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

**About Normal Swallowing**

Many muscles and nerves work together to help you swallow (see Figure 1).

When you eat and drink, the food and liquids mix with your saliva. Your saliva makes the food soft and moist. Chewing your food breaks it down. As you chew, the food and saliva form a ball called a bolus.

When you swallow, your tongue pushes the bolus to the back of your mouth. Then, a reflex takes over and the back of your tongue pushes the food into your esophagus (food pipe). At the same time, your larynx (voice box) closes to keep the food or liquid from entering your airway (trachea). The bolus then moves down your esophagus and into your stomach.

If the muscles in your mouth or throat are weak, food or liquid could stick in your esophagus or enter your airway or lungs. Both of these things can be dangerous.
When food or liquid enters your airway or lungs, it’s called aspiration. Aspiration can lead to complications such as pneumonia (an infection in one or both of your lungs) or respiratory infections (infections that affect your nose, throat, airways, or all 3).

**How Cancer and Radiation Therapy Can Affect Swallowing**

Depending on the tumor’s size and location, your radiation therapy may weaken the muscles and structures that help you swallow. It can also keep them from working as well as they did before you started radiation therapy. This can make it harder to eat and drink normally.

Radiation therapy can cause:

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

These symptoms usually start 1 to 2 weeks after you start radiation therapy. They may get worse during treatment. Most symptoms will start to get better about 2 to 4 weeks after you finish treatment.

Radiation therapy can also cause permanent tissue scarring. The effects of this scarring depend on the area that was treated. Some effects of scarring are listed below.

- The muscles attached to your jaw may tighten and make it hard to open your mouth and chew your food. This is called trismus.
- Your salivary glands may not make enough saliva. This can make it hard to swallow 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 food or liquids down your throat and open up your esophagus.

The muscles that help protect your airway when you swallow may get weaker. They may not be strong enough to keep foods or liquids from going down your airway.

Your esophagus may narrow. This can cause food to get stuck in the back of your throat.

Not everyone will have all these problems. Your treatment will be planned to lower the chance that these problems happen. Your healthcare team will also teach you things you can do to help manage these problems.

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

**Managing Problems with Swallowing**

Having trouble swallowing is called dysphagia (dis-FAY-jee-uh). Your healthcare team will work with you to help you manage dysphagia. This team includes your doctors, nurses, a swallowing specialist, and a clinical dietitian nutritionist.

You’ll 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 to prevent long-term or late-onset changes.
**Painful swallowing**

If it’s painful when you swallow, your healthcare team will give you pain medication to help. Follow your doctor’s instructions for taking the medication. If it doesn’t help, tell your doctor or nurse. There are many different medications that can 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. This can make you more likely to aspirate your food. Signs of aspiration include:

- Coughing when you swallow
- Coughing after you swallow
- Changes in your voice while you’re eating or drinking

If any of these things happen, contact your swallowing specialist right away. They’ll evaluate any changes in your ability to swallow and can recommend foods and liquids that are safe to swallow. They can also help you practice swallowing exercises to help prevent more changes in your ability to swallow.

Call your doctor or nurse right away if you have any of the following symptoms:

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

These things can be signs of pneumonia or a respiratory infection.
Trismus

Trismus is when you can’t open your mouth as wide as usual. Trismus can happen anytime during, right after, or even years after your treatment.

When you can’t open your mouth well, it’s hard for your doctor to examine the area. You may also have problems:

- Cleaning your mouth and teeth (oral hygiene). This can lead to bad breath, cavities, and infections.
- Chewing and swallowing. This can make it hard for you to eat and drink.
- Talking.
- Kissing.
- Having a breathing tube placed, such as if you ever need general anesthesia (medication to make you sleep during a surgery or procedure).

Once trismus develops, it’s very hard to treat. That’s why it’s important to prevent trismus and treat it as early as possible. Your swallowing specialist will teach you exercises to help prevent trismus. It is also important to keep good oral hygiene and good posture.

Exercises

These exercises will help prevent changes in your ability to swallow during your radiation therapy. They’ll also help you keep your ability to swallow over time. Your swallowing specialist will tell you when to start doing them. The exercises won’t be helpful if you start them too soon after surgery or too far before your radiation therapy.

Do 10 repetitions of each exercise 3 times a day. If your swallowing specialist tells you to do them more or less often, follow their instructions instead.
Swallowing exercises

**Tongue hold exercise (Masako exercise)**

1. Put the tip of your tongue between your front teeth.
2. Swallow. Keep your tongue tip between your front teeth while you swallow.

You can relax and move your tongue back to its normal position between each swallow.

**Effortful swallow exercise**

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

Pretending you’re swallowing something big (such as a spoonful of peanut butter) can help you squeeze hard.

**Mendelsohn swallow maneuver exercise**

1. Swallow normally, but when you feel your throat and Adam’s apple move up, pause for 2 seconds before you relax at the end of the swallow.

To pause during the swallow, you can pretend you’re holding your breath in the middle of the swallow for 2 seconds before relaxing. It may also help to place your hand lightly on your throat to feel when the muscles are moving up or tightening during the swallow.

**Supraglottic swallow exercise**

1. Breathe in (inhale) and hold your breath.
2. While holding your breath, swallow.
3. Breathe out (exhale) forcefully or cough out the breath you were holding.
**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

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

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 10 seconds.

2. Move your lower jaw to the left (see Figure 3). Hold this stretch for 3 seconds.

3. Move your lower jaw to the right (see Figure 4). Hold this stretch for 3 seconds.

4. Move your lower jaw in a circle to the left.

5. Move your lower jaw in a circle 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 as wide as you can. Use your fingers to give extra resistance to keep it from
closing. You should feel a light stretch, but not pain.

4. Hold this stretch for 15 to 30 seconds.

If your swallowing specialist notices any changes in your ability to swallow, they may teach you other exercises or ways to help you keep swallowing during your treatment.

**Dietary Guidelines**

Eating well is an important part of your cancer treatment. If you’re having pain or trouble swallowing:

- You may not be able to eat enough food. This can make you lose weight and have less energy.
- You may not be able to drink enough liquids. This can make you dehydrated.

Your swallowing specialist, nurse, doctor, and clinical dietitian nutritionist 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 your swallowing specialist recommends.

Your healthcare team may also recommend that you drink nutritional supplements (such as Ensure®) to help you get more calories. You can buy nutritional supplements at your local grocery store, pharmacy, or on the Internet.

Managing dry mouth or thick saliva

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 often.
- Chew sugarless gum or suck on sugarless candy. This can make more saliva flow.
- Add sauces, gravies, or other liquids to your foods.
- Use a humidifier to help loosen thick saliva and secretions.
- Rinse your mouth often during the day with a mixture of 1 liter (about 4.5 cups) of water, 1 teaspoon of salt, and 1 teaspoon of baking soda. You can sip, rinse, or gargle with the mixture.

Contact Information

For more information, 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 a.m. to 5:00 p.m. 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)
Bobst Building 4th Floor, Suite 7
New York, NY 10065

The Speech and Swallowing Center is located in the David H. Koch Building at:

530 East 74th Street