

Radiation Therapy for Oral Cavity and Oropharyngeal Cancers

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KEYWORDS

- Oral cavity cancer • Oropharyngeal cancer • Head and neck cancer
- Radiation therapy • Intensity-modulated radiation therapy

KEY POINTS

- Radiotherapy is a common modality used in the treatment of oral cavity and oropharyngeal cancers.
- The side effects of radiation, during and after treatment, can be significant and can negatively impact patient function and quality of life.
- Efforts to improve outcomes, such as through patient education, supportive care, and posttreatment adherence to rehabilitative and preventive care, can help mitigate toxicity and improve outcomes.
- Advances in radiation delivery, such as through continued technological advances, or novel approaches to customizing radiation dose and volume, to maximize the therapeutic efficacy while minimizing side effects, are warranted.

INTRODUCTION

Cancers of the oral cavity and the oropharynx exemplify the changing demographics, biology, and causes of head and neck cancer. Although cancers of the oral cavity remain largely tobacco induced, the incidence of this diagnosis continues to decrease. In contrast, the incidence of oropharyngeal cancer has been steadily increasing, largely caused by human papillomavirus (HPV) infection. Long-term disease outcomes are increasingly divergent, reflecting the different biology from HPV-associated and nonassociated tumors. This article summarizes current approaches to radiotherapy (RT) management of oral cavity and oropharyngeal cancer and highlights future efforts.

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PRERADIATION PATIENT MANAGEMENT

Before the initiation of radiation, there are several important issues that should be addressed in order to facilitate therapy and ensure optimal long-term disease- and treatment-related outcomes.

Many patients with cancers of the oral cavity have a history of previous and/or current heavy tobacco use. From a cancer therapy-specific standpoint, continuation of smoking throughout RT has been associated with worse outcomes.^{1,2} Continued smoking can also negatively impact or predispose to other comorbid conditions, such as cardiovascular disease,³ second primary cancers,⁴ and chronic obstructive pulmonary disease.⁵ Efforts to intervene, motivate, and educate patients on the importance of smoking cessation are, therefore, warranted.

All patients undergoing RT to the head and neck region should receive a thorough pretreatment dental evaluation to assess if any dental treatment is required before initiation of RT to minimize the potential for dental complications during or post-RT. For example, extraction of at-risk teeth is indicated before initiation of RT to minimize the risk of osteoradionecrosis associated with postradiation dental extractions.⁶ Because of the radiation exposure of salivary glands during treatment, one of the most commonly reported long-term side effects of RT is xerostomia, which significantly increases the risk of dental caries.^{7,8} Therefore, an additional benefit of pre-RT dental evaluation is to receive any prescribed treatment recommendations (such as supplemental, prescription fluoride) and education on preventive posttreatment dental care to minimize the long-term dental effects from RT.

The effects of RT can negatively impact long-term speech and swallowing function as well as patient quality of life. Speech difficulties can result from muscle fibrosis, coordination, and strength impacting speech production. Problems with dysphagia and oral intake can result from trismus and poor coordination of muscles associated with swallowing and can predispose patients to issues such as poor nutrition or aspiration. Therefore, it is important that all patients are evaluated before radiation in order to develop a customized protocol to strengthen muscle and maintain function. These protocols, when started and maintained throughout the course of radiation, have been associated with improved posttreatment swallowing outcomes.⁹

ORAL CAVITY CANCER

Cancers of the oral cavity are commonly associated with tobacco use or may be due to local irritants (such as betel nut chewing) and, unlike oropharyngeal cancers, are usually pathologically HPV negative.¹⁰ The estimated incidence of oral cavity cancers in the United States for 2017 is 32,670, with an estimated 6695 deaths,¹¹ with the incidence of HPV-negative head and neck cancers decreasing over the past several decades,¹² mirroring the decreased incidence of smoking in the population.⁴ Surgery is typically the treatment of choice, as it is generally associated with improved survival compared with a definitive, nonsurgical approach.¹³ Definitive RT is generally reserved for patients who are unable to undergo surgery. RT is indicated in the postoperative setting (for locally advanced-stage disease or for adverse pathologic risk factors), with or without chemotherapy, to improve disease control.

Definitive Radiotherapy for Oral Cavity Cancer

Although initial surgery is the preferred initial treatment of choice, there will be patients for whom surgical resection is not feasible (due to surgically unresectable tumor and/or medical comorbidities). For these patients, RT is a viable, definitive treatment option for oral cavity cancer. For patients receiving definitive chemoradiation (CRT) for locally

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