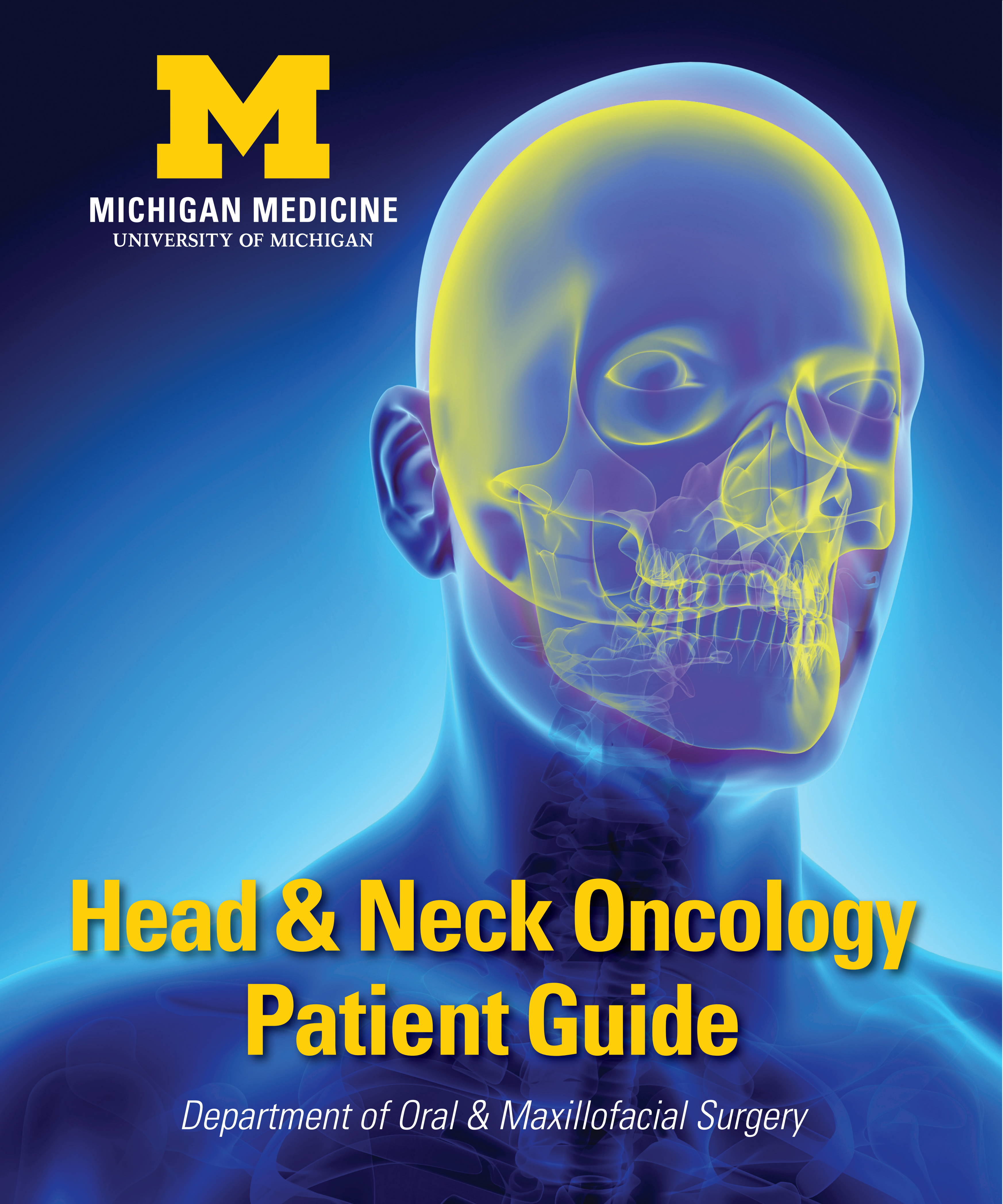


MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Head & Neck Oncology Patient Guide

Department of Oral & Maxillofacial Surgery

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Head & Neck Oncology Patient Guide

Department of Oral & Maxillofacial Surgery

Please bring this care guide with you to all appointments.

This Head & Neck Oncology Patient Guide is designed to help Michigan Medicine patients and their caregivers throughout the head and neck cancer experience.

Use this book as a reference guide, starting with the table of contents. There you will find topics ranging from pre-operative information, to descriptions of each procedure and the recovery process. Questions you have may be answered in this guide. If you have questions that require further explanation or you have concerns about something you don't understand, make a list to ask your doctor or nurse at your next office visit, or contact us at **(734) 936-5950**.

We know any cancer can be emotionally and physically stressful. Our team of doctors and other healthcare professionals understand this and want to help you through this process. We hope you find this information helpful.

Using this guide does not replace medical consultation with a qualified healthcare professional to meet the health needs of you or others. While the content of this guide is frequently updated, medical information changes rapidly and therefore, some information may be out of date or contain inaccuracies or typographical errors.

This patient guide was funded in part by a grant from U-M FRIENDS Gift Shops. Its contents were written by members of the Department of Oral Maxillofacial Surgery and the School of Dentistry. This guide does not provide specific medical advice and does not endorse any medical or professional service obtained through information provided in this guide.

Fey Adunbi, MSW
Amanda Jackson, BSN, RN
Sindu Kannapan, BS
Justine Moe, DDS, MD
Stephanie Munz, DDS
Cathy Smith, AGACNP-BC
Margaret Tiner, MS, CCC, BCS-S
Ana Trivax, RDN
Ashleigh VanBlarcom, DNP, AGACNP-BC
Brent Ward, DDS, MD

Revised 12/2021

What is Head and Neck Cancer?

