Survivorship: Late Effects After Radiation for Head and Neck Cancer

What is a late effect?

A late effect is a side effect that is caused by cancer treatment but happens months to years after cancer treatment has finished. Some side effects that you develop during treatment can last for months to years after treatment is completed (for example, fatigue or neuropathy). These are called long-term side effects.

Late effects can be health issues or psychological, emotional, and practical challenges.

Late Effects After Radiation for Head and Neck Cancer

Side effects from radiation treatment are directly related to the area of the body being treated. Any area in the treatment field has a risk of being damaged by radiation, causing side effects. The way radiation is given has changed over the years, leading to a lower risk of late effects.

Some of the possible long-term side effects of radiation to the head & neck include:

- **Swallowing problems**: Radiation can cause scar tissue in your throat or esophagus months to years after treatment. This can lead to swallowing problems. Report any changes in your swallowing to your provider. It may help to see a speech and swallowing specialist.
- **Radiation fibrosis**: This is the scarring of muscles that can make the muscles feel stiff or tough. These muscles can have spasms, stiffness, pain and/or become weak. Scarring of muscles in the neck can cause your head to be turned and tilted to the side or make it difficult to hold up your head. Physical therapy, cancer rehabilitation, supportive devices, and certain medications can help manage these problems.
- **Nerve Issues**: Nerves in the radiation area can be damaged or pinched by scar tissue, causing weakness or pain in the area.
- **Lymphedema**: Swelling of the face, chin, and neck area can happen. Notify your provider if you notice any swelling. Physical therapy can be used to treat and manage lymphedema.
- **Trismus**: This is an ongoing contraction of the muscle that opens and closes your mouth (TMJ). Trismus makes you unable to open your mouth normally. This can make it difficult to eat, speak, or perform dental care. Your oncology team can give you jaw exercises to prevent or help improve trismus. For some patients, jaw manipulation by a dentist or treatment by a cancer rehabilitation provider can be helpful.
- **Changes in Saliva Production**: You may have either dry mouth or thickened saliva. Dry mouth can lead to cavities. Using a saliva substitute, sipping on fluids, and sucking on sugar-free candy can help dry mouth. Thickened saliva can be managed by drinking fluids to thin your spit, using a cool or warm air humidifier, and warm showers. Some medications can be used to treat thickened saliva.

There are treatments available for many of these issues. Doctors who specialize in Cancer Rehabilitation Medicine (called physiatrists) can be very helpful in treating these concerns. You should see a dentist regularly and perform good oral hygiene (regular brushing, flossing, fluoride treatments if recommended by your dentist). You should avoid smoking, secondhand smoke, vaping, hookah, and using oral tobacco products, which can make oral problems from radiation worse.

Because the head & neck treatment field can encompass several other structures and organs, the risks to these areas are discussed below. Talk with your radiation oncologist to find out which areas were in your treatment field.
Hearing and Ear Changes
Radiation to the head can damage the cochlea (a part of the inner ear), and/or the ear canal. This can cause hearing loss, dryness of the ear canal, and fluid collection in the inner ear. These problems could result in:

- A full or clogged ear feeling.
- Dizziness.
- Ringing in the ears (tinnitus).
- Vertigo (sensation of spinning or loss of balance).

If you are having any of these issues, you should call your provider. An audiogram (hearing test) or seeing an audiologist can determine how to treat these side effects.

Damage to the Salivary Glands
Radiation to the head and neck can damage the salivary (parotid) glands. This can lead to:

- Dry Mouth.
- Dental problems: be sure to brush twice daily and floss once daily. Have dental exams and cleaning every 6 months and be sure your dentist is aware of your radiation treatment history.
- Contact your provider if you have new or worsening jaw pain.
- Ask your care team for a referral to a Registered Dietitian if you are having problems eating because of dry mouth, decreased taste/smell, or difficulty chewing or swallowing.

Damage to the Bones
- Radiation can cause small cracks (fractures) in the bones that are in the treatment field. Try to avoid trauma including falls or accidents. If you do get hurt, ask your provider if you need an x-ray to check for bone damage.
- Radiation to the jaw can cause osteoradionecrosis (ORN) of the jawbone. This is a rare complication. It causes the jaw bone to not be able to heal after minor trauma. It can happen after a dental procedure such as pulling a tooth. It may start as jaw pain or being unable to open the jaw. You should report any pain or difficulty opening your mouth to your provider. Let your dentist know that you have had radiation to the jaw, so they can monitor for ORN.

Sinus Problems
When the sinuses are in the field of radiation treatment, you may develop chronic sinusitis, a swelling of the sinus tissues.

Signs of sinusitis include:

- Post-nasal drip.
- Nasal discharge.
- Facial pain.
- Headaches.

You may need to see an otolaryngologist (ENT) to help manage these issues.

Vision and Eye Changes
If your eyes were in the area that received radiation, you are at risk of getting cataracts at an early age. Signs of cataracts include blurry vision, light sensitivity, poor night vision, double vision in one eye, seeing "halos" around objects, needing brighter light to read, or fading or yellowing of the colors you see. If you have any of these signs you should contact your provider.

Your lacrimal glands (tear ducts) can be damaged. This can cause a loss of or less tear production and chronic dry eyes. You may be given artificial tears or medications to stimulate tear production. Patients with dry eyes from radiation treatment may be at a higher risk for infections in the cornea (the front part of the eye).

Other possible effects can include:
- Shrinkage or loss of the eye.
- Corneal abrasions (scratches) and ulcers.
- Glaucoma.
- Damage to the optic nerve, leading to vision loss or blindness.

Due to the possible **side effects to your eyes**, you will need to be seen by an eye doctor (ophthalmologist) on a regular basis. If you notice any changes in your vision, you should contact your provider right away.

**Skin Changes**

Radiation can lead to permanent changes in the skin.

- You may develop new scars or notice changes in the color or texture of your skin. Radiation can also change the color and texture of your hair or can cause permanent hair loss in the treated area.
- The soft tissue and muscles under the skin can develop scarring and/or shrinkage, which can lead to a loss of flexibility and movement or chronic swelling in this area.
- You may develop chronic or recurring ulcers of the skin in the area treated. Blood vessels of the skin may become dilated and more visible, although this is not harmful.
- If the skin feels tight or sore, you can apply vitamin E to the skin.
- Use fragrance and dye-free soaps and moisturizers in the area if your skin is sensitive after radiation.

After radiation, the skin in the treated area is more sensitive to sunlight. This sensitivity will last for your lifetime. Practice **sun safety**, use plenty of sunscreen, wear a wide-brimmed hat, and keep skin in the treated area covered with clothing. Try to avoid being out in the sun between the hours of 10 am-4 pm when it is the strongest.

If you notice any new or worsening skin issues anywhere on your body, you should contact your provider for an assessment.

**Managing Late Effects**

If you experience any concerning or lasting symptoms, contact your care team. Some side effects require specialized care from healthcare providers experienced in working with cancer survivors. **Interdisciplinary survivorships clinics** are available at many cancer centers. If a clinic is not available near you, talk with your oncology care team about resources for managing your late effects.

After treatment, talk with your oncology team about receiving a survivorship care plan, which can help you manage the transition to survivorship and learn about life after cancer. You can create your own survivorship care plan using the **OncoLife Survivorship Care Plan**.

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