



Radiation Therapy to the Head and Neck: What You Need to Know About Swallowing

This information describes swallowing problems that can be caused by radiation therapy to the head and neck. It also describes how to prevent them.

Normal Swallowing

Many muscles and nerves work together to help you swallow (see Figure 1). When you eat and drink, food and liquids mix with your saliva. Your saliva makes the food soft and moist.

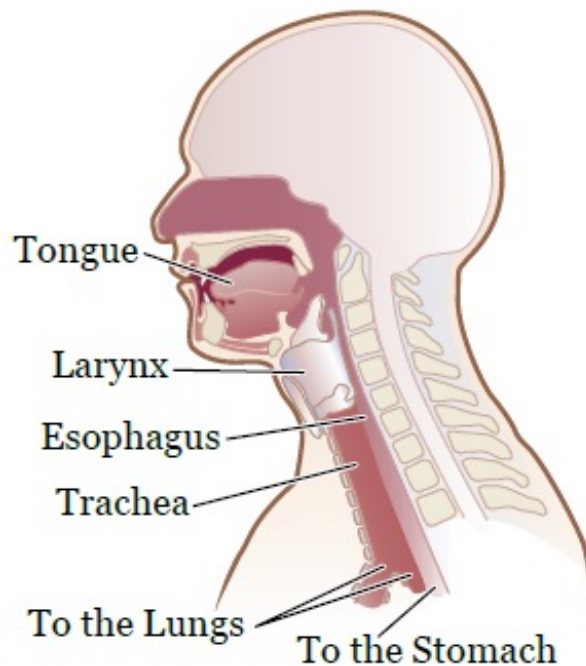


Figure 1. Structures involved in swallowing

Chewing your food breaks it down. As you chew, the food and saliva form a ball

called a bolus.

The bolus gets pushed to the back of your mouth with your tongue. Then, a reflex takes over and the back of your tongue pushes the food down. Your larynx (voice box) closes to prevent the food or liquid from entering your airway (trachea). The bolus then enters your esophagus (food pipe) and moves through to your stomach.

If the muscles you use to swallow or protect your airway are weak, food or liquid could enter your airway or lungs. This is called aspiration. Aspiration can lead to complications including pneumonia or respiratory infections (infection that affects your nose, throat, and airways).

Effects of Cancer and Treatment on Swallowing

Depending on the size and location of the tumor, your muscles and structures that support normal swallowing may weaken. They may not work as well as they did before you started radiation therapy. The side effects of treatment can also affect these structures.

Radiation therapy can cause:

- Pain when swallowing
- Sores (mucositis) in your mouth and throat
- Dry mouth
- Thicker saliva
- Swelling
- Taste changes

These symptoms begin 1 to 2 weeks after you start radiation therapy and may get worse during treatment. Most symptoms will start to improve about 2 to 4 weeks after treatment has ended.

Radiation therapy can also cause permanent tissue scarring. The effects of this

scarring depend on the area that was treated. Below are some effects of scarring.

- The muscles attached to your jaw may tighten and make it difficult to open your mouth and chew your food. This is called trismus.
- Your salivary glands may not make enough saliva. This can make swallowing difficult because your mouth is too dry.
- The muscles in your tongue and the back of your throat may not be able to move as well. This can make it harder to push the bolus down your throat and open up your esophagus.
- The muscles that help you to protect your airway when swallowing may get weaker. They may not be strong enough to prevent foods or liquids from going down your airway.
- Your esophagus may narrow, which can cause food to get stuck in the back of your throat.

Not everyone will have all of these problems. Your treatment will be planned to decrease your chances of developing them. Your healthcare team will also teach you things that you can do to help decrease these problems.

Other treatments can also affect swallowing. Surgery can affect parts of your mouth and throat, which could make swallowing more difficult. Some chemotherapy medications can cause sores in the mouth and throat. This can make swallowing painful.

