

Role of a Dental Surgeon in Management of Oral Cancer Patients: A Review Article

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Abstract

In the 21st century, oral cancer is rapidly becoming a global health priority. Head and neck cancer ranks among the top three cancers in India and its treatment involves radiotherapy, which has various dental complications. Such patients can appear with radiation caries, trismus, xerostomia, osteonecrosis, and other dental changes within the first 3 months following radiotherapy. Due to this increasing rate of patients being treated for cancer, a general dentist should be well-informed of the various oral problems, its management and their role to lessen these side effects through the way treatment is rendered. Every effort should be focused on prevention of severe dental caries preoperatively since restorative treatment of radiation caries becomes an exigent task later. Counseling of patients before and after radiotherapy can help to alert them about its complications, its prevention, and management.

Key words: Cancer, Dental caries, Oral care on cancer patients, Radiotherapy complications

INTRODUCTION

Oral cancer is of significant public health importance to India as it ranks among the top three cancer in the country.^[1] About 12% of mortality rate worldwide is due to cancer, and in about 20 years, it is anticipated to increase from about 6 to 10 million.^[2] The major cause of this global health issue is the rising number of tobacco and alcohol users in children and youth.^[3] The other risk factors of oral cancer are human papillomavirus infections, sharp or ill-fitting dentures, lack of proper diet, weak immune system, hereditary, and exposure to sun's UV rays.^[4]

As per data of Global Adult Tobacco Survey 2010, Uttar Pradesh tops in early deaths due to tobacco followed by Bihar and Maharashtra.^[5] A study reported that the ratio of male:female for oral cancer was 2:1. 6.25% were young

(<30 years), 67.24% were in 30–60 years, and 26.51% were more than 60 years. The most common cancers among the youngest age group were those of tongue and buccal mucosa (41.26%). 75% oral cancer patients had risk habits, 55% were habituated for >10 years, and 25% were habit free. Majority 59% were chewers of betel quid alone (17%)/betel quid with tobacco (42%); smokers were (31%) and alcohol users were (14%) of patients. Chewers of Gutkha, Khaini were more in 30 years.^[6]

In view of the fact that the treatment of oral cancer has potential side effects in oral tissues, the quality of life of such patients is compromised due to chemotherapy and radiotherapy. Hence, a proper role of a dentist in managing a cancer patient before, during and after cancer treatment can benefit the patient beyond oral cavity.^[7]

SCREENING OF ORAL CANCER

The most common symptom while screening of oral cancer is a sore in the mouth that does not heal and constant pain in oral cavity. A patient may turn up with a lump or thickening in the cheek, a white or red patch on the gums, tongue, tonsil, or lining of the mouth or a sore throat. The patient may complain of difficulty in chewing or swallowing, trouble in

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moving the jaw or tongue, numbness of the tongue or other area of the mouth, change in voice, constant bad breath, ill-fitting denture, mobile teeth, or a lump or mass in the neck.^[8]

ORAL COMPLICATIONS RELATED TO CANCER TREATMENT

Oral mucositis and xerostomia is a general complication related to both chemotherapy and radiotherapy, it increases the risk for pain, oral or systemic infections, radiation caries, nutritional compromise, impaired ability to eat, taste, swallow, and speak. Children exposed to radiotherapy and/or high doses of chemotherapy before the age of 9 years may have abnormal tooth development, craniofacial growth, or skeletal development. Certain classes of drugs, such as the Vinca alkaloids cause neurotoxicity, i.e., persistent, deep aching, and burning pain that mimics a toothache, with no established dental or mucosal source. The effects of chemotherapy on bone marrow decrease the platelets and clotting factors which may result in bleeding from soft tissues in oral cavity. There is lifelong risk of rampant dental decay that may begin within 3 months of completing radiation treatment if changes in either the quality or quantity of saliva persist. Trismus or tissue fibrosis may occur due to loss of elasticity of masticatory muscles. Osteonecrosis may occur due to exposure to high-dose of radiation therapy.^[9]

THE SIGNIFICANCE OF PRE-TREATMENT ORAL CARE

A thorough oral evaluation by a knowledgeable dentist before cancer treatment begins is crucial to the success of the regimen. It reduces the risk and severity of oral

complications, allows for prompt identification and treatment of existing infections or other problems, improves the likelihood that the patient will successfully complete planned cancer treatment, prevents, eliminates, or reduces oral pain, preserves or improves oral health, decreases the cost of care, and provides an opportunity for patient education about oral hygiene during cancer therapy, thus improving the quality of life of the patient.^[9]

HOW CAN A DENTIST BE HELPFUL?

