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Comprehensive Rehabilitation in the Treatment of Oral Squamous Cell Carcinoma: A Brief Review of the Literature

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ABSTRACT
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I. Introduction

Oral Squamous cell carcinoma (OSCC) in the head and neck region requires a multi disciplinary approach to find a complete solution to the problem. Therefore, the involvement of multiple specialists in its management [(1).] OSCC has an adverse impact on the health related quality of life (QOL) of the patient. Being the sixth most common malignancy in the world[(2)] with Southeast Asia as its hotbed, oral cancer continues to affect multiple lives and continues to be amongst the leading causes of mortality in the sphere of oncology. A clear lack of awareness, education and inability to receive appropriate healthcare measures continues to heat its stove. Looking into the exact etiology of oral cancer, one may be surprised to find out that its causative agents are all around us and available with ease and at a low price (far less than the price paid in its treatment including physical, mental, social and financial).

Health related quality of life is an individual's or a group's perceived physical and mental health over time[(3)]. According to the World Health Organization[(4)], the subjective evaluation of Oral Health Related Quality of Life[OHRQoL] "reflects people's comfort when eating, sleeping and engaging in social interaction; their self-esteem; and their satisfaction with respect to their oral health"

Rehabilitation may be carried out in a variety of surgical and non-surgical ways. Most of the maxillofacial defects following oral cancer can be treated by the use of intraoral obturation. However, complex defects often involve extraoral structures. These have to be treated by the use of extraoral maxillofacial prosthesis in combination with intraoral modalities.

II. Challenges Encountered By A Cancer Patient

The oral cancer patient presents with new challenges in terms of physical, mental, social and financial challenges. In order to deal with this multifaced problem, it is first important to have an organized team at work with the sole intention and aim being the complete rehabilitation in terms of all the four factors discussed. Therefore, it is important to develop an understanding of how each of the given factors is important and how it affects the overall well being of the individual.

1. Physical factor

The oral cavity is the part of the digestive system responsible for performing the function of chewing and mastication. Besides, these functions in digestion it also helps to articulate words and aid conversations. Younger patients, patients with oropharyngeal tumors and those treated with surgery and radiotherapy reported poor functional outcomes. These patients are more likely to have anxiety, depression and poor functional outcomes[(5)]. Mady et al. concluded in a study conducted on a group of 19 persons with oral cancer that swallowing was more of an issue than speech[(6)]. 70% of all oral cancer cases have some voice or speech impairment[(7)].

2. Mental factors

Psychological factors also weigh down heavily on the patient of oral cancer. The inability to socialize often leads to isolation starting off a vicious cycle of low self esteem. The inability to consume dietary products

also lower down the immune status of the individual and lead to weakness and lethargy which further charge a state of depression. Incase of extraoral involvement, the presence of a facial deformity may further discourage the patient from socializing. The mental health factor is also related to the prolonged procedures like radiotherapy and ablative surgery which come as a part and parcel of oral cancer care. Deteriorated functional status along with poor coping mechanism are responsible for poor functional outcomes in oral cancer patients[11]. Neuropsychological performance impairment may be linked to stigmatizing factors like oral opiods, pain and reduced performance status. Tuma et al. concluded that cancer patients have multiple causes of delirium most of which are treatable and may lead to better cognitive status after treatment[13]. Hammerlid et al. concluded in a study that the mental status changes with the stages of treatment that the patient undergoes. For instance, they found the levels of anxiety to be the highest at the time of diagnosis. Females were more anxious than males and those below 65 years of age were more anxious than those above it[14].

3. Social changes

These changes generally have a direct link to the psychological mindset of the individual. The condition of oral cancer may lead to speech impairment which is the main tool for socializing. Even in the era of technological advances, one cannot expect online social networking to replace the necessity of human to human contact.

4. Financial concerns

As the disease progress, it causes a loss in functions which are absolutely basic to the well being of the individual. These include mastication and speech. Both these functions are vital to the employability potential of an individual. Unemployment leads to a loss of steady income and since the costs involved in oral cancer treatment are high, it leads to a financial burden on not only the patient but also his/her family.

