Despite the efforts and achievements, the prevalence of oral diseases in India remains very higher when compared with other countries. Primary Health Centre is the first point contact for an individual towards health care system which serves as an active ground where the presence of a dentist is crucial for early diagnoses, prompt treatments and timely referrals. Around 75% of health infrastructure and resources are concentrated in urban areas where only 27% of the total Indian population resides while 73% of the country's population do not have easy reach to healthcare system. More than half of the community health centres are not functional and there is no dentist in 20% of the rural primary health care centres and one dentist for 2.5 lakh people in rural India [1]. There is an acute shortage of dental auxiliaries, appropriate polices, public and private partnerships leading to poorly equipped dental care setups resulting in lack of prioritization for oral healthcare services for the entire population [2-4].

Oral cancer is of significant public health importance to India owing to its high prevalence. Primarily, it is diagnosed at later stages which result in low treatment outcomes and considerable costs to the patients who typically cannot afford treatments [5]. Secondly, rural areas in middle- and low-income countries also have inadequate access to skilled care providers and limited health services. As a result, delay has also been largely associated with advanced stages of oral cancer. Early detection of oral cancer offers the best chance for long term survival and has the potential to improve treatment outcomes and make healthcare affordable. Oral cancer affects those from the lower socioeconomic strata of society due to a higher exposure to risk factors such as the use of tobacco.

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Although clinical diagnosis occurs via examination of the oral cavity, the majority of cases present to a healthcare sector at later stages of cancer subtypes, thereby reducing chances of survival due to delays in diagnosis [6]. Efforts to increase the frame of literature on the knowledge of the disease aetiology and regional distribution of risk factors have begun gaining momentum. Oral cancer will remain a major health problem until efforts towards early detection and prevention are taken which will reduce the burden [6, 7]. In light of this, the objective of this paper is to report a case on similar difficulty faced in public health care scenario and to create awareness among services sector on focusing the incidence of disease in the country highlighting the significance of a community dentist's role in guidance of betterment of life an individual who was ignorant and asymptomatic. Hence an attempt to project this case report with two year follow-up and a quality of life measure was made.

Case Report

About the case: A 62 year old male reported to the community urban health center of our institution with a chief complaint of a non-healing growth of tissue on the right upper back teeth region for a year following an injury that resulted after a stair case fall. He developed pain in the same zones triggered on touch and usage of denture which aggravated on mastication over the course of period. He had undergone an uneventful extraction and replacement in the same region before 4 years and gave a history of consuming hypoglycemic for 12 years.

On intraoral examination:

Following the recording of brief case history intraoral examinations were performed. On inspection an ovoid swelling on the right cheek area was observed extraorally which was tender on palpation (**FIGURE 1**). A solitary, firm, non-scrappable proliferous ulcerative growth measuring 3×2 centimetres was found on the alveolar mucosa of right maxillary vestibule having finger like corrugations which was pinkish with focal areas of white spots (Figure 1).

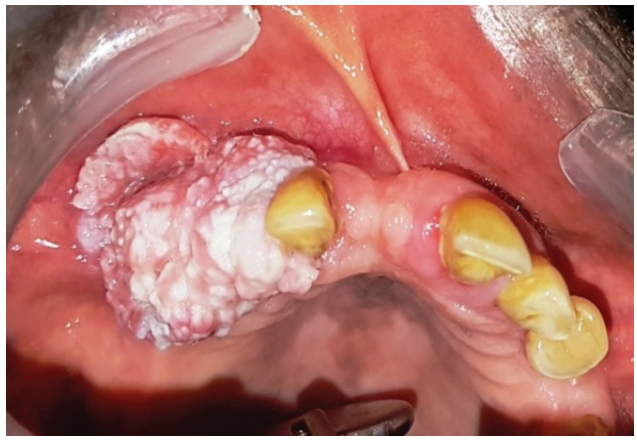


FIGURE: 1: Clinical Photograph showing the non-scrappable proliferous ulcerative growth measuring 3×2 centimeters

Analysis of the past dental and relevant history was done and provisional diagnosis of traumatic fibroma, epulis fissuratum with super added candidal infection, verrucous hyperplasia; proliferative verrucous leukoplakia (PVL), verrucous carcinoma and squamous cell carcinoma were made. He was referred to our college dental speciality wing where he was prescribed topical application of antifungal drugs (1% Cotrimazole) for a week. As the lesion did not show signs of regression, CBC and RBC investigations were carried out and found to be normal and hence CT and incisional biopsy were also conducted.

