Oropharyngeal Cancer Treatment
General Information about Oropharyngeal Cancer

Oropharyngeal cancer is a disease in which cancer cells form in the tissues of the oropharynx.

The oropharynx is the middle part of the pharynx (throat), behind the mouth. The pharynx is a hollow tube about 5 inches long that starts behind the nose and ends where the trachea (windpipe) and esophagus (tube from the throat to the stomach) begin. Air and food pass through the pharynx on the way to the trachea or the esophagus.
Anatomy of the pharynx (throat). The pharynx is a hollow tube that starts behind the nose, goes down the neck, and ends at the top of the trachea and esophagus. The three parts of the pharynx are the nasopharynx, oropharynx, and hypopharynx.
Parts of the oropharynx. The oropharynx includes the soft palate, (back roof of the mouth), side and back wall of the throat, tonsils, and the back third of the tongue.
Oropharyngeal cancer is a type of head and neck cancer. Sometimes more than one cancer can occur in the oropharynx and in other parts of the oral cavity, nose, pharynx, larynx (voice box), trachea, or esophagus at the same time.

Most oropharyngeal cancers are squamous cell carcinomas. Squamous cells are the thin, flat cells lining the inside of the oropharynx.

Smoking or being infected with human papillomavirus can increase the risk of oropharyngeal cancer.

Anything that increases your risk 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.

The most common risk factors for oropharyngeal cancer include the following:

- A history of smoking cigarettes for more than 10 pack years and other tobacco use.
- Personal history of head and neck cancer.
- Heavy alcohol use.
- Being infected with human papillomavirus (HPV), especially HPV type 16. The number of cases of
Oropharyngeal cancers linked to HPV infection is increasing.

**Signs and symptoms of oropharyngeal cancer include a lump in the neck and a sore throat.**

These and other signs and symptoms may be caused by oropharyngeal cancer or by other conditions. Check with your doctor if you have any of the following:

- A sore throat that does not go away.
- Trouble swallowing.
- Trouble opening the mouth fully.
- Trouble moving the tongue.
- Weight loss for no known reason.
- Ear pain that is constant and possibly on one side.
- A lump in the back of the mouth, throat, or neck.
- A white patch on the tongue or lining of the mouth that does not go away.
- Coughing up blood.

Sometimes oropharyngeal cancer does not cause early signs or symptoms.
Tests that examine the mouth and throat are used to help detect (find), and determine the extent of, and stage oropharyngeal cancer.

The following tests and procedures may be used:

- **Physical exam and history**: An exam of the body to check general signs of health, including checking for signs of disease, such as swollen lymph nodes in the neck or anything else that seems unusual. The medical doctor or dentist does a complete exam of the mouth and neck and looks under the tongue and down the throat with a small, long-handled mirror to check for abnormal areas. An exam of the eyes may be done to check for vision problems that are caused by nerves in the head and neck. A history of the patient’s health habits and past illnesses and treatments will also be taken.

- **Fiber Optic Laryngoscopy**: A procedure in which the doctor checks the larynx (voice box) with a mirror or a laryngoscope to check for abnormal areas. A laryngoscope is a thin, tube-like instrument with a light and a lens for viewing the inside of the throat and voice box. It may also have a tool to remove tissue samples, which are checked under a microscope for signs of cancer.
• **PET-CT scan**: A procedure that combines the pictures from a positron emission tomography (PET) scan and a computed tomography (CT) scan. The PET and CT scans are done at the same time with the same machine. The combined scans give more detailed pictures of areas inside the body than either scan gives by itself. A PET-CT scan may be used to help diagnose disease, such as cancer, plan treatment, or find out how well treatment is working.

• **CT scan (CAT scan)**: A procedure that makes a series of detailed pictures of areas inside the body, such as the head and neck, taken from different angles. The pictures are made by a computer linked to an x-ray machine. A dye is 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.

• **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.

- **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).

- **Biopsy:** The removal of cells or tissues so they can be viewed under a microscope by a pathologist to check for signs of cancer. A fine-needle biopsy is usually done to remove a sample of tissue using a thin needle.

  The following procedures may be used to remove samples of cells or tissue:

  - **Endoscopy:** A procedure to look at organs and tissues inside the body to check for abnormal areas. An endoscope is inserted through an opening in the body, such as the mouth or nose. An endoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove abnormal tissue or lymph node samples, which are checked under a microscope for signs of disease. The nose, throat, back of the tongue, esophagus, stomach, larynx, windpipe, and large airways will be checked. The type of endoscopy is named for the
part of the body that is being examined. For example, pharyngoscopy is an exam to check the pharynx.

If cancer is found, the following test may be done to study the cancer cells:

- **HPV test (human papillomavirus test):** A laboratory test used to check the sample of tissue for certain types of HPV infection. This test is done because oropharyngeal cancer can be caused by HPV.

**Certain factors impact treatment options.**

Treatment options depend on the following:

- Whether the patient has HPV infection of the oropharynx.
- Whether the patient has a history of smoking cigarettes for ten or more pack years.
- The stage of the cancer.
- The number and size of lymph nodes with cancer.
- Keeping the patient's ability to speak and swallow as normal as possible.
- The patient’s general health.
Oropharyngeal tumors related to HPV infection have a better prognosis and are less likely to recur than tumors not linked to HPV infection.

