



Mouth and Dental Care

Before, during and after radiation to the head and neck

You are having or have had radiation therapy for your head and/or neck cancer. With this therapy, you can expect some changes in your oral health, some short-term and others permanent.

This handout explains the changes and what to do for your oral health during and after radiation treatment.

How Radiation Works

Radiation disrupts DNA of actively dividing cells and causes them to die. Since cancer cells are actively dividing, this is very desirable.

How Radiation Therapy Affects Your Mouth

Unfortunately, many of the normal cells found in your mouth are also actively dividing, and are equally hurt if the radiation passes through them on its way to the cancer cells. The mucosal lining of your mouth, the blood vessels in your jaw, your chewing muscles, your bone cells, and your saliva glands are all prone to damage. Every effort is being made to minimize the exposure these normal cells receive, while maximizing the exposure the cancer cells receive.

Short-term Changes

Mucositis

Radiotherapy damages the cells lining the inside of your mouth, causing sores. They may or may not be painful. Topical medications can be used to make these areas feel better. After the radiation therapy is finished, the lining of your mouth almost always heals completely. If the sores are too great, you may need to take a break from your radiation therapy to allow healing.

Taste Changes

You may have a frustrating decrease in your ability to taste certain foods both during and after radiation. This is due both to damage to your taste buds from the beam and from diminished saliva. With time, most people recover a good portion of their ability to taste foods, although they tend to prefer spicier foods.

Long-term Changes

Possible long-term changes to your mouth include:

- Limited opening.
- Reduced blood flow to the bone.
- Reduced saliva.
- Increased tooth decay.

Limited Opening

When the radiation passes through your chewing muscles, they can become damaged and scarred. If this happens, your ability to open your mouth and/or chew may be affected. The good news is that this is *completely avoidable*.

During your radiation and afterwards, you must **stretch** and **yawn** as wide open as you can, as many times a day as you can. Do this even if you are sore.

Your doctor may have you use a set number of tongue depressors to monitor your progress. As long as you keep exercising and stretching open, you will not develop the scarring problem. In rare cases, the muscles scar so much that your mouth cannot be opened very wide at all after treatment.

Reduced Blood Flow

Radiation damages the small blood vessels that nourish the bone of your jaws. This means it is difficult or impossible for your bone to heal if, for example, a tooth is removed. Therefore, it is important to have a thorough dental exam before starting radiation therapy. Sometimes teeth that would be repaired and saved in different circumstances will need to be removed.

For the same reason, it is vital that you inform any future dentist that you have had radiation therapy and that no oral surgery is to be done without proper precautions. The blood flow reduction gets worse over time. If a tooth is removed later without proper precautions, you may get *osteoradionecrosis*, meaning an area of dead bone that cannot heal.

There is good news, however. A method exists where we can re-grow some blood vessels. It is time-consuming and very expensive (and thus not standard protocol), but it can grow about 70% of the blood vessels back, which is enough to be able to do oral surgery.

This therapy is called *hyperbaric oxygen therapy* (HBO₂). If you need any kind of oral surgery in the future, your doctor will likely require you to undergo HBO₂. While this therapy works well, it is much simpler to maintain the best teeth and remove any teeth that are in question before starting radiation.

Reduced Saliva

At higher doses of radiation, any salivary glands in the beam are destroyed. This results in a permanent condition known as *xerostomia*, or “dry mouth.” You will notice a lack of saliva and have the feeling that your mouth is “cottony.” Your radiation oncologist will tell you if you are a candidate for intensity-modulated radiation therapy (IMRT) and the medicine *amifostine*, two current therapies used to minimize this effect.

At this time, we do not know how to regenerate the glands once they have been destroyed. While artificial saliva substitutes are available on the market, most people prefer to carry a small squirt bottle of water and give themselves a squirt when they feel too dry. We recommend this since it is inexpensive, effective, and easy to do. At night, a humidifier can be used for comfort while sleeping.

The lack of saliva is what patients typically notice most after radiation. Because the saliva normally functions to bathe the teeth and tissues in helpful nutrients, we often see other problems develop in a dry mouth. The most common is dental decay.

Increased Tooth Decay

Saliva helps to prevent tooth decay. Without it, the teeth have very little protection and tend to decay at a much higher rate, often within weeks. Most times, the softer root areas are affected first, since they are much more vulnerable than the hard enamel.

You can slow or stop the decay process with careful, regular toothbrushing using prescription-strength fluoride gel or toothpaste. Brushing removes food debris and *plaque*, which is a gooey film of decay-causing bacteria. Brushing must be done **after every meal**.

Fluoride makes the teeth stronger and less tasty to the bacteria. Apply the fluoride **once or twice every day for the rest of your life**. If you skip brushing and using fluoride, you will give the bacteria the opportunity to start decaying your teeth.

To Apply Fluoride

Your doctor will prescribe high-strength fluoride in either a gel or toothpaste. If you use the gel, your dentist will make some soft, flexible fluoride trays that custom fit your teeth. To use the fluoride, follow these steps:

Gel Fluoride Tray Method (*Apply 1 to 2 times daily*)

- Brush your teeth and rinse them well.
- Remove your fluoride trays from their water storage, damp dry them.
- Apply a few drops of fluoride to your trays, spread around.
- Insert your fluoride trays for 5 minutes on the clock.
- Remove the trays and spit out the excess fluoride.

Questions?

Call 206-598-4277

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC Clinic staff are also available to help at any time.

Dental Clinic:
206-598-4277

- Do not rinse, drink, or eat anything for at least 30 minutes. (We suggest applying the gel just before bedtime, although any time is fine.)
- Rinse your fluoride trays and return them to the water. (The trays will warp if they dehydrate.)

High-strength Fluoride Toothpaste Method *(Do 2 to 3 times daily)*

- Brush your teeth well.
- Do not rinse, drink, or eat anything for at least 30 minutes.
- The toothpaste will seem gritty, but leave it on for at least 30 minutes for best benefit.

Note: The toothpaste method is generally easier, but either method will work if the fluoride has good “contact time” with the teeth.

Dental Checkups

See your dentist every 3 months for the first year after radiation therapy. Your doctor can adjust this schedule based on how your mouth is doing.

Dentures

Dentures rely on saliva to give them suction. If you wear dentures, expect them to be more difficult to manage after radiation therapy. Keeping dentures properly relined and using water sips helps to keep them working well. If you have a partial denture, care must be taken to clean it well after every meal so that food trapped between it and the teeth will not fuel the bacteria that cause tooth decay.

Coping with Xerostomia

There will be an adjustment period that may or may not be difficult for you. Most people with dry mouths learn to use water sips and enjoy very happy lives with minor adjustments to their routine. See your dentist as recommended and follow the guidelines in this handout to maintain your oral health and make your mouth as comfortable as possible.

We’re Here to Help

Most dentists have not had specialized training to care for patients who have had radiation therapy. Ask your dentist if he or she has had this kind of training. Do not have any surgical procedures until you know it is safe to do so.

We are happy to assist you and your regular dentist in any way we can. Please encourage him or her to give us a call. The most critical thing is that you get the best possible care for your situation.

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