Managing Problems with Swallowing

Having trouble swallowing is called dysphagia (dis-fey-juh). Your healthcare team will work with you to help you manage this problem. This team includes your doctors, nurses, a swallowing specialist, and a dietitian.

Painful swallowing

If you have painful swallowing during your treatment, you will get pain medication to manage it. Take the medication as instructed by your doctor. If it doesn't help, tell your doctor or nurse. There are many different medications that could be used

to help manage your pain.

Aspiration

When you're having trouble swallowing, food or liquid can pool in the back of your throat. You can then aspirate your food, which means it goes into your airway instead of your esophagus.

Signs of aspiration include coughing during or after swallowing. You can also have changes in your voice quality while eating or drinking.

If this happens, contact your swallowing specialist immediately. They will evaluate any changes in your swallow function and can recommend the right foods and liquids that are safe to swallow. They can also review swallowing exercises with you to help prevent further impact on your ability to swallow.

Aspiration can lead to pneumonia, respiratory infections, and other complications. Call your doctor or nurse immediately if you have any of the following symptoms:

- Shortness of breath
- Wheezing
- Painful breathing
- A cough with phlegm or mucus
- A temperature of 100.4° F (38° C) or higher

Swallowing therapy

You will see a swallowing specialist before, during, and after your treatment. They will:

- Explain how treatment can affect your swallowing.
- Teach you exercises to stretch and strengthen the muscles involved in swallowing.
- Look for any changes in your ability to swallow as you go through radiation therapy.

- Help you keep your ability to swallow after your treatment is done.

Exercises

Your swallowing specialist will tell you when you should start these exercises. These exercises will help to prevent changes in your swallow function during your radiation therapy and help you keep your ability swallow over time.

For each exercise, do one of the following, as directed by your swallowing specialist:

- 5 repetitions, 5 times a day
- 10 repetitions, 3 times a day

Swallowing exercises

Tongue hold exercise (Masako exercise)

1. Put the tip of your tongue in between your front teeth.
2. Hold your tongue between your front teeth and swallow.

Between each swallow, you can relax and move your tongue back to its normal position.

Effortful swallow exercise

- Swallow normally, but squeeze hard with your throat and tongue muscles.

To squeeze hard, you can pretend you're swallowing something large, like a spoonful of peanut butter.

Mendelsohn swallow maneuver exercise

- Swallow normally, but pause for 2 seconds in the middle of the swallow before you relax at the end of the swallow.

To pause during the swallow, you can pretend that you're holding your breath in the middle of the swallow for 2 seconds before relaxing.

Supraglottic swallow exercise

1. Breathe in (inhale) and hold your breath.
2. While holding your breath, swallow.
3. Breathe out (exhale) forcefully.

Shaker exercise

1. Lay flat on the floor or a bed.
2. Lift your head as if you're looking at your toes.
3. Lay your head back down.
4. Repeat this movement 30 times.
5. Next, lift your head. Hold it in this position for up to 60 seconds or for as long as you can. Then, relax.

Tongue range of motion (ROM) exercises

Tongue protrusion exercise

1. Stick out your tongue as far as you can until you feel a good stretch.
2. Hold it there for 5 seconds.

Tongue retraction exercise

1. Pull your tongue far back in your mouth, as if you're gargling or yawning.
2. Hold it there for 5 seconds.

Tongue lateralization exercise

1. Move your tongue as far to the left as you can so you feel a good stretch in your tongue.
2. Hold it there for 5 seconds.
3. Move your tongue to the right as far as you can until you feel a good stretch in

your tongue.

4. Hold it there for 5 seconds.

Tongue tip exercise

1. Place the tip of your tongue behind your top teeth or on your gums.
2. While holding this position, open your mouth as wide as possible for 5 seconds.

Back tongue exercise

- Say a strong “k” or “kuh” sound. You should do this by pulling the back of your tongue to the back of your throat.

Tongue strengthening exercises

You will need a tongue depressor or spoon to do these exercises.

