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Oral Cancer Care and Oromaxillofacial Surgery

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ABSTRACT

Oral cancers are one of the most common cancers affecting people of Nepal and it the sixth most common cancer in the world. Unlike other cancers the early detection of the disease is possible through a routine examination of the oral cavity which is usually done by a dental practitioner. Through a series of phases like prevention, screening, early intervention, diagnosis and staging, management with tumor ablative surgeries, and rehabilitation to restore the function and esthetic part for better clinical outcome, the role of the specialty of dentistry is immensified. From a patient perspective, having a direct referral line within the dental community between dentists and oral and maxillofacial surgeons will contribute to cost reduction and improvement in outcomes. Trained oral and maxillofacial surgeon especially in the head and neck oncology plays a vital role in exploring functional multidisciplinary efforts to enhance patient care, academic excellence and research initiatives and evaluate for gaps in patient care. This article highlights the role of such professionals in a multidisciplinary team approach for the proper management of head and neck cancers which have significantly and logically additive effect for a better outcome.

Keywords: Oral cancer; oral cancer surgery; oral and maxillofacial surgery; multidisciplinary treatment oral cancer; head and neck cancer surgery.

INTRODUCTION

The number of people being diagnosed with mouth cancer (oral cancer) is increasing, with notable rises in incidence in younger peoples and in females. There are certain lifestyle habits that can increase the risk of mouth cancer, such as smoking or chewing tobacco, drinking alcohol above the recommended levels (especially in those who also smoke), and chewing betel nut (areca nut). Currently, we are experiencing an increase in the number of lip cancers due to the loss of the Ozone Layer.[1] We are also experiencing an increase in the number of Oral Cavity and Oropharyngeal Cancers primarily due to the increase in Human Papilloma Virus (HPV) virus related tumors.[2] It is therefore necessary that our profession *not only maintains but also increases its involvement* in the education, clinical care, and research of these diseases.

We are also seeing a younger patient population suffering from oral cavity and orophayrngeal "HPV related" cancer.[3] HPV-related tumours are more sensitive to treatment and we see higher survival rates compared to the same "smoking related" tumours.[4] Younger patients are living longer with the morbidity of cancer treatment, hence the importance of quality of life enhancing procedures and survivorship programs. These procedures are of utmost importance to the model of "patient centered care". This means, there is an increased demand for minimally invasive surgeries, as well as full rehabilitation to normal function. With respect to Head and Neck and Oral and Maxillofacial Cancers this means, cosmetic reconstruction, and functional reconstruction with respect to speech, swallowing and mastication, all of which are dependent on the reconstruction and rehabilitation of the oral cavity and dentition.[5,6]

ROLE OF THE DENTAL PROFESSION IN CANCER CARE

Anatomical concentration of cancer disease sites managed within the professions of dentistry and Oral

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and Maxillofacial Surgery (OMFS) predominantly include but are not limited to the face, lips, salivary glands, as well as oral cavity and oropharynx.

The course of the disease, treatment and aftercare of the patient with oral and/or head and neck cancer is complicated and participation in their care is truly multidisciplinary. Even within the domain of Dentistry, multiple specialties of dental/medical care participate within the phases of care.

Phases of potential involvement in patient care:

1. Prevention (Education, smoking cessation, vaccine programs)
2. Screening (Examination and screening investigations/adjuncts)
3. Early Intervention (Treatment of premalignant lesions/disease, and risk factor management)
4. Diagnostics and Staging (Biopsies, imaging etc)
5. Management of Disease (Tumor ablative surgery, pre-chemoradiation dentistry and oral surgery, chemotherapy, radiation)
6. Rehabilitation (Management of trismus, speech, masitcaiton, swallowing, pre-prosthetic surgery, osseointegrated (bone) implants/dental implants, oral and facial prosthetics and anaplastology, radiation caries)

Within the domain of Dentistry there are five main groups of specialties participating at various levels within the scope of what would be complete care of the patient with Oral and Head and Neck Cancer.

GENERAL DENTIST

The practice of dentistry is the assessment of the physical condition of the oral and maxillofacial complex and the diagnosis, treatment and prevention of any disease, disorder or dysfunction of the oral and maxillofacial complex and related structures. The definition varies however, “Oral health is a state of the oral and related tissues and structures that contribute positively to physical, mental and social well-being and the enjoyment of life’s possibilities, by allowing the individual to speak, eat and socialize unhindered by pain, discomfort or embarrassment.”