Pre-Surgery

Surgery

Neck Dissection

Flaps

Hospital Stay

Tracheostomy

Feeding Tube and Nutrition

Follow Up

Special Care

YOUR HEAD AND NECK CANCER TEAM

Head and Neck Cancer Surgeon

A doctor who will perform your surgery. Your surgeon is responsible for the evaluation of your medical condition in preparation for surgery, performing your surgery and providing post-operative care.

Surgical Head and Neck Fellow

A surgeon who has completed their training but wishes to pursue additional training to specialize in head and neck cancer.

Clinical Care Coordinator

A registered nurse (RN) who specializes in head and neck cancer who will work with the rest of your healthcare team to get you ready for surgery.

Advanced Practice Provider

An advanced practice provider (APP) is a nurse practitioner (NP) or physician's assistant (PA) who works closely with the surgeon to provide medical care in the clinic and during your hospital stay. The APP may be involved in your diagnosis, diagnostic evaluation and management of medical problems. As a survivor, you will be followed long term by an APP.

Surgical Resident

A surgeon who is near completion of surgical training. They work very closely with your primary surgeon in the clinic and operating room.

Dentist

A doctor of oral health who is trained to diagnose, treat and prevent oral diseases, as well as the treatment of teeth and oral hard and soft tissue.

Anaplastologist

A clinician who specializes in making custom prostheses, such as eyes, ears and noses, to rehabilitate an absent, disfigured or malformed part of the body.

Speech-Language Pathologist (SLP)

A healthcare provider who specializes in evaluating and treating speech, language and swallowing.

Social Worker

A healthcare professional who works in the hospital and assists you and your family if you need psychosocial (emotional) care or assistance, or require resources outside of medical care or advance directive planning.

Registered Dietitian Nutritionist (RDN)

An expert who will provide nutrition advice based on your medical condition and individual needs.

Primary Care Provider

A doctor responsible for providing your general care and may assist with all the testing needed for surgery.

Radiation Oncologist

A doctor who specializes in radiation treatment for cancer.

Medical Oncologist

A doctor who specializes in using chemotherapy or other medications to treat cancer.

WHAT IS HEAD AND NECK CANCER?

Head and Neck Cancer

Your body is made of trillions of cells. Cancer is a disease of cells and can start anywhere in the body. When cancer spreads to other parts of the body and grows, it's called **metastasis**. These cancer cells look just like the ones from the head and neck where they originally started.

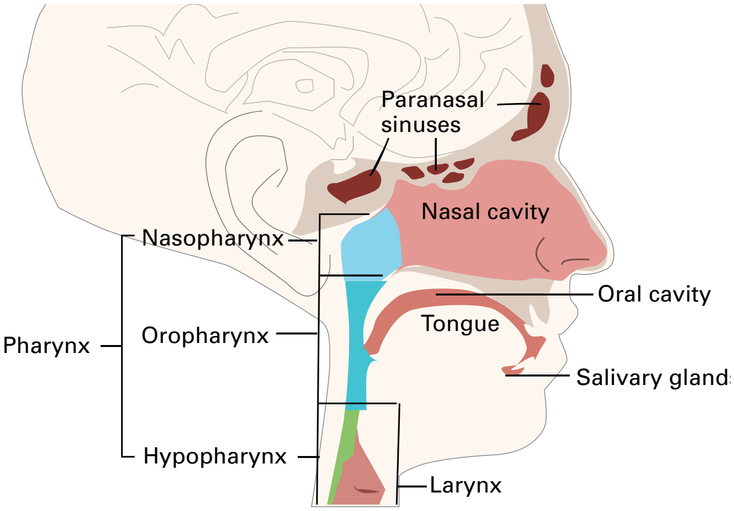
Cancer is always named for the place that it starts in the body. When head and neck cancer spreads to another area like the lungs, it is still called head and neck cancer. It would not be called lung cancer unless it started in the lung.

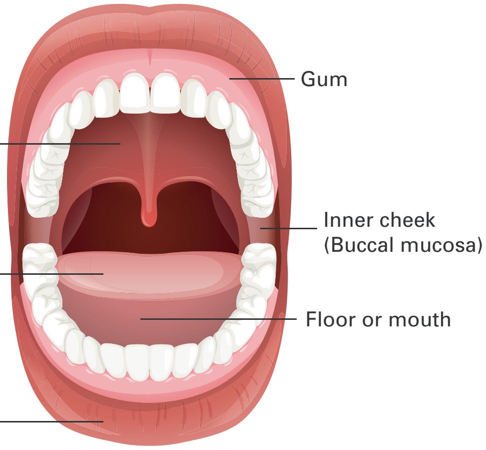
There are different kinds of head and neck cancer:

- **Oral cavity cancer** starts in the mouth.
    - Buccal mucosa is the inside the cheeks.
    - Floor of the mouth is under the tongue and between the teeth.
    - Anterior tongue is the front two-thirds of the tongue.
    - Alveolar ridge is the gums and the base of the teeth.
    - Retromolar trigone is the gums behind the wisdom teeth.
    - Hard palate is the roof of the mouth.
- **Nasal cavity cancer** starts in the area at the opening behind the nose and goes down to join the back of the mouth and throat.
- **Oropharyngeal cancer** starts in the voice box.
- **Hypopharyngeal cancer** starts in the lower part of the throat beside and behind the voice box.
- **Paranasal sinus cancer** starts in the opening around the nose called the sinuses.
- **Nasopharyngeal cancer** starts in the upper part of the throat behind the nose.

The most common type of cancer in the head and neck area is called squamous cell carcinoma. These cancers start in the tissues that line the parts of the nose, mouth, and throat.