Patients with oropharyngeal cancer have an increased risk of another cancer in the head or neck. This risk is increased in patients who continue to smoke or drink alcohol after treatment.

**Stages of Oropharyngeal Cancer**

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

The process used to find out if cancer has spread within the hypopharynx or to other parts of the body is called staging.

There are three ways that cancer spreads in the body.

- 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 and deposits in the lymph nodes.
• 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, such as the liver.

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.

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

Sometimes, patients may have a separate lung cancer and it may be difficult to determine if it is originating from the lung or metastatic to the lunch. Treatment may not differ.
Stage 0 (Carcinoma in Situ)
In stage 0, abnormal cells are found in the lining of the oropharynx. 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 and is 2 cm or smaller and is found in the oropharynx only.

Stage II
In stage II, the cancer is larger than 2 cm but not larger than 4 cm and is in the oropharynx only.

Stage III
In stage III, the cancer is 4 centimeters or smaller; cancer has spread to one lymph node on the same side of the neck as the tumor and the lymph node is 3 centimeters or smaller; or is larger than 4 centimeters or has spread to the epiglottis (the flap that covers the trachea during swallowing). Cancer may have spread to one lymph node on the same side of the neck as the tumor and the lymph node is 3 centimeters or smaller. If the cancer is related to HPV, you may have more than one lymph node at this stage level.

Stage IV*
Stage IV is the most advanced stage of cancer.

*Due to its favorable prognosis, HPV-associated oropharyngeal cancer does not have a Stage IV category.
Patients with oropharyngeal cancer should have their treatment planned by a team of doctors with expertise in treating head and neck cancer.

The patient's treatment will be overseen by a head and neck surgeon, a doctor who specializes in surgically treating people with cancer. Because the oropharynx helps in breathing, eating, and talking, patients may need special help adjusting to the side effects of the cancer and its treatment. The medical oncologist may refer the patient to other health professionals with special training in the treatment of patients with head and neck cancer. These may include the following specialists:

- Medical oncologist
- Radiation oncologist
- Head and neck microvascular reconstructive surgeon
- Dentist
- Dietitian/nutritionist
- Psychologist
- Rehabilitation specialist
- Speech therapist
- Pain specialist
Four types of standard treatment are used:

**Surgery** is a common treatment of all stages of oropharyngeal cancer. A surgeon may remove the cancer and some of the healthy tissue around the cancer. After the surgeon removes all the cancer that can be seen at the time of the surgery, some patients may be given chemotherapy or radiation therapy after surgery to kill any cancer cells that are left, or for aggressive features. Treatment given after the surgery, to lower the risk that the cancer will come back, is called **adjuvant therapy**.

New types of surgery, including transoral robotic surgery (TORS), are being studied for the treatment of oropharyngeal cancer. Transoral robotic surgery may be used to remove cancer from hard-to-reach areas of the mouth and throat. Cameras attached to a robot give a 3-dimensional (3D) image that a surgeon can see. Using a computer, the surgeon guides very small tools at the ends of the robot arms to remove the cancer. This procedure may also be done using an endoscope and is considered minimally invasive. If you are a candidate, recovery is faster and time spent in the hospital is shorter.

**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.

**External radiation therapy** uses a machine outside the body to send radiation toward the cancer.
Certain ways of giving radiation therapy can help keep radiation from damaging nearby healthy tissue. These types of radiation therapy include the following:

- **Intensity-modulated radiation therapy (IMRT):** IMRT is a type of 3-D radiation therapy that uses a computer to make pictures of the size and shape of the tumor. Thin beams of radiation of different strengths are aimed at the tumor from many angles.

- **Stereotactic body radiation therapy:** Special equipment is used to place the patient in the same position for each radiation treatment. Once a day for several days, a radiation machine aims a larger than usual dose of radiation directly at the tumor. By having the patient in the same position for each treatment, there is less damage to nearby healthy tissue. This procedure is also called stereotactic external-beam radiation therapy and stereotaxic radiation therapy.
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.
**Internal radiation therapy** uses a radioactive substance sealed in needles, seeds, wires, or catheters that are placed directly into or near the cancer.

In advanced oropharyngeal cancer, dividing the daily dose of radiation into smaller-dose treatments improves the way the tumor responds to treatment. This is called hyperfractionated radiation therapy.

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 oropharyngeal cancer.

Radiation therapy may work better in patients who have stopped smoking before beginning treatment.

If the thyroid or pituitary gland are part of the radiation treatment area, the patient has an increased risk of hypothyroidism (too little thyroid hormone). A blood test to check the thyroid hormone level in the body should be done before and after treatment.

**Chemotherapy**

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. Systemic chemotherapy is used to treat oropharyngeal cancer.

**Targeted therapy**

Targeted therapy is a type of treatment that uses drugs or other substances to attack specific cancer cells. Targeted therapies usually cause less harm to normal cells than chemotherapy or radiation therapy do. Monoclonal antibodies are a type of targeted therapy being used in the treatment of oropharyngeal cancer.

Monoclonal antibody therapy is a cancer treatment that uses antibodies made in the laboratory from a single type of immune system cell. These antibodies can identify substances on cancer cells or normal substances in the blood or tissues that may help cancer cells grow. The antibodies attach to the substances and kill the cancer cells, block their growth, or keep them from spreading. Monoclonal antibodies are given by infusion. They may be used alone or to carry drugs, toxins, or radioactive material directly to cancer cells.