Role in Cancer Care: Dentists are the primary point of care for oral cavity examination and screening. Dentists are capable of diagnosing oral cavity tumors and performing the biopsies necessary to confirm the diagnosis. Dentists also participate in pre-radiation oral cavity screening, management of radiation caries, xerostomia, mucositis as well as the other side effects of chemoradiation that require long term follow up.

ORAL PATHOLOGY AND/OR ORAL MEDICINE

Oral Medicine and Oral Pathology is the branch and speciality of dentistry concerned with the diagnosis, nature and primarily non-surgical management of oral, maxillofacial, and temporomandibular diseases and disorders, including dental management of patients with medical complications.

Role in Cancer Care*:* Oral Pathology/Medicine specialists are primary care givers for prevention and early intervention. They participate in biopsy diagnosis of diseases and malignancies of the oral cavity and those with pathology training participate in the histopathological identification and diagnosis of the disease.

ORAL AND MAXILLOFACIAL SURGEON (OMFS)

As defined by the majority of dental regulatory bodies in the world, Oral and Maxillofacial Surgery is the branch and specialty of dentistry which is concerned with and includes the diagnosis, surgical and adjunctive treatment of disorders, diseases, injuries, and defects involving the functional and aesthetic aspects of the hard and soft tissues of the oral and maxillofacial regions and related structures.

Role in Cancer Care: OMF surgeons typically become involved in the differential and definitive diagnosis of lesions on referral from general practitioners and physicians. They participate in the biopsy confirmation of diagnosis and advanced diagnostic imaging required to evaluate and stage the extent of disease. They commonly manage premalignant lesions surgically while some participate in the management of early stage tumors. Those without the requisite training for management of more extensive disease will refer cases on to the fellowship trained head and neck surgeons of OMFS, ENT, Plastics or General Surgery. They also have an extensive role in revision surgery, preprosthetic surgery, and dental implants in order to rehabilitate the oral cavity for speech, mastication, swallowing and cosmetic. They coordinate extensively with maxillofacial prosthodontists who fabricate prosthesis.

MAXILLOFACIAL ONCOLOGY FELLOWSHIP TRAINED - OMF SURGEONS

See Oral and Maxillofacial Surgeons; In addition, an appropriately trained Oncologic Oral Maxillofacial Surgeon is a person with a degree of 5½ years in Dentistry (BDS/DDS), has completed a 3-4 years surgical residency training in Maxillofacial Surgery (trauma, pathology, as well as reconstruction of congenital or acquired defects of the oral cavity and face) and has 12-24 months of specialized fellowship training in head and neck oncologic (cancer) surgery, reconstruction and rehabilitation (typically with a focus in Maxillofacial anatomy and a total of 11-12 years post-secondary education). Their training includes core rotations on surgical oncology, radiation oncology and medical oncology. Typically, these surgeons are tertiary care or academic center based surgeons that are involved in research and training of OMF surgery residents, and education of the dental community on cancer screening and management. Such a person is an ideal fit as a "Core Team Surgeon/Reconstructive Surgeon" within the broader Head and Neck Multidisciplinary Team (MDT).

Role in Cancer Care: They participate in all the above roles of the OMF surgeon. They are also active in the primary ablative treatment of malignancies of all stages, regional lymphadenectomy, adjunctive tracheostomy and the necessary reconstructive surgery in cooperation with their respective multidisciplinary tumor boards.

MAXILLOFACIAL PROSTHODONTIST

Prosthodontics is the branch and speciality of dentistry concerned with the diagnosis, restoration, and maintenance of oral function, comfort, appearance, and health of the patient by the restoration of the natural teeth and/or the replacement of missing teeth and contiguous oral and maxillofacial tissues with artificial substitutes.

Role in Cancer Care: They also have an extensive role in the rehabilitation of oral cavity and face. Following ablative surgery, secondary preprosthetic surgery, and or dental implant surgery they fabricate prosthesis that replaces the functional and cosmetic defects in the maxillofacial region in order to rehabilitate speech, mastication, swallowing and cosmesis. Prosthodontist coordinates extensively with maxillofacial surgeons for surgeries and implants that facilitate the prosthesis functionality.