Ask Your Doctor to Show You Where Your Cancer Is





Cancer Staging

Staging is the way the disease is measured, describing the growth of the primary tumor. A number (0-4) is assigned to each factor. The more serious the growth, the higher the number assigned. Staging is based on the T Score, N Score, and M Score which is described below :

- **T Score:** The size of the cancer inside the mouth (T stage). T0 (zero) means no evidence of primary tumor has been found. T4 means the tumor has spread to nearby structures and is considered an advanced local disease.
- **N Score:** The N score describes the cancer status of nearby lymph nodes. If there has been any spread of the cancer to the lymph nodes (glands) in the neck, there will be an N score (N stage). N0 (zero) means the nodes are cancer free. N1 or above means cancer is in the lymph nodes.

- **M Score:** The M score tells if the cancer has spread to body parts distant from the mouth and neck. Spread of the cancer to other parts of the body is the M score. (M stage). M0 (zero) means there are no distant metastases. M1 means one or more distant metastases are present. The lungs are the most common place oral cancer is spread.

After Staging

Staging represents a detailed description of the cancer. It will help decide whether you need surgery, radiation, chemotherapy or a combination of these options.

Treatment Options

- **Local therapy** treats cancer in a limited region. It cannot fully treat cancer that is widespread. Local therapies include surgery and radiation therapy.
- **Surgery** is a treatment that removes tumors or entire organs with cancer. This is a common treatment for oral cancers.
- **Radiation therapy** may be the main treatment. Radiation therapy uses high-energy x-rays to treat oral cancer, damaging DNA in cancer cells. Radiation either kills the cancer cells or stops new cancer cells from being made.
- **Systemic therapy** is a cancer treatment for the whole body. These treatments can be in the form of injections or pills.
- **Immunotherapy** is a type of therapy that uses substances to stimulate or suppress the immune system to help the body fight cancer. It works for certain cancer cells. T cells are a type of immune cell that can kill cancer cells.
- **Clinical trial** is a type of research that studies how well a certain treatment works in people. It can give you access to new tests and treatments you wouldn't otherwise receive. A treatment option may be to join a clinical trial.

Questions

This can be a confusing and scary time for you and your family, so we encourage you to bring family or friends to your clinic appointments. It's a good idea to write down questions for your healthcare providers. Everyone on your healthcare team will do everything they can to answer your questions accurately and clearly, at any time. If you don't understand answers to your questions, please ask again.

PRE-SURGERY

Your First Office/Clinic Visit

- **Please bring contact information for your dentist, primary care doctor, cardiologist, and any other specialty doctors you see.**
- Check in to the front desk and have a seat in the lobby.
- You will be taken back into an exam room where your blood pressure, heart rate, and temperature will be recorded. You will also be asked about your health and social history.
- A healthcare provider will examine the inside of your mouth.
- A special kind of x-ray, called a panoramic x-ray, may be taken. It shows both the upper and lower jaws and teeth on a single x-ray.
- A small camera, called a nasopharyngeal scope, may be passed through your nostril so the healthcare professional can better see the back of your throat and your vocal cords.
- You may see several healthcare providers on the same day (surgeon, nurse practitioner, nurse, speech language pathologist, etc.).
- You will be instructed how to set up your patient portal to view your healthcare information online.

THE SURGICAL PLAN

Once you and your doctor have agreed you need surgery, you will need to complete a few tests and procedures, and possibly see other doctors to make sure you are ready for surgery.

REMINDER: If you are on a blood thinner, you will need to discuss with the prescribing provider how many days before surgery you should stop taking the blood thinner. This is often your primary care provider (family doctor) or your cardiologist (heart doctor).

Taking antibiotics before your surgery is typically not necessary, except in special circumstances.

Possible Tests/Imaging

It is highly recommended to complete pre-operative blood work and imaging at Michigan Medicine due to possible delays in care. Below is a list of testing that may be ordered before to surgery. Any of the imaging tests can be scheduled by calling radiology at **(734) 936-4500**.

Blood Work

Your doctor may ask that you get the following blood work drawn:

- White blood count (WBC) monitors for infection.
- Hemoglobin (HGB) monitors for blood loss, evaluates for anemia (low red blood cell count).
- Hematocrit (HCT) monitors for blood loss, evaluates for anemia.
- Platelets (PLT) monitors for bleeding tendencies.
- Prothrombin Time (PT/INR) monitors blood clotting.
- Glucose (blood sugar) monitors pancreas function; can be an indicator of how well diabetes is managed.
- Sodium (Na) monitors for electrolyte balance.
- Potassium (K) monitors for electrolyte balance.
- Creatinine (Creat) is a measure of kidney function.
- Albumin (ALB) monitors nutrition status.

Electrocardiogram (EKG)

An EKG is a special test that records the electrical signals that create heart rhythms

CT (Computerized Tomography) Scan

A CT scan is a special kind of x-ray that takes detailed images of different body parts. It usually takes around 30 minutes or more depending on the number of areas scanned. Your healthcare provider will decide if you need dye (called contrast) injected into your vein to improve the quality of the scan. The test should be painless other than a needle poke to inject the dye. ***REMINDER:*** If you have a known allergy to contrast material, you need to call the Radiology Department at **(734) 936-4500** as soon as you can before the test.

It may take several days for the results to be available. Your healthcare provider will contact you to discuss the results, review them with you when you return to clinic, or send them to your patient portal.

MRI (Magnetic Resonance Imaging)

Unlike a CT scan, an MRI does not use x-ray radiation, but instead uses magnetic fields to build pictures. The test usually takes about 30 minutes to scan one part of your body and should not be painful.

It may take several days for the results to be available. Your healthcare provider will contact you to discuss the results, review them with you when you return to clinic, or send them to your patient portal.

PET (Positron Emission Tomography)

A PET scan uses a special dye containing radioactive tracers that can be swallowed, inhaled, or injected into a vein to help diagnose some conditions in your body, including cancer.

It may take several days for the results to be available. Your healthcare provider will contact you to discuss the results or review them with you when you return to clinic, or send them to your patient portal.