SURGICAL REHABILITATION IN SQUAMOUS CELL CARCINOMA

Surgical resection with adequate margins is the mainstay modality of OSCC management. Surgery may leave the patient with a defect that could impair the regular day to day functions, thereby, having an impact on the social life of the individual. A patient after undergoing gastrostomy or tracheostomy may be dependent on a feeding tube for the rest of their lives.[1]

In case a primary closure cannot be achieved following ablative surgery , reconstruction with the usage of flaps is mandated. A compilation of various flaps used in rehabilitation is well written in an article by Amresh S Baliarsing et al[18]. They may include Local flaps for smaller defects such as the Nasolabial flaps, Forehead flaps, Buccal advancement flaps, Facial artery myomucosal flaps. Regional flaps such as Pectoralis major myocutaneous, Deltopectoral , Platysma island , Temporalis or Submental island flaps may be used or Microvascular free flaps such as the free Fibula flap , Radial forearm free flap, Anterolateral thigh flap, Latissimus dorsii free flap.

OTHER MODES OF REHABILITATION

Edgerton and Pyott in 1951 recognized the need for a Prosthodontist in the rehabilitation of Squamous cell carcinoma[25]. In addition to this, they also stated that the decision to fabricate a prosthesis depends solely on the quality of the anatomy of the defect. Miglani and Drane observed that a large population of patients had stomatological defects requiring rehabilitation and ,therefore, emphasized on the need to train dental surgeons for rehabilitation of oral cancer patients[26]. Ackerman et al stressed the use of an obturator prosthesis[27]. The need for osseointegration in the rehabilitation of oral cancer patients to enhance the retention and stability of facial prosthetics by anchoring the prosthesis to the orofacial skeleton, needs to be emphasized upon [29]. Anderson et al. conducted a review to establish the rationale of the use of implants in the rehabilitation of maxillofacial defects. The review covered a wide range of prosthesis which included bone anchored hearing aids and maxillofacial defects[30]. Dabreo and Schuller suggested a technique for the rehabilitation of orbital defects. [31]. A two piece obturator with a soft extraoral prosthesis was suggested by Skyes and Essop wherein they fabricated a two part combination prosthesis in which the intraoral part served to cover the defect and the extraoral part covered the lost facial tissue[32]. Various authors have suggested the use of CAD/CAM for the fabrication of a framework for a nasal prosthesis or as a radiographic stent, and reported an enhancement in the retention, stability, support and function. [35 , 36].

III. Discussion:

India has an oral cancer survival rate of 50%.[38] . Due to lack of knowledge about oral cancer in rural areas and monetary difficulties in the urban ones, there is a high incidence of its occurrence.

A combination of factors which include financial, educational and hygienic besides others, are therefore responsible for the surge in the occurrence, incidence and prevalence rates of oral cancer amongst the

population of developing nations in the world. In more developed countries, the reasons pertain more to higher levels of smoking and alcohol consumptions due to higher financial level of life. Smokless or chewable tobacoo being cheap and easily available is abused more in the developing world. A genetic perspective may be taken on the same topic. In a study done on the North Eastern population, several DNA methylation changes were observed in patients suffering from oral cancer [(39)].

Surgical Resection needs to be followed by either surgical or prosthetic rehabilitation. Dental rehabilitation including dental implants may also come as an important aspect for many patients. However, the timing for such surgical intervention is of utmost importance , keeping in mind the adjuvant therapies received by the patient.

IV. Conclusion :

Oncological pathology has a severe effect on the quality of life of the patient which sees a depreciation in terms of health, both physical and mental, besides affecting the social and financial aspects of life. Surgical resection is the *usus practicus* in most cases of Oral Squamous Cell carcinoma. The loss of structure leads to an alteration in the anatomy of the affected region, thereby, severely affecting normal function. The Health related Quality of Life is affected and unless effective measures for rehabilitation (either Prosthetic or Surgical) are undertaken , the patient will have to bear the pain and disturbance caused by the loss of structure which may include the presence of a defect.

The most effective rehabilitation in cases of Oral Squamous cell carcinoma is achieved by rehabilitation of the defect via grafting and flap surgery.

It is, thus, an essential and necessary requirement to train the Surgical Oncologist in procedures involved in post surgical rehabilitation via the use of grafting procedures and flap surgery.

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