HEAD AND NECK CANCER MANAGEMENT GUIDELINES

Guidelines for the management of Head and Neck Cancers currently do not exist in Nepal. Currently, some trained Oral and Maxillofacial Surgeons of this caliber around the country are not caring directly for oral cancer patients due to the omission in these political position papers. Their talent and expertise is idle and patients are not being cared for as timely as possible, or to the same level as occur in other Nepalese jurisdictions and throughout most of the world.

When looking at similar documents in which guidelines define surgeons by background, they do so in a broad sense recognizing that the public is best served by having access to well trained surgeons regardless of background. The concern here is that the exclusion of a given speciality such as general surgery or oral and maxillofacial surgery could preclude well-trained individuals from these surgical disciplines from providing care.[7]

"Surgeons: each MDT should include three or more designated surgeons, who are likely to be ear, nose and throat (ENT), maxillofacial, or plastic surgeons. It is important that each MDT includes, or has access to, surgeons who are proficient in reconstruction, including microvascular techniques. This document will refer to all surgeons in the MDT as surgical specialists, whatever their individual background or speciality. Each surgeon in the MDT should normally dedicate half of his or her time to head and neck cancer."[7]

Here the surgeon is not rigidly defined as coming from one speciality; rather it is simply stated that they would *likely* come from one of these disciplines. The paragraph goes on to state that they should devote a significant portion of their clinical practice to head and neck cancer, which is a reasonable expectation for the maintenance of competency.

The exclusion of Maxillofacial Surgery from these documents would seem to imply that they are not competent to treat head and neck malignancies. This is of a concern and patently incorrect. There is no "Evidence" in the literature to support this. Once again, the specialty alone cannot be the benchmark applied for competency in treating malignant disease.

Most would agree that competence comes from education and clinical experience. In this regard, a comparison of training standards is instructive. Competence in the diagnosis and management of oral malignancy is a core component of the education and certification process for dentists and for oral and maxillofacial surgeons.

Dentists are the primary point of care for oral cavity examination and screening. Most OMF surgeons are involved in some phases of care and those with

subspeciality training can be involved in all phases of care. As dentists and dental specialists are the point of care providers in identifying these patients and in large part in restoring function and quality of life, neglect to recognize those that service for this community with additional training to complete all the necessary roles of treatment demonstrates a disconnection in the whole prevention and treatment guideline.

RATIONALE OF DENTISTRY AND OMFS INVOLVEMENT IN ORAL AND HEAD AND NECK CANCER

Oral, lip and oropharyngeal cancer encompass up to 75% percent of all head and neck cancer,[8] accounting for 2% of all cancer in women and 4% in men.[9] Globally, oral and pharyngeal cancer is a more significant burden than in North America with incidence rates are as high as 42 in 100 000 in the south east Asia.[10] Outcomes for patients with oral and oropharyngeal cancer are largely dependent on early detection and staging at diagnosis of disease.[9,11,12] Early stage lesions that require less invasive surgical procedures and potentially without medical therapy have a higher survival rate, less morbidity and better quality of life outcomes.[9,11,12] Five year survival rates for early (stage 1 and 2) oral and oropharyngeal cancer range from 60-80%, while late stage (stage 3 and 4) cancers have a 20-50% five year survival.[9] Two year survival in stage 1 upper aerodigestive tract cancer (including oral, lip and oropharyngeal cancer) is approximately 90% as opposed to 50% two year survival for stage 4 cancer of the same sites.[11] Despite the importance of early detection, only 14% of adults in the United States report having an oral cavity examination at any point during their life, and only 7% within the past year.[11] While we suspect that this may be higher in some areas of the world, it highlights the lack of surveillance present in an industrialized country. The five-year survival rate compared to the survival rates of cervical cancer (75%), melanoma cancers (89%), and prostate cancer (95%) demonstrates the lethality of this disease.[13]

Despite large improvements in the field of reconstructive surgery, improvements in survival have been marginal in the last 30 years. The only way at this time to significantly improve survival is to improve the stage of detection. Isolating and not recognizing the dental community's role in early diagnosis and detection is lacking in the best interest of public health.

Apart from increased life expectancy, early detection of oral cancer benefits include; less invasive treatment, exceedingly lower treatment costs, shorter recovery time, earlier return work, and a higher quality of life for cancer survivors.