Biopsy

A biopsy is a procedure that removes a small amount of tissue for lab testing that can help confirm the cancer diagnosis. All results will generate a pathology report that can be released into your patient portal. Your medical provider will review the results with you.

Fine Needle Aspiration (FNA)

Your doctor may recommend an FNA to a nodule, mass or enlarged lymph node. An FNA is a biopsy technique where a needle is inserted into the area of concern to obtain a tissue or fluid sample to help make a diagnosis. Before the procedure, the area is injected with medication to make it numb and then a needle is quickly inserted to obtain tissue cells. Depending on the type of cells present, additional tests may need to be performed.

FNA is a quick and accurate way to determine the cause of an abnormal nodule or mass. Possible causes include infection, inflammation, and cancerous diseases.

Possible Consults Before to Surgery

Pre-operative History and Physical

Depending on your past medical history and the extent of the operation, you may be referred for an appointment at the pre-operative history and physical clinic. This appointment will review your past medical and surgical history, any medications you take, and recommendations on which medications to stop taking before surgery.

Cardiac Clearance

If you have any past medical history that involves your heart, you may need a cardiac clearance by your heart doctor (cardiologist). For an example, if you have had any type of open heart surgery, if you have had any heart stents placed, if you have an irregular heart rhythm, or if you take any blood thinners. It’s important to get medical clearance from your cardiologist to proceed with surgery.

Speech and Swallow Exam

An evaluation of speaking and swallowing is commonly completed before surgery because oral cavity cancer and surgery can cause problems with speech and swallowing. At this time, a speech language pathologist will evaluate your speaking and swallowing ability, as well as develop an understanding of your personal speaking demands. Sometimes, individuals may have a history of swallowing or speaking problems before surgery and this is important information for your treatment team to understand so that therapy can be tailored appropriately.

Nutrition Before Surgery

Nutrition is an important factor leading up to surgery. Better nutrition before surgery can lead to better outcomes after surgery. There are two main factors for ensuring good nutritional status – adequate calorie intake and sufficient protein intake. Your weight is the best way to tell if you are eating enough calories.

Ways to Increase Calories and Protein Before Surgery

- Try eating smaller, more frequent meals and snacks.
- Aim to have a good source of protein with each meal and snack. Good sources of protein include meat, fish, eggs, yogurt, milk, beans/legumes, and nuts/seeds.
- Try including a high-calorie and high-protein supplemental nutrition drink (available at local grocery stores) – either premixed or a protein powder mixed with whole milk.
- Think of food like medicine. Scheduling meals and snacks can help increase overall calorie and protein intake.
- Drink fruit juice, milk, or other calorie-containing beverages instead of water.
- Consume whole milk in place of skim or 1% milk.
- Add extra fats and oils (cheese, butter, margarine, cream cheese, sour cream, or avocado) to food.
- Make milkshakes or smoothies with ice cream or yogurt.
- Add peanut or nut butters for both extra calories and protein.

If you have poor oral intake or unintentional weight loss before surgery, a registered dietitian will provide additional resources to improve your nutritional intake.

Dental Clearance Evaluation

This is an opportunity for you and your dentist to discuss ways to treat a disease before head and neck cancer treatment begins. Meeting with your dentist before surgery can help prevent complications during treatment and educate you to the signs and symptoms to look for. During this visit, you will discuss your oral and dental care before surgery (clearance evaluation), during your hospital stay and after discharge.

During your first meeting, the goal for you and your dentist is to make sure you are in the best dental health possible. Your dentist will help you reach your best dental potential to make sure you have good function and comfort in your mouth and to try to avoid changes that can affect your social or professional life. You should discuss what is important to you and set goals with your dental providers.

Topics that may be covered during your visit with your dentist may include:

- **Denture fit** – Your dentures may fit comfortably before surgery but may not fit after your treatments. Your daily oral care practices are critically important. You may be prescribed a prescription-strength fluoride to brush with. Daily flossing and brushing of your tongue are also very important.
- **Oral complications** – The oral complications of head and neck radiation therapy (RT) result from radiation injury to the glands in your mouth that produce saliva, the lining of your mouth, and taste buds. Some complications your dentist may discuss with you are:
  - Inflammation (painful swelling) or sores in the lining of your mouth and gums (mucositis)
  - Cavities
  - Taste loss
  - Infections in your mouth
  - Destruction to the structures around your teeth
  - Decreased ability to open your mouth (trismus)

Some of these complications are short term and some can become permanent.

How to Prepare for Your In-Patient Admission

Discuss your scheduled admission with loved ones. Let them know you will be counting on them for support. Ask each person to help in small, but specific, ways.

Before admission, you will need to:

☐ Designate a health care advocate.

☐ Talk to trusted family members about your medical condition and determine who will best represent you. Select someone who you want making medical decisions on your behalf.

☐ Contact the clinic social worker (before your admission) or in-patient social worker as soon as possible during your admission process and request assistance in completing an Advance Directives document.

☐ Make copies of the advance directives available to clinic or hospital staff.

Ask Yourself These Questions About Medical Insurance Coverage

- Do you have insurance? Do you have adequate insurance?
- If you're not sure of your insurance status, contact the business office or patient financial counselors (PFC) directly at **(877) 326-9155** (toll-free) or **(734) 232-2621** (local) for eligibility, application and enrollment assistance.
- Alternatively, contact your insurance company to find out what benefits you have under your current plan, as well as for questions about what will be covered in your specific case. Contact information for your insurance company is available on the back of your insurance card.
- Remember to take notes (especially for names and telephone numbers) for anyone you speak with.

Family and Medical Leave Act (FMLA) Disability

- If you are planning on filing for FMLA (or any other type of disability) with your employer, please submit the paperwork as soon as possible to the Oral and Maxillofacial Surgery Clinic. Make sure to fill out the patient section before submitting. It can take up to 14 business days to process this paperwork; the sooner received, the sooner it can be processed. You can either give the clinic your FMLA paperwork in person or fax the paperwork to **(734) 232-5015**. Please provide a return number for which we can fax the completed paperwork back.