On special investigations:

Correlating the clinical picture with CT revealing a poorly infiltrating soft tissue dense lesion which was likely to be a mitotic upper gingivo-buccal mucosal CA of stage IV, histopathological examination of the biopsied tissues was done which revealed confirmatory findings [**FIGURE 2**]

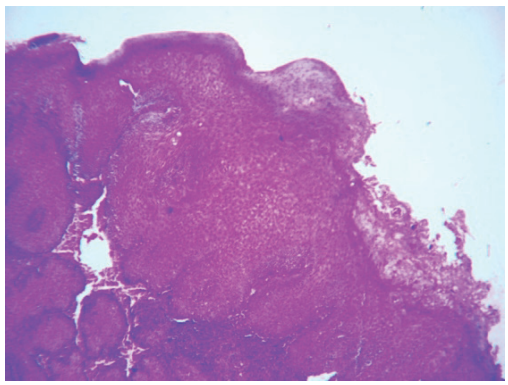


FIGURE 2: Histopathological Image (40x) showing broad bulbous retepegs with mild dysplasia, parakeratin plugging with break in the basement membrane and malignant cells infiltrating in to the subjacent minimal connective tissue stroma.

Points taken into consideration before arriving at a final diagnosis:

Oral fibroma was ruled out since it usually presents as a firm smooth papule in the mouth and it is in the same colour as the rest of the mouth lining which sometimes may be paler or darker if it has bled. The surface may be ulcerated due to trauma, or become rough and scaly. It is usually dome-shaped but may be on a short stalk like a polyp (pedunculated). If it has developed under a denture it may be flat with a leaf-like shape. It should be noted that no histological dysplastic features and other observations were not present and fibromas never develop into oral cancer [8].

Epulis fissuratum is a fibrous overgrowth caused by chronic irritation of the denture flange against the area where the gums meet the alveolar vestibular mucosa. Although it is very uncommon for these lesions to be associated with oral squamous cell carcinoma, as a precautionary measure the removed lesion should be sent for microscopic testing to rule out by histological confirmations [9, 10]. Non response to antifungal drugs was taken note to rule out candida infection as a precipitating or secondary factor.

Final Diagnosis

On complete evaluation of clinical, radiological and histological findings a conclusive diagnosis of verrucous carcinoma (VC) was put forward by ruling out other possible diagnoses.

Discussion

It should be noted that VC of the oral cavity is a different clinicopathologic tumour distinguished from the usual squamous cell carcinoma because of its local invasiveness, non-metastasizing behaviour, and special clinical appearance. Oral verrucous lesions typically presents as slowly enlarging, grey or white overgrowths on the buccal mucosa or gingiva of older men [11]. It is a warty variant of squamous cell carcinoma characterized by a predominantly exophytic overgrowth of well-differentiated keratinizing epithelium. Histologically, it is known to present "elephant feet" like down-growth that seems to compress the underlying connective tissue and typically show minimal or absent cytological atypia [12]. Verrucous hyperplasia (VH) may be a de novo lesion or associated with papillomas. VH and PVL are irreversible clinicopathologic lesions with considerable potential for evolving into verrucous or squamous cell carcinoma. PVL is a disease of the oral cavity in which VH is a part of its developmental spectrum [13].

