

# Caring for the Oral Health of Patients Battling Cancer

## Part III: Oral Care After Cancer Treatment

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*The following is the final installment of a three-part series addressing oral health concerns that ideally should be addressed before, during, and after cancer treatment. This segment focuses on oral health care needs after cancer treatment.*

To say a battle with cancer changes one's life is perhaps one of the most profound understatements ever made! Few experiences leave their indelible mark on health, relationships, and spirituality as deeply as cancer. From the moment the diagnosis is verbalized by the physician, lives are changed forever...the life of the patient, the lives of family and friends, the lives of those not even yet born who will benefit from the lessons learned from the care given. There is little argument to be made - cancer changes lives!

People who have met cancer face-to-face understand that the disease expects much and adaptations in daily life must be made to meet those demands. So it is with the oral health of the survivors. Truly, there is still much to learn with regard to cancer survivorship in many areas of health care, and dentistry is no different. There are, however, tenets of care that must be followed for the cancer survivor. Some of these simply make life more pleasant; others are fundamental courses of care to which the patients must strictly adhere.

To the cancer survivor, I would say...because your experience with cancer has been a personal journey, there is no single adage that applies to all. There are, however, recommendations that are applicable to most. Always consult with your dentist or dental oncologist to customize a continuing care plan that is suited for *your* needs. Do not be afraid to begin a dialogue with your oral health care provider. Let him or her understand what is working for you, and what isn't. Together, you and your dental oncologist can develop a regimen that is tailored to your needs and helps ensure your prolonged oral health as you live life as a *survivor*.

## DENTAL CARE FOLLOWING CHEMOTHERAPY

Because many of the direct cytotoxic effects of chemotherapy subside after infusions have ended, much of the oral health care recommendations directed towards the post-chemotherapy patient focus on dealing with possible lingering side effects. Granted, the severity of enduring complications is usually contingent on the specific chemotherapeutic agents used, their dose, and the duration of treatment. Usually, however, the patient who has completed chemotherapy will notice a return to normal in the oral cavity. Dysgeusia (abnormal taste) and dysphagia (difficulty in swallowing) most often resolve without further intervention from the dentist. As white cells and platelets recover, mucositis is usually no longer an issue.

Xerostomia, or dry mouth, can continue to be a problem for many treated with chemotherapy alone, especially if medication for comorbidities continue after chemo has concluded. As long as the salivary flow is reduced, as determined by either a “feeling” of dry mouth or quantitative analysis by a dentist or dental oncologist, the xerostomic patient should commit to a professional dental cleaning and recall visit every three months. Dry mouth can lead to dental complications including rampant caries, periodontal disease, and oral infections. This condition should continue to be monitored and managed until normal salivary flow has returned and the patient has demonstrated a proficiency in home care that reduces the risk of extensive generalized decay.

During times of xerostomia, caries control is paramount. In some cases, it may be necessary to place the patient on microbial reduction therapy. The level of streptococci mutans can be reduced below a pathological level for three to six months by instructing the patient to use aqueous chlorhexidine gluconate 0.12% as an oral rinse: 1/2 oz. twice a day for two weeks. (This timeframe of bacterial load reduction has only been demonstrated in non-cancer patients. Patients battling cancer should continue using aqueous chlorhexidine gluconate on an ongoing basis and should be closely monitored if the oral rinse is reduce or discontinued as rapid recolonization has been documented in this population.) Similarly, the regular application of fluoride should be considered as long as patient remains at-risk for rampant caries.\*

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\* Detailed instructions for fluoride application can be found in the second installment of this series.