Tongue tip strengthening exercise

1. Stick out your tongue as far as you can.
2. Place a tongue depressor or a spoon at the tip of your tongue.
3. Push your tongue firmly against the tongue depressor or spoon.
4. Hold this position for 5 seconds. Then, relax.

Sides of tongue strengthening exercise

1. Place the tongue depressor or spoon against the left side of your tongue.
2. Push your tongue firmly against the tongue depressor or spoon.
3. Hold this position for 5 seconds. Then, relax.
4. Place the tongue depressor or spoon against the right side of your tongue.
5. Push your tongue firmly against the tongue depressor or spoon.
6. Hold this position for 5 seconds. Then, relax.

Top of the tongue strengthening exercise

1. Push down on your tongue with a tongue depressor or spoon. As you're doing this, push up with your tongue.
2. Hold this position for 5 seconds. Then, relax.

Jaw exercises

Active range of motion and stretching exercises

Sit or stand. Hold your head still while doing these exercises.

1. Open your mouth as wide as you can, until you can feel a good stretch but no pain (see Figure 2). Hold this stretch for _____ seconds.
2. Move your jaw to the left (see Figure 3). Hold this stretch for 3 seconds.
3. Move your jaw to the right (see Figure 4). Hold this stretch for 3 seconds.
4. Move your jaw in a circle. Make 5 circles in each direction.



Figure 2. Opening your mouth



Figure 3. Moving your jaw to the left



Figure 4. Moving your jaw to the right

Passive stretching exercise

1. Place your thumb under your top front teeth.
2. Place the pointer (index) finger of your other hand on your bottom front teeth (see Figure 5).
3. Open your mouth with your fingers. Don't bite down or resist. Let your fingers do all of the work.

4. Hold this stretch for _____ seconds.

Your swallowing specialist may teach you other exercises or strategies to help you keep swallowing during your treatment. These will be based on your swallowing evaluations.

Dietary Guidelines

Eating well is an important part of your cancer treatment. If you're having pain or difficulty swallowing, you may not be able to eat enough food. This can make you lose weight and decrease your energy.

You also may not be able to drink enough liquid to stay hydrated. Your swallowing specialist, nurse, doctor, and dietitian will talk with you about what you should eat and drink during your treatment.

Your swallowing specialist will recommend the proper food and liquid textures for you. When you try new foods and liquids, make sure they have the textures recommended by your swallowing specialist.

Your healthcare team may also recommend that you drink nutritional supplements (such as Ensure®) to help increase your caloric intake. These items can be found at your local grocery store, pharmacy, or on the Internet.

For more dietary recommendations, read the following resources:

- *Eating Well During and After Your Cancer Treatment*
(www.mskcc.org/pe/eating_cancer_treatment)
- *Eating Guide for Puréed and Mechanical Soft Diets*
(www.mskcc.org/pe/pureed_mechanical_soft_diets)

Managing dry mouth or thick saliva



Figure 5. Passive stretching exercise

Try the following suggestions if dry mouth or thick saliva is a problem for you:

- Drink 8 to 10 cups of liquids a day. Being well-hydrated will help loosen thick saliva.
- Keep a bottle of water or other liquid with you when you're away from home. Sip from it frequently throughout the day.
- Chew sugarless gum or suck on sugarless candy. This can cause more saliva to flow.
- Add sauces, gravies, or other liquids to your foods.
- Use a humidifier at home to help loosen thick saliva and secretions.

Contact Information

For more information, you can contact a speech and hearing specialist in Memorial Sloan Kettering (MSK)'s Speech and Hearing Center.

You can reach a specialist Monday through Friday from 9:00 AM to 5:00 PM at 212-639-5856.

The Speech and Hearing Center is located in Memorial Hospital at:

1275 York Avenue (between East 67th and East 68th Streets)
4th Floor in the Bobst Building
Suite 7
New York, NY 100065

If you have any questions, contact a member of your healthcare team directly.
If you're a patient at MSK and you need to reach a provider after 5:00 PM,
during the weekend, or on a holiday, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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