Transportation

- You will likely need assistance with transportation before and after surgery. If you need transportation, asking family and friends is always a good place to start.
  - You will not be able to drive within 24 hours of receiving anesthesia or if you are taking controlled substances. Identify people to assist with the following:
    - Admission transportation
    - Discharge transportation
    - Transportation to follow-up appointment

Pets

Please plan care for pets. Identify someone in your network who can adequately care for your pets in your absence.

Children

- Please make safe arrangements for all children, particularly minor children. The hospital, nurse or social worker cannot assist with childcare during your admission.
- You **may not** have young children stay overnight at your bedside during your admission.

Bills and Other Responsibilities

Please contact your financial institutions, utility company, auto insurance company, etc. to manage your financial obligations. If you need assistance, please reach out to the clinical care coordinator before surgery for a social work referral.

Family at Bedside

Begin to think about the following:

- Who will support you while you're in the hospital?
- Will that person sleep at the Med Inn or at another hotel? How do you plan to pay?
- What will they eat and how do they plan to pay for meals?
- Is that person on any medication? If so, have them get their prescription(s) filled before your admission.
- Do you require financial assistance for hotel/lodging?

For questions and more information, please contact the Patient and Visitor Accommodations Program (PVA) at **(800) 544-8684** (toll-free) or **(734) 936-0135** (local).

Hospital Facilities

Laundry Room

The laundry room is located on the 6th floor, unit 6A. For assistance, please call **(734) 936-6256**. Detergent is included with service, so there is no need to bring your own.

Guest Shower

Guest showers are located on the right side of the hallway on the 7th floor, by the east elevator.

Cafeteria

The cafeteria is located on the 2nd floor. Look for the big aluminum fork (cafeteria entrance).

Gift Shop

The gift shop is located on the 2nd floor. From the west elevator, turn right and walk past the big aluminum fork (cafeteria entrance). The gift shop is just past the double doors. From the east elevator, turn right and the gift shop is ahead of you.

Assistance at Home

Meals

Depending on what kind of surgery you undergo, you may be able to eat food by mouth after surgery. Think about who can help with meals after you leave the hospital. You may need help with preparing meals, getting groceries, or eating.

Company at Home

For further assistance, think about who can stay with you after you leave the hospital. It is recommended you have someone with you 24 hours a day for the first few days and possibly longer while you get used to being home and managing your care.

If you have concerns or questions about admission and what to expect, please contact the Social Work Department through the Guest Assistance Program at **(800) 888-9825** (toll-free) or **(734) 764-6893** (local) to connect or for a referral to the right community resource or hospital staff.

SURGERY

Day Before Surgery

REMINDERS:

- The day before surgery you will need to call **(866) 936-8800** (toll-free) between 7:30 - 9:30 a.m. You will need to leave your name, date of birth and a phone number where you can be reached. You will be called back before 4:30 p.m. and given the time you need to check in/arrive, as well as the general time of your surgery.
- **Do not** eat after midnight. You can have sips of water up until two hours before your arrival time.

Day of Surgery

- On the day of surgery, we suggest you park in parking structure P2 or valet park at University Hospital. Enter the hospital and head to the Surgery Waiting Room and Admitting. It is on the first floor of the hospital by the red column.
- When you check in, you'll either receive a pager and wait until pre-op is ready for you, or you will be brought back to pre-op.
- Once in pre-op, you will change into a hospital gown, get an IV and then you will be asked questions by the pre-operative nurse, operative nurse, doctors, and anesthesia personnel. You will be asked for your name, date of birth, type of surgery, allergies and current medications you are taking.
- Family members will be able to be with you for most of your time in pre-op and will receive a pager for updates during your surgery.

Surgery

- When your operating room is ready, the anesthesiologist will give you medicine to make you sleepy. You will move from the pre-op bed to the operating room bed, and then wheeled to the operating room.
- The operating room staff will ask your name, date of birth and type of surgery. The anesthesiologist will then give you oxygen to breathe as they give you medications to make you sleep. Once you are asleep, a breathing tube will be inserted by the anesthesiologist to help you breathe for the operation. This allows for optimal use of sedation and pain medications.
- You will be positioned for surgery and the areas of surgery will be prepared with a sterile prep to prevent infections. A foley catheter (flexible tube) to monitor urination will be inserted, as well as additional IVs. A final safety check will be performed before surgery.

- A catheter may be placed in an artery at the wrist, elbow, or groin to constantly measure your blood pressure and can be a source for future blood draws. A feeding tube is placed through your nose into the stomach and is used to administer nutrition. Patches are applied to your chest to monitor your heart.

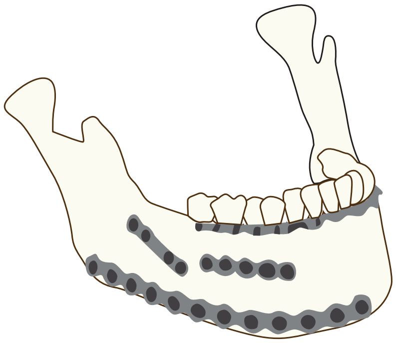
You may be in surgery between 3-12 hours or longer. Before surgery, your doctor can give you a better idea of time. After surgery begins, your family can get updates using your medical record number on displays in the family waiting area and by the pager given to you at check in. In general, updates occur every two hours. The pager works throughout the hospital.

The Procedure

Your surgeon will discuss with you where the cancer is located to know what part of your body will be operated on. The scans you took pre-operatively will determine whether a neck dissection will be needed. Neck dissection is an operation that removes lymph nodes that could contain cancer. See the *Neck Dissection* section for more information. Below are terms that could be used to describe your operation.