## DENTAL AND ORAL HEALTH CARE FOLLOWING HEAD AND NECK RADIATION

Dental care following head and neck radiation is perhaps one of the most complicated areas of dental oncology as many of the side effects of radiotherapy linger for the remainder of the patient's life. As is the case *during* treatment, it is imperative that the dental professional be thoroughly familiar with the dose of radiation the patient has received. An isodose map showing dosage according to anatomical structures must be considered prior to treatment planning for dental and oral health care following radiation. While most radiation therapy is now administered by intensity modulated radiation therapy (IMRT), some patients may have received treatment through a fixed beam of conventional radiation therapy or brachytherapy, which involves insertion of radioactive wires directly into the tumor. The dental professional must be familiar with not only the cumulative dose and the structures involved, but also with the radiation modality and the treatment schedule.

Perhaps one of the post-radiation risks most familiar to dental professionals is that of osteoradionecrosis (ORN). ORN is a late side effect of radiation where damage to the small blood vessels in the mandible, and more rarely the maxilla, impairs the bone's ability to heal. Those who have received brachytherapy are particularly at-risk for developing this condition. Typically, ORN is not seen within the first year following treatment and the risk of ORN increases with time. Most often, bone necrosis of the jaw in the head and neck cancer survivor follows a traumatic event, such as an extraction or dental surgery; however, spontaneous exposure and necrosis of the bone - especially in the posterior mylohyoid ridge - has been reported. Although it can occur after lower doses, ORN usually occurs with doses greater than 60 Gy. *All* future oral health care treatment planning must consider radiation exposure to the bony structures of the face to minimize the risk for ORN.

Because of the risk of ORN, endodontic therapy should be considered as a viable treatment option for carious lesions with pulpal involvement. Root banking may be necessary when insufficient tooth structure remains supragingivally. For carious lesions, fluoridated glass ionomer is the restorative material of choice for the cancer survivor.

Exposure of the salivary glands to therapeutic radiation causes atrophy of the secretory cells resulting in xerostomia, the severity of which is related to the cumulative dose. Doses as low as 25 Gy can result in dry mouth. Although IMRT has reduced much of the widespread damage to the salivary glands seen in conventional radiation therapy, xerostomia continues to be the most widespread complication seen in head and neck radiation patients. The dental professional treating patients with a history of head and neck radiation should realize that long-term survivors who experienced conventional fixed beam radiation may present with more severe xerostomia that is a permanent side effect of their treatment.

Not only does ionizing radiation affect the function of the secretory cells in the glands, it also changes the composition of the saliva when some salivary function is retained. Serous glands are impaired much more readily than mucous glands. The result is a saliva that is much more viscous and acidic and lacks much of the protective qualities normally seen. Clinically, the patient may experience impaired remineralization capacity, taste alteration and difficulty swallowing, difficulties in mastication and speech, and decreased protection against microbes. These in addition to the increased propensity for dental caries makes xerostomia a side effect that cannot be ignored. Unfortunately for some head and neck cancer survivors, the damage of the salivary glands is permanent. These patients require close monitoring by the dental professional and should follow the guidelines for the post-chemotherapy patient as outlined above.

Fungal infections are more prevalent in this population, and the dentist or dental oncologist must be comfortable diagnosing and treating these conditions should they arise. When treating a Candida infection, both the patient and the denture should be treated, when applicable. Fluconazole 100 mg, twice a day, is an effective means of treating a yeast infection in the patient that can be used long term, if necessary. Nystatin suspension is not recommended due to its high sugar content. Alternatively, clotrimazole 10 mg troches, five times per day for two weeks, or mycostatin 200 mg oral pastilles, four times per day for two weeks, can be used. Dentures can be treated using bleach diluted in water (2 teaspoons per 1 cup water) for 30 minutes each day.

Beyond the teeth and oral mucosal tissues, many lingering side effects often plague the head and neck survivor. Permanent taste loss can occur at a dose of 60 Gy or higher. In lower doses, taste loss is often temporary although it may take several months to fully recover. Decreased salivary flow can cause taste alteration as can damage done by mucositis. Chemoreceptors on the tongue can take months to years to return to normal function if they have been affected by mucosal ulceration. Trismus can cause limited opening for three to six months following radiation therapy. Caused by contraction of the muscles of mastication and the TMJ capsule, trismus can occur with an unpredictable frequency and severity. Physical therapy (opening the mouth to maximum and closing 20 times, three times per day) can bring some relief and improve opening, but this condition must be considered when planning treatment and formulating an at-home oral hygiene regimen.

