Salivary Gland Cancer Treatment
General Information about Salivary Gland Cancer

Salivary gland cancer is a rare disease in which malignant (cancer) cells form in the tissues of the salivary glands.

The salivary glands make saliva and release it into the mouth. Saliva has enzymes that help digest food and antibodies that help protect against infections of the mouth and throat. There are 3 pairs of major salivary glands:

- Parotid glands: These are the largest salivary glands and are found in front of and just below each ear. Most major salivary gland tumors begin in this gland.
• Sublingual glands: These glands are found under the tongue in the floor of the mouth.
• Submandibular glands: These glands are found below the jawbone.

Anatomy of the salivary glands. The three main pairs of salivary glands are the parotid glands, the sublingual glands, and the submandibular glands.

There are also hundreds of small (minor) salivary glands lining parts of the mouth, nose, and larynx (voice box) that can be seen only with a microscope. Most small salivary gland tumors begin in the palate (roof of the mouth).
More than half of all salivary gland tumors are benign (not cancerous) and do not spread to other tissues.

Salivary gland cancer is a type of head and neck cancer.

**Being exposed to certain types of radiation may increase the risk of salivary cancer.**

Anything that increases the chance of getting a disease is called a *risk factor*. Having a risk factor does not mean that you will get cancer; not having risk factors doesn’t mean that you will not get cancer. Talk with your doctor if you think you may be at risk. Although the cause of most salivary gland cancers is not known, risk factors include the following:

- Older age.
- Treatment with radiation therapy to the head and neck.
- Being exposed to certain substances at work.

**Signs of salivary gland cancer include a lump or trouble swallowing.**

Salivary gland cancer may not cause any symptoms. It may be found during a regular dental check-up or physical exam. Signs and symptoms may be caused by salivary gland cancer or by other conditions. Check with your doctor if you have any of the following:

- A lump (usually painless) in the area of the ear, cheek, jaw, lip, or inside the mouth.
• Fluid draining from the ear.
• Trouble swallowing or opening the mouth widely.
• Numbness or weakness in the face.
• Pain in the face that does not go away.

**Tests that examine the head, neck, and the inside of the mouth are used to find and diagnose salivary gland cancer.**

The following tests and procedures may be used:

• **Physical exam and history**: An exam of the body to check general signs of health. The head, neck, mouth, and throat will be checked for signs of disease, such as lumps or anything else that seems unusual. A history of the patient's health habits and past illnesses and treatments will also be taken.

• **MRI (magnetic resonance imaging)**: A procedure that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the body. This procedure is also called nuclear magnetic resonance imaging (NMRI).

• **PET scan (positron emission tomography scan)**: A procedure to find malignant tumor cells in the body. A small amount of radioactive glucose (sugar) is injected into a vein. The PET scanner rotates around the body and makes a picture of where glucose is being used in the body. Malignant tumor cells show up brighter in the picture because they are more active and take up more glucose than normal cells do.
Computed tomography (CT) scan of the head and neck. The patient lies on a table that slides through the CT scanner, which takes x-ray pictures of the inside of the head and neck.

- **CT scan (CAT scan):** A procedure that makes a series of detailed pictures of areas inside the body, taken from different angles. The pictures are made by a computer linked to an x-ray machine. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly. This procedure is also called computed tomography, computerized tomography, or computerized axial tomography.
• **Endoscopy:** A procedure to look at organs and tissues inside the body to check for abnormal areas. For salivary gland cancer, an endoscope is inserted into the mouth to look at the mouth, throat, and larynx. An endoscope is a thin, tube-like instrument with a light and a lens for viewing.

• **Biopsy:** The removal of cells or tissues so they can be viewed under a microscope by a pathologist to check for signs of cancer.
  
  o Fine needle aspiration (FNA) biopsy: The removal of tissue or fluid using a thin needle. An FNA is the most common type of biopsy used for salivary gland cancer.
  
  o Incisional biopsy: The removal of part of a lump or a sample of tissue that doesn’t look normal.
  
  o Surgery: If cancer cannot be diagnosed from the sample of tissue removed during an FNA biopsy or an incisional biopsy, the mass may be removed and checked for signs of cancer.

Because salivary gland cancer can be hard to diagnose, patients should ask to have the tissue samples checked by a pathologist who has experience in diagnosing salivary gland cancer.
Certain factors affect chance of recovery and treatment options.

Prognosis (chance of recovery) depends on the following:

- The stage of the cancer (especially the size of the tumor).
- The type of salivary gland the cancer is in.
- The type of cancer cells (how they look under a microscope).
- The patient's age and general health.

After salivary gland cancer has been diagnosed, tests are done to find out if cancer cells have spread within the salivary gland or to other parts of the body.

The process used to find out if cancer has spread within the salivary glands or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment. The following procedures may be used in the staging process:

- **CT scan (CAT scan):** A procedure that makes a series of detailed pictures of areas inside the body, taken from different angles. The pictures are made by a computer linked to an x-ray machine. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly. This procedure is also called computed tomography, computerized tomography, or computerized axial tomography.

- **MRI (magnetic resonance imaging) with gadolinium:** A procedure that uses a magnet, radio waves, and a computer to
make a series of detailed pictures of areas inside the body. Sometimes a substance called gadolinium is injected into a vein. The gadolinium collects around the cancer cells so they show up brighter in the picture. This procedure is also called nuclear magnetic resonance imaging (NMRI).

There are three ways that cancer spreads in the body.

Cancer can spread through tissue, the lymph system, and the blood:

- **Tissue.** The cancer spreads from where it began by growing into nearby areas.

- **Lymph system.** The cancer spreads from where it began by getting into the lymph system. The cancer travels through the lymph vessels to other parts of the body.