Before cancer treatment begins a dentist should treat all the existing infections, caries and tissue injury or trauma. After a complete mouth oral prophylaxis, topical application of fluoride varnish at an interval of 3 months should be done to prevent radiation caries. The teeth in the radiation field which cannot be saved and mobile deciduous teeth in case of children should be extracted. If a patient wears removable prosthesis, it should be clean and well adapted to the tissue. Orthodontic bands and brackets should be removed if highly stomatotoxic chemotherapy is planned or if the appliances will be in the radiation field. To minimize oral complications, the patient should be educated.^[9]

In addition to this, the dentist should register and document the tobacco use profile in detail of the patient and his/her relatives. Effective tobacco cessation counseling can be done by group counseling/individual counseling/relatives counseling. Carbon monoxide monitoring should be done. Pharmacotherapy can be helpful in cases where patients are unable to quit with voluntary control. Regular follow-up with brief counseling at each visit is necessary for encouragement. Educational materials should be displayed and quitters should be rewarded [Table 1].^[10]

Table 1: Oral care guidelines for patients^[11]

Brushing	Flossing	Mouth rinse	Others
Brush teeth, gums, and tongue gently with an extra soft toothbrush and fluoride toothpaste after every meal and before bed	Floss teeth gently every day	Avoid mouthwashes containing alcohol. It burns the tissue	Exercise the jaw muscles 3 times a day to prevent and treat jaw stiffness from radiation. Open and close the mouth as far as possible without causing pain; repeat 20 times
Use of soft bristles toothbrush after rinsing it in warm water to avoid tissue damage	If gums are sore or bleeding, avoid those areas till it heals but keep flossing other teeth	Rinse the mouth with a baking soda and salt solution, followed by a plain water rinse several times a day. It helps tissue to heal. (Use ¼ teaspoon each of baking soda and salt in 1 quart of warm water.) Omit salt during mucositis	Avoid candy, gum, and soda unless they are sugar-free
Use mild toothpaste, avoid use of whitening agents		Use chlorhexidine mouthwash to prevent infections	Avoid spicy or acidic foods, toothpicks, tobacco products, and alcohol
Replace toothbrush in every 3 months or after any infection			Avoid ill-fitting dentures; it increases the risk of osteonecrosis of jaw Keep the appointment schedule recommended by the dentist

Key Notes^{9]}

- High-dose radiation treatment carries a lifelong risk of xerostomia, dental caries, and osteonecrosis.
- Due to the risk of osteonecrosis, principally in the mandible, patients should avoid invasive surgical procedures, including extractions that involve irradiated bone. If an invasive procedure is required, use of antibiotics and hyperbaric oxygen therapy before and after surgery should be considered.
- Lifelong daily fluoride application, good nutrition, and conscientious oral hygiene are especially important for patients with salivary gland dysfunction.
- Dentures may need to be reconstructed if treatment altered oral tissues. Some people can never wear dentures again because of friable tissues and xerostomia.
- Dentists should closely monitor children who have received radiation to craniofacial and dental structures for abnormal growth and development.
- Dentists should be mindful about the recurrence of malignancies in patients with oral and head and neck cancers, and thoroughly examine all oral mucosal tissues at recall appointments.

CONCLUSION

Preventive measures before radiation therapy can reduce the risk of postradiation complications, improving the quality of life of the patient postoperatively. Hence, as

dental professionals, it is our responsibility to educate these patients, how to deal with oral side effects of radiotherapy and provide them essential dental care preoperatively and postoperatively.

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