Reconstruction Hardware

When bone is being used to reconstruct an area, screws and plates will be used. They are made of titanium so you will be able to have MRIs and go through airport security and metal detectors without any issues.



Flaps

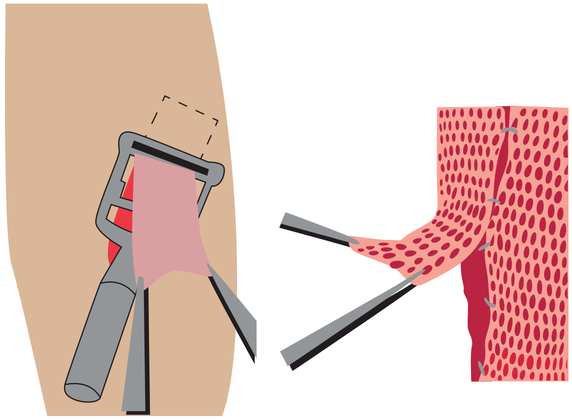
A **flap** is a way to fill a hole which is left when a cancer has been removed. Tissue from one part of your body is removed and placed over the area where the cancer has been removed. A flap can be used to replace large parts of the inside of the mouth, face, or neck. For more information, see the *Types of Flaps* section of this guide.

Grafts

Bone Graft

A bone graft involves removing bone from anywhere in your body, often from your rib, hip, or lower leg bone. This bone is used to replace an area in your face or jaw where bone has been removed, has missing bone, or an area that has not healed properly. Most bone grafts are expected to be reabsorbed and replaced as natural bone heals over the next few months.

Skin Graft



Graft skin is a portion of healthy skin that is taken from one of several places. Commonly, a thick piece of skin is shaved from the thigh and a clear dressing is placed over the top. It may look bloody under the clear dressing which is normal. This dressing will fall off in about seven days or a healthcare provider may remove it sooner. Once the clear dressing is removed, it is important to place Vaseline® on the area until it heals.

Another common skin donor site is the inside of your arm just above your elbow. This area may have stitches that may need to be removed in 10-14 days.

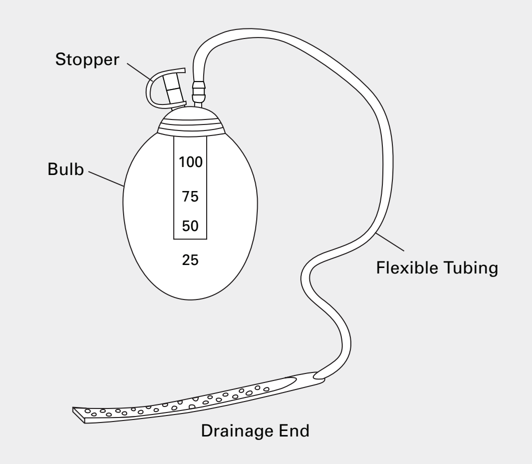
Jackson-Pratt Drain

A Jackson-Pratt Drain is a closed-suction medical device. It is commonly used as a post-operative drain for collecting body fluids from surgical sites. If you need to go home with this drain, a nurse will teach you how to care for it. ***REMINDER*****:** You will have to record the amount of drainage coming out every day. Once the amount is less than 30mL (per 24-hour period) for two days in a row, call the clinic and we will arrange for removal of the drain.

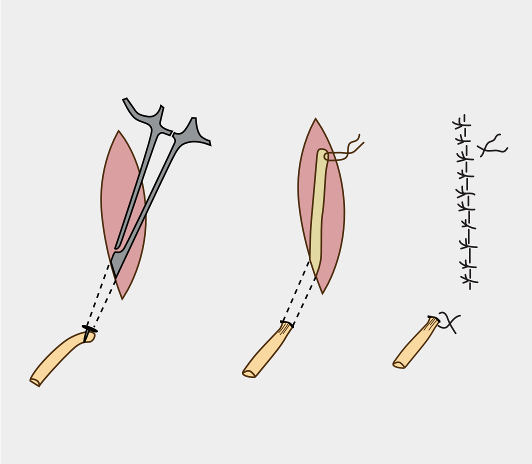
Penrose Drain

A Penrose is a soft, flexible rubber tube. It is used as a surgical drain to prevent the buildup of fluid in a surgical site. Your doctor will remove this drain when ready.

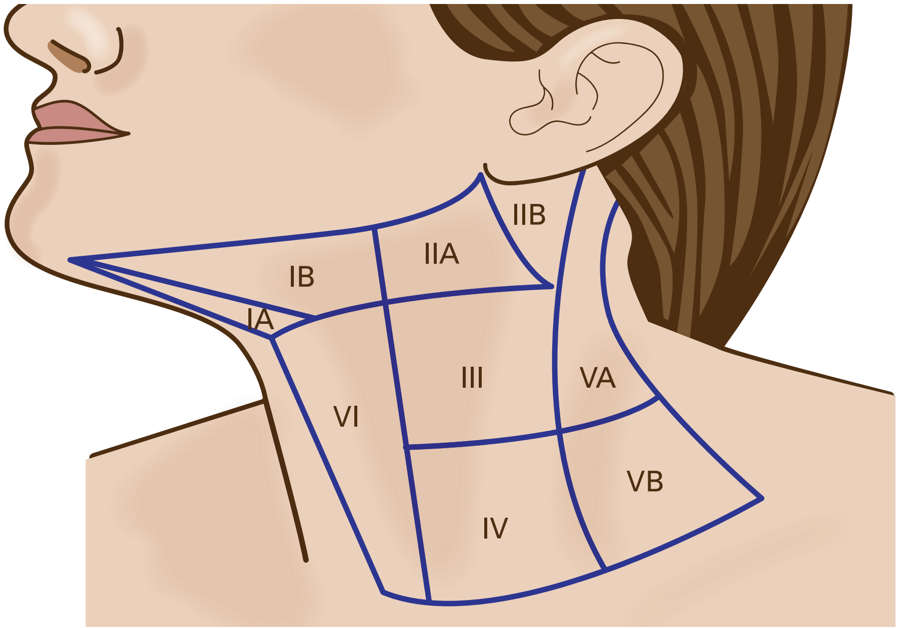
Jackson-Pratt Drain



Penrose



NECK DISSECTION



A **neck dissection** is a surgery to remove lymph nodes and other tissues in the neck.