- **Blood.** The cancer spreads from where it began by getting into the blood. The cancer travels through the blood vessels to other parts of the body.

Cancer may spread from where it began to other parts of the body.

When cancer spreads to another part of the body, it is called *metastasis*. Cancer cells break away from where they began (the primary tumor) and travel through the lymph system or blood.

- **Lymph system.** The cancer gets into the lymph system, travels through the lymph vessels, and forms a tumor (metastatic tumor) in another part of the body, lymph node disease in the neck.
• **Blood.** The cancer gets into the blood, travels through the blood vessels, and forms a tumor (metastatic tumor) in another part of the body. This is called *Distant Metastatic Disease.*

The metastatic tumor is the same type of cancer as the primary tumor. For example, if salivary gland cancer spreads to the lung, the cancer cells in the lung are actually salivary gland cancer cells. The disease is metastatic salivary gland cancer, not lung cancer.

**The following stages are used for salivary gland cancers that affect the parotid, submandibular, and sublingual glands:**

**Stage 0 (Carcinoma in Situ)**
In stage 0, abnormal cells are found in the lining of the salivary ducts or the small sacs that make up the salivary gland. These abnormal cells may become cancer and spread into nearby normal tissue. Stage 0 is also called carcinoma in situ.

**Stage I**
In stage I, cancer has formed. The tumor is in the salivary gland only and is 2 centimeters or smaller.

**Stage II**
In stage II, the tumor is in the salivary gland only and is larger than 2 centimeters but not larger than 4 centimeters.
Tumor sizes are often measured in centimeters (cm) or inches. Common food items that can be used to show tumor size in cm include: a pea (1 cm), a peanut (2 cm), a grape (3 cm), a walnut (4 cm), a lime (5 cm or 2 inches), an egg (6 cm), a peach (7 cm), and a grapefruit (10 cm or 4 inches).
**Stage III**

In stage III, one of the following is true:

- The tumor is larger than 4 centimeters and/or cancer has spread to soft tissue around the salivary gland; or

- The tumor is any size and cancer may have spread to soft tissue around the salivary gland. Cancer has spread to one lymph node on the same side of the head or neck as the tumor. The lymph node is 3 centimeters or smaller and cancer has not grown outside the lymph node.

**Stage IV**

Stage IV is the most advanced stage.

**Minor salivary glands are staged differently from the parotid, submandibular, and sublingual glands**

Minor salivary gland (small salivary glands lining parts of the mouth, nose and larynx or voice box) cancers are staged according to where they were first formed, such as the mouth or sinuses.

**Treatment Option Overview**

Patients with salivary gland cancer should have their treatment planned by a team of doctors who are experts in treating head and neck cancer
Your treatment will be overseen by a head and neck surgeon, a doctor who specialized in treating people with cancer of this region of the body. Because the salivary glands help in eating and digesting food, patients may need special help adjusting to the side effects of the cancer and its treatment. The surgeon may refer you to other providers who have experience and expertise in treating patients with head and neck cancer and who specialize in certain areas of medicine. These include the following:

- Radiation oncologist
- Medical oncologist
- Dentist
- Speech therapist
- Dietitian
- Psychologist
- Rehabilitation specialist

Three types of standard treatment are used:

**Surgery** is a common treatment for salivary gland cancer. A doctor may remove the cancer and some of the healthy tissue around the cancer. In some cases, a lymphadenectomy (surgery in which lymph nodes are removed) will also be done.

After the doctor removes all the cancer that can be seen at the time of the surgery, some patients may be given radiation therapy after surgery to kill any cancer cells that are left. Treatment given after the surgery, to lower the risk that the cancer will come back, is called **adjuvant therapy**.
Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells or keep them from growing. There are two types of radiation therapy:

- **External radiation therapy** uses a machine outside the body to send radiation toward the cancer. The total dose of radiation therapy is sometimes divided into several smaller, equal doses delivered over a period of several days. This is called fractionation.

- **Internal radiation therapy** uses a radioactive substance sealed in needles, seeds, wires, or catheters that are placed directly into or near the cancer.

Special types of external radiation may be used to treat some salivary gland tumors. These include:

- **Fast neutron radiation therapy**: Fast neutron radiation therapy is a type of high-energy external radiation therapy. A radiation therapy machine aims neutrons (tiny, invisible particles) at the cancer cells to kill them. Fast neutron radiation therapy uses a higher-energy radiation than the x-ray type of radiation therapy. This allows the radiation therapy to be given in fewer treatments.

- **Photon-beam radiation therapy**: Photon-beam radiation therapy is a type of external radiation therapy that reaches deep tumors with high-energy x-rays made by a machine called a linear accelerator. This can be delivered as hyperfractionated radiation therapy, in which the total dose of radiation is divided into small doses and the treatments are given more than once a day.
The way the radiation therapy is given depends on the type and stage of the cancer being treated. External radiation therapy is used to treat salivary gland cancer, and may also be used as palliative therapy to relieve symptoms and improve quality of life.

External-beam radiation therapy of the head and neck. A machine is used to aim high-energy radiation at the cancer. The machine can rotate around the patient, delivering radiation from many different angles to provide highly conformal treatment. A mesh mask helps keep the patient's head and neck from moving during treatment. Small ink marks are put on the mask. The ink marks are used to line up the radiation machine in the same position before each treatment.
Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing. When chemotherapy is taken by mouth or injected into a vein or muscle, the drugs enter the bloodstream and can reach cancer cells throughout the body (systemic chemotherapy). When chemotherapy is placed directly into the cerebrospinal fluid, an organ, or a body cavity such as the abdomen, the drugs mainly affect cancer cells in those areas (regional chemotherapy). The way the chemotherapy is given depends on the type and stage of the cancer being treated. Chemotherapy is prescribed by a medical oncologist.