Oral cancer is very expensive to treat. The average cost for treating an advanced oral cancer case is over $200,000 in the USA.[14]

These results are not surprising given the costs of:

1. Diagnostics; Clinical, Laboratory, Endoscopy, Speech, CT, MRI, Nuclear medicine and PET functional imaging
2. Primary Treatment; multi-modal treatment including expensive microvascular tissue transplant surgery, radiation therapy and chemotherapy
3. Hospital and auxillary costs; OR time, ICU time, ward costs, respiratory therapy, physiotherapy, occupational therapy, speech therapy and social work care
4. Rehabilitation; Secondary surgeries, osseointgrated (dental) implants as well as oral and maxillofacial prosthetics costs
5. Post cancer surveillance; clinical follow up, endoscopy, diagnostic imaging

Oral cancer may be the most expensive cancer to treat.[14]

Apart from prevention, early detection and early treatment is the key to;

1. optimizing patient outcomes and survival rates
2. minimizing expenditure of health care resources.

Early staged asymptomatic oral cancer in Nepal is most often detected in the dental clinic through routine visits. They are more commonly found at an earlier stage of disease than that detected in a physician's clinic.[9] Having a direct referral line within the dental community between dentists and oral and maxillofacial surgeons will contribute to cost reduction and improvement in outcomes. This is achieved by eliminating unnecessary consults with medical practitioners who have had significantly less training and/or expertise in diseases of the oral cavity than that of dentists and OMF surgeons, thereby eliminating treatment delays from the time of detection, improving outcomes and dramatically reducing the costs.

Dentists refer patients with precancerous or oral cancerous lesions to Oral and Maxillofacial Surgeons. Given appropriate hospital privileges these Oral and maxillofacial Surgeons with appropriate training would be poised to treat early stage oral cancers in a more timely manner. The compartmentalization of cancer

care services to specific hospitals and disciplines and restricting trained individuals from treating patients adds to the long term burden of this disease by treating the disease at later stages and causing patients to undergo more radical surgery and medical treatment that has both social and economic consequences.

In the dental community, oral and maxillofacial surgeons have always been the clinical experts in oral cancer care and they assume the bulk of the educational role. Having well trained ablative and reconstructive oral and maxillofacial surgeons prominently figured on head and neck tumor boards and in hospitals will strengthen the role of dentistry, as a whole plays in the care of head and neck cancer patients. Taking this into consideration it is obvious that the inclusion of oral and maxillofacial surgeons as primary surgeons on a head and neck cancer team is not redundant but rather it is significantly and logically additive.

We would suggest that hospitals bring the interested parties in the management of Head and Neck Oncology together to; 1) explore functional multidisciplinary efforts to enhance patient care, academic excellence and research initiatives. 2) Evaluate for gaps in patient care, such as rehabilitation pre-prosthetic surgeries, implants and prosthetics. This "ideal" is typically aligned with a hospitals mission, and their commitments to improving health care and to delivering value for their citizens.

The important point being that the early screening which is already being carried out in dental clinics of Nepal can be used to advantage by those with a vested interest in improving cancer outcomes for Nepalese; to decrease death rates, improve quality of life outcomes and reduce overall cost of cancer care in Nepal.

The public is best served to have all aspects of dentistry intimately involved in head and neck cancer which also includes oral and maxillofacial surgery. The time has long passed when the rehabilitation of a head and neck cancer patient meant a healed wound. Contemporary rehabilitation includes a dental rehabilitation, which is well documented to improve all aspects of a cancer patient's quality of life not limited to their speech and diet. Cancer care outcomes for head and neck cancer are most dependent upon early detection. Existing data show that dentists and not primary care physicians make most early diagnoses of oral tumors.

SUMMARY OF BENEFITS

1. Improved outcomes/quality of life for Oral and Oropharyngeal Cancer Patients in Nepal
2. Reduced costs to country and health care systems for persons affected by Oral and Oropharyngeal Cancer Patients in Nepal
3. Aligns the interests of the profession of Dentistry and OMF Surgery with those of Country Cancer Care Organizations (Prevention, screening, early detection and better outcomes)
4. Improved Reconstruction and Rehabilitation Survivorship programs for Oral and Head and Neck Cancer Patients

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