Long-term head and neck cancer survivors may also experience occlusion of the carotid arteries. Consideration must be given to this fact when using dental anesthetics with epinephrine. The dentist or dental oncologist should be familiar with signs and symptoms of a transient ischemic attack (TIA) or stroke and monitor these patients closely for signs of distress during dental procedures. Sometimes, head and neck survivors suffer degeneration of cervical vertebrae and may experience fatigue with minimal exertion. Fibrosis of the musculature in the radiation field may yield unusual results in head and neck examinations. Careful observation must be made during oral cancer screenings and head and neck examinations as “normal” may feel different to the dental professional examining the patient. For patients who have just completed treatment, radiation burns may still exist on the skin. Even long-term, a patient may complain of the tissue that was in the field of radiation as feeling “hot.”

The dental professional should be prepared to help the head and neck patient understand that many of these changes will affect the way he or she is accustomed to eating. The patient should avoid sharp or crunchy foods that can cause mucosal damage, hot and spicy foods, foods that are highly acidic, foods that are sticky or highly cariogenic, and drinks that contain alcohol. Patients should choose foods that are easy to chew and swallow, learn to take small bites and chew slowly, and sip liquids with meals. While many of these changes were necessary *during* treatment, most will need to continue these practices for several months following the completion of radiation

therapy. When necessary, the dental professional should be ready to refer the patient to a registered dietician or professional nutrition therapist.

#### OTHER POST-TREATMENT ORAL HEALTH CARE CONSIDERATIONS

Patients who have received bisphosphonate therapy via an intravenous route of administration are at risk for developing bisphosphonate-related osteonecrosis of the jaw (BRONJ). Medications used to treat metastatic disease in the bone include Zometa (zoledronic acid), Aredia (pamidronate), and Xgeva (denosumab). It is believed that the risk of developing BRONJ is directly related to the dose and duration of the bisphosphonate therapy. While the specific etiology of BRONJ is not fully understood, the dental professional treating patients with a history of bisphosphonate therapy should understand the risks associated with these medications and care for the patient in a manner similar to patients at risk for ORN. Since the half-life of some of these medications is in excess of ten years, a history of bisphosphonate therapy should be considered for *all* future oral health care planning in these patients.

Patients who are post-transplant, either for bone marrow or hematopoietic stem cells, are at high-risk for infection due to continued immunosuppression. In addition to bacterial and fungal infections, these patients are susceptible to viral infections including herpes simplex virus type 1, herpes varicella zoster virus, and cytomegalovirus. Moreover, these patients are at-risk for graft-versus-host disease (GVHD) and other autoimmune problems. GVHD and autoimmune issues can be very complicated. The dental professional seeing these patients should seek out continued education related to the specific care of autoimmune patients or refer to a dental oncologist experienced in their care.

Caring for patients before, during, or after their fight with cancer can be the most rewarding experience of a lifetime. More dental professionals are needed to commit to meeting the unique dental and oral health care needs of patients battling cancer. As the epidemiological forecasts continue to predict an increase in the number of new cancer cases as well as an increase in the population of survivors, *now* is the time for dental professionals to become part of a cancer care team. You can make a difference!

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*Dr. Abbott has most recently conducted studies focusing on bisphosphonate-related osteonecrosis of the jaw and xerostomia in patients with cancer. He is the previous recipient of the Dentist Scientist Award and the National Research Service Award, both granted by the National Institutes of Health. Dr. Abbott has been a visiting faculty lecturer for the University at Buffalo School of Dental Medicine continuing education program and has lectured throughout the United States.*