The illustration above demonstrates the different levels (areas) where your surgeon may remove lymph nodes. Ask your surgeon if any lymph nodes need to be removed and from what area.

Lymph Nodes

Lymph nodes are glands that are present throughout your body. You may have felt a swollen lymph node in your neck when you had a simple cold or infection. Their job is to filter liquid which naturally leaks out of the blood vessels. This liquid (lymph) travels to the nodes which contain a lot of white blood cells designed to trap and fight germs which can cause an infection. As well as trapping germs, the lymph nodes can also trap cancer cells.

Lymph

Lymph is a clear fluid found throughout your body, including your mouth. Lymph cells give other cells food and water and contain germ-fighting blood cells. Lymph drains from tissue into vessels that transport it to the bloodstream. As lymph travels, it passes through small structures called lymph nodes. Lymph nodes remove germs from lymph. Lymph nodes are commonly removed in head and neck cancer, so it is important to know what they are.

Sentinel Lymph Nodes & Biopsy

The **sentinel lymph node is the first lymph node where the cancer would be expected to spread, given the flow of the body's lymphatic system.** In a procedure called sentinel lymph node biopsy, a surgeon removes the first node that drains the neck to check for metastasis. If that lymph node is clear, meaning there are no cancer cells in it, then a neck dissection can be avoided.

Do I have cancer in my lymph nodes?

It is often not possible to have the answer to this question until after your surgery when the glands that have been removed have been carefully looked at under a microscope. Your healthcare provider will have already felt your neck to see if there are any lumps and you will have a special scan (CT, MRI, or PET) to look more closely at the glands. Glands can feel big if there is an infection in the area, so if you can feel a lump in your neck, it does not necessarily mean your cancer has spread. If there are only small amounts of cancer cells in the glands, the neck can feel normal and look normal on the scan. This is often why we do not know if the cancer has spread until the glands have been removed and looked at under a microscope.

Will I still be able to fight infections once my lymph nodes have been removed?

Yes. There are thousands of lymph nodes throughout your body which will still be able to fight infection.

When will my neck dissection be carried out?

At the time of your surgery to remove the cancer, your surgeon will make an incision across your neck to gain access to lymph nodes in the neck. The cut usually follows a natural fold that is already in your neck skin. Once the lymph nodes are removed, stitches are placed that will be removed 10-14 days following your surgery. One or more drains are usually placed into the neck skin for a week or two to collect any blood and fluid. You have to go home with the drains still in place; if that is the situation, a healthcare provider will show you how to take care of the drains.

What are possible complications?

Nerve Damage

Most of the problems associated with having a neck dissection are the result of damage to one of two nerves:

- **Accessory nerve** – This nerve runs from the top to the bottom of the neck. It helps you to move your shoulder. The nerve has lots of lymph nodes lying very close to it, so it is often handled and sometimes bruised during neck dissection. If the nerve is bruised, it can stop working for several months. If this happens, you may experience pain and some difficulty in moving your shoulder which makes getting dressed more difficult. Rarely, the lymph nodes cannot be completely removed without cutting this nerve which would result in permanent shoulder problems. A physical therapist will work with you during your hospital stay and teach you shoulder strengthening exercises.

- **Facial nerve** – The branch of the facial nerve which makes your lower lip move can be bruised when lymph nodes close to it are removed. If this happens, the lower lip won’t move properly, and you may end up with weakness which will give you a crooked smile. Your smile may improve over time, but it can take several months.

Lymphedema

Lymphedema is swelling from lymph fluid that builds up in the tissues after surgery or radiation . If this happens, there are specialized therapies that can help move the fluid so there is not a large buildup of fluid in a single area.

Will I have scars?

All cuts made through the skin can leave a scar, but the majority will fade with time.

TYPES OF FLAPS

Flaps consist of tissue or bone from another part of your body that will be used to cover the areas where cancer has been removed. There are many different types of flaps. The following are the most common flaps used in our practice.

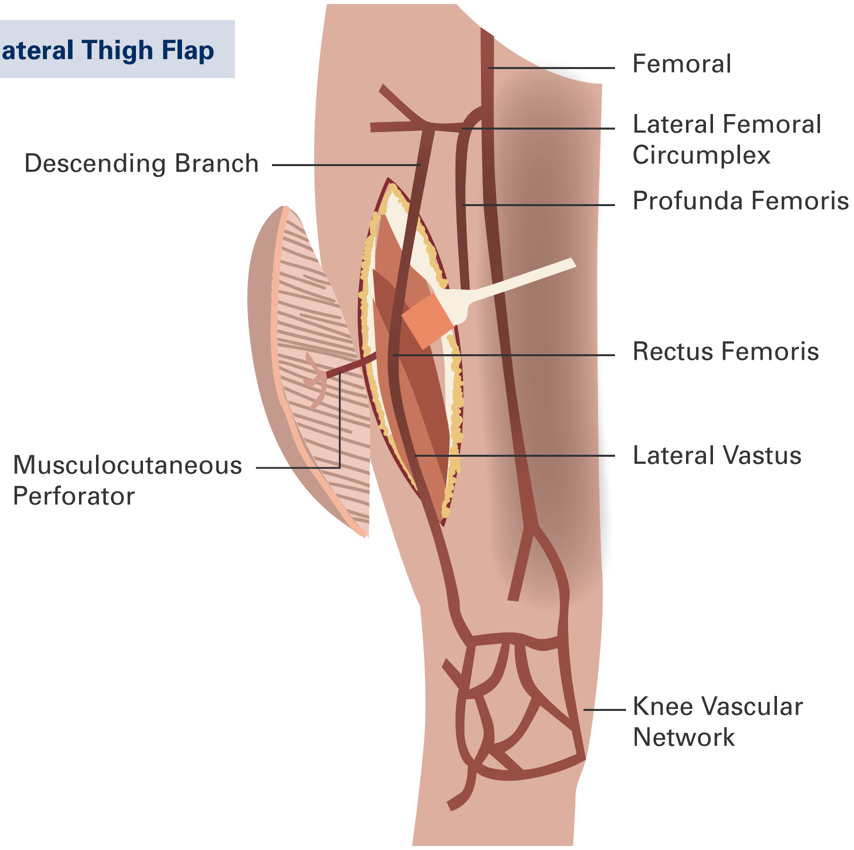
Anterolateral Thigh Flap (ALT)