In a study by Keszler, histologic data showed orthokeratinization more frequently in PVL and VH, while parakeratinization in VC. Although, sharp epithelial projections predominated in all three lesion types, lympho-plasmatic infiltration and Russell bodies were more frequent in VH. Histometrically, connective tissue–epithelial interface, epithelial height and connective tissue–epithelial interface plus verrucous epithelial surface, showed statistical differences between PVL or VH versus VC. Keszler concluded that histometric analysis was able to detect epithelial differences between both premalignant lesions and VC [14]. VC, though uncommon lesion, in its pure form, can be considered a disease of later life, typically occurring in the seventh–eighth decades, with a strong male predominance. VC is strongly associated with the chronic use of tobacco, chewing betel nuts, alcohol and poor oral hygiene [15, 16]

Treatment strategy planned: On complete evaluation of clinical, radiological and histological examination following treatment strategy was planned **(TABLE 1)**

TABLE 1: Table showing the phases of treatment planned for the patient

Emergency Phase	Surgical protocol- Adv. Partial Maxillectomy from 11 to 16 region followed by split thickness graft under General anaesthesia
Phase I	Ø Adv. Health Education, Ø Nutritional Counseling, Ø QOL-OC Measurement
Phase II	Adv. Extraction of 12, 22, 24,43

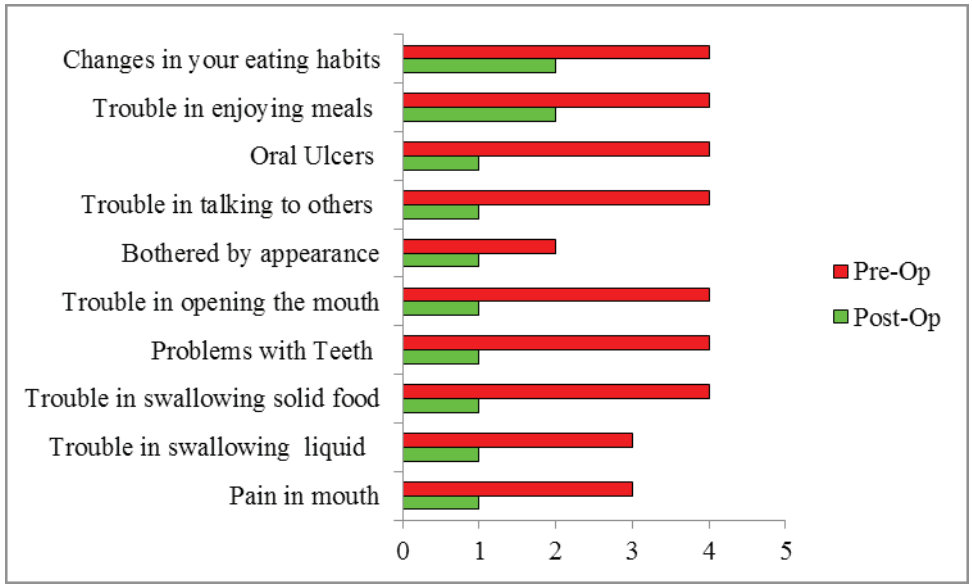
***Cont* .. TABLE 1: Table showing the phases of treatment planned for the patient**

Phase III	Ø Adv. Scaling, Ø Adv. Replacement i.r.t 12,13,14,15,16,17,25, 31,27,41,42, Ø Adv. Class- I restoration in 36, Ø Adv. Class –V restoration in 46, Ø Adv. Class V GIC in 23, and 25
Phase IV	Adv. Recall and Review