What does the surgery involve?

Skin is taken from the front of the thigh and is used to fill a hole which is left when a cancer has been removed. Your surgeon will take a piece of skin and fat from the upper surface of your thigh known as the **donor site**. The skin and fat layer is removed (the **flap**) along with two blood vessels. One of the blood vessels supplies blood to the flap (artery) and other drains blood from it (vein).

Once the flap of skin is removed, it is stitched into the hole created by the removal of the cancer. Blood vessels supplying and draining the flap are then joined to the blood vessels in your neck, keeping the flap alive while it heals. The donor site on your thigh is then closed with stitches. A drain (Jackson Pratt drain or JP drain) will be placed to remove any excess fluid or blood from the donor site. Information about JP drains can be found in the *Surgery* section of this guide.

Anterolateral Thigh Flap



What will my leg be like afterward?

There may be a bandage or dressing over the top of the stitches that will be removed by your surgical team. An antibiotic ointment or Vaseline® will be used twice daily to promote healing. The stitches will be removed in about 7-10 days.

What are the potential complications?

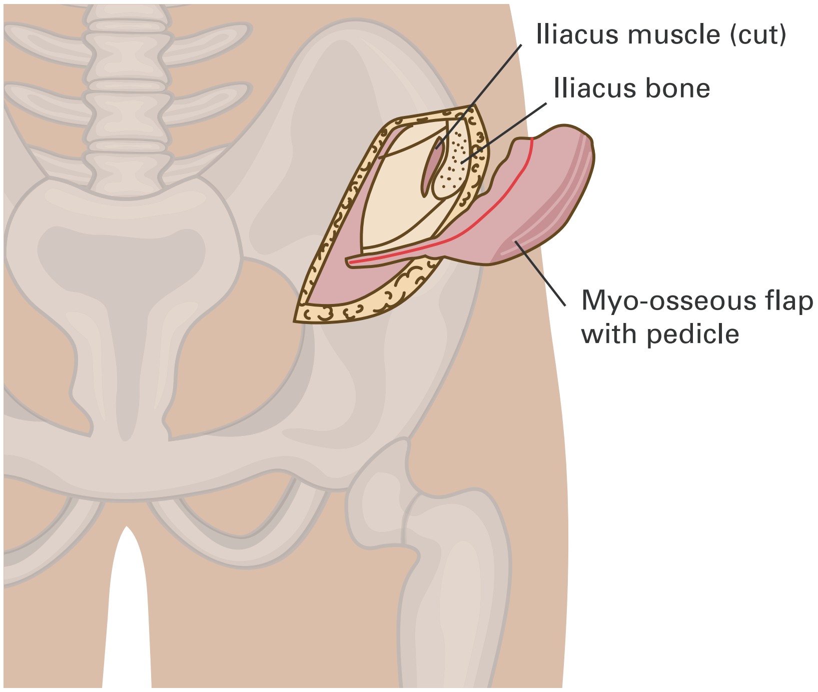
All surgeries have risk, such as bleeding or infection. The risks are low, but you should be aware of what they are.

A blood clot can form in the blood vessels. This means that the flap isn't getting any fresh blood. If the drainage vein clots, the flap becomes congested (dark in color) with old blood. If this occurs, it usually happens the first few days after surgery and you would have to return to the operating room to remove the clot. Clot removal is not always successful and would be considered a flap failure, requiring another surgery.

Deep Circumflex Iliac Artery Flap (DCIA)

The DCIA flap is a common way to replace bone that has been removed for cancer treatment. It is used to fill a hole in the bone in either the upper or lower jaw. The artery supplying blood to the bone is called the deep circumflex iliac artery. Therefore the flap is usually known as the DCIA flap.

Deep Circumflex Iliac Artery Flap (DCIA)



What does the surgery involve?

Your surgeon will take a piece of bone from your pelvis. The pelvis is the large block of bone that lies immediately above the hip joint. Pelvic bone (flap) is removed along with two blood vessels, one which supplies blood to the flap (artery) and one which drains blood from it (vein). Once the necessary piece of bone from the pelvis is removed, it is transferred to the head and neck and secured in position with small plates and screws. The blood vessels supplying and draining the flap are then joined to blood vessels in your neck. These blood vessels keep the flap alive while it heals.

What happens to the hole in the pelvis?

The hole in the pelvic bone where the flap is removed is left to heal on its own. It takes months for the pelvis to heal completely, but over time it will be as strong as it was before surgery.

What can I expect after the operation?

The area of your pelvis where the bone has been removed is likely to be sore. Pain medication will be prescribed. A JP drain may be placed to help prevent fluid from collecting under the skin. Your healthcare team will remove it when it’s time.

Will my walking be affected?

Soon after surgery you will start sitting in a chair. Slowly, you will start walking longer distances and will be walking normally in a short period of time.