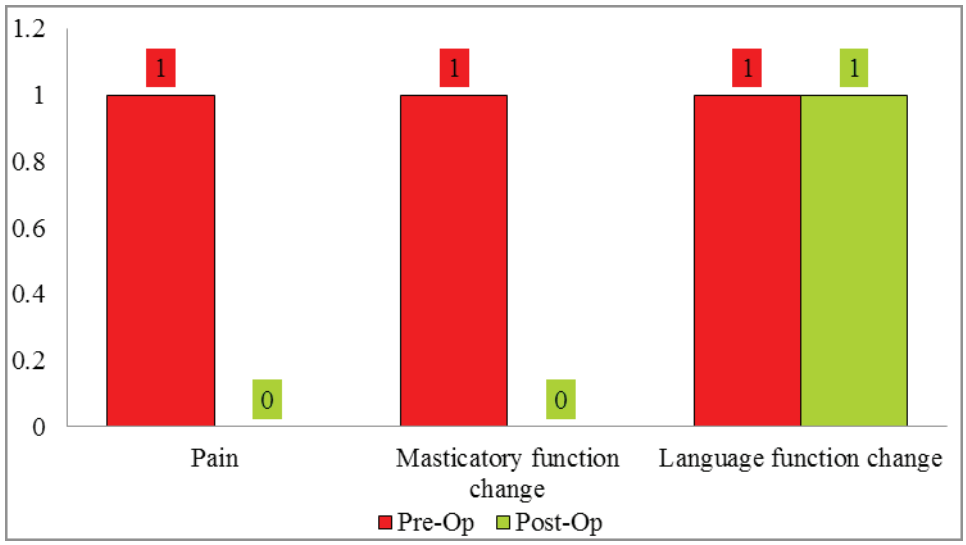
The above treatment plan was explained to the patient. His pre-operative quality of life using Quality of Life-Oral Cancer questionnaire consisting of 29 items was measured and counseling was given prior performing the surgery which ended with placement of an obturator. Deeper sections and complete sampling was required further to rule out frank squamous cell carcinoma. The excised portion was sent for excisional biopsy which revealed adequate clearance. He was prescribed antibiotics and analgesics for three days and instructed to maintain soft diet, good oral hygiene and avoid blowing through nose. His condition progressed with satisfactory healing during the recall visit and subsequent necessary treatment procedures were performed **(FIGURE 3)**

FIGURE 3: Intra-Oral clinical photograph following Phase-III treatment

QOL-OC score of 58 to 32 post surgery denotes an improvement in his quality of living in terms of functional efficiency and esthetics (**GRAPH 1, 2**).



GRAPH 1: Graph showing the range of Perceived Quality of life by the patient before and after Surgery



GRAPH 2: Graph showing the level of Experience of the patient recorded before and after Surgery

The patient reported weight gain post –operatively. Reinforcement of oral hygiene instructions was given with demonstration of brushing technique with teeth model. He was educated with more emphasis on denture hygiene maintenance.

Impact Of The Case Report:

The above report is just a presentation of one case resulting in drastic improvement in the quality of life of an individual following early diagnosis, prompt treatment, regular follow-up and adoption of preventive strategies highlighting the significance of dentists at health centres and conducting health programmes at mass level to focus on the incidence of oral diseases as well. This case emphasizes the need to educate the patient regarding denture care which could have saved him from such a lesion. Though the patient was ignorant initially, appropriate timely professional advice given has enabled him develop a positive dental attitude towards comprehensive treatments as well.

Recommendation:

This case is a classic example highlighting the need for recruitment of dental health professionals in all Government health care centres and urgent fixing of health facilities in rural India along with creation of awareness which can be done by creating attractive opportunities and growth benefits for dentists to migrate from urban to rural areas.

The potential of Public Health Dentists should be well utilized for early identification of oral precancer/cancer, oral health education, tobacco cessation counselling, provision of basic treatments including ART, topical fluoride and sealant applications and most importantly recruiting them to perform the responsibilities of an administrator taking up monitoring roles for the smooth and effective functioning of rural health care centres and ensuring maintenance of updated registers consisting of details regarding regular long-term follow up of special cases [20].

As it was not affordable for the patient to undergo cast partial denture which was a suggested better option, his functional efficiency and aesthetics was regained with removable prosthesis. The Government of India should introduce the free denture scheme for geriatric population like the Government of Karnataka which under the Dantha Bhagya Scheme has benefited 1512 of its senior citizens as of 2019 [18].

Conclusion

Large numbers of outreach programs through mobile dental vans are a solution to spread awareness and disseminate treatment at rural areas. There should be inclusion of dental health programs with family welfare programs by the government like in other developed countries and the barriers in the implementation of National Oral Health Policy should be addressed to achieve universal dental coverage for our country's citizens for which integration of political, social, organizational (both government and nongovernmental), professional dedication and support are the need of the hour making its long term distant goal reachable for a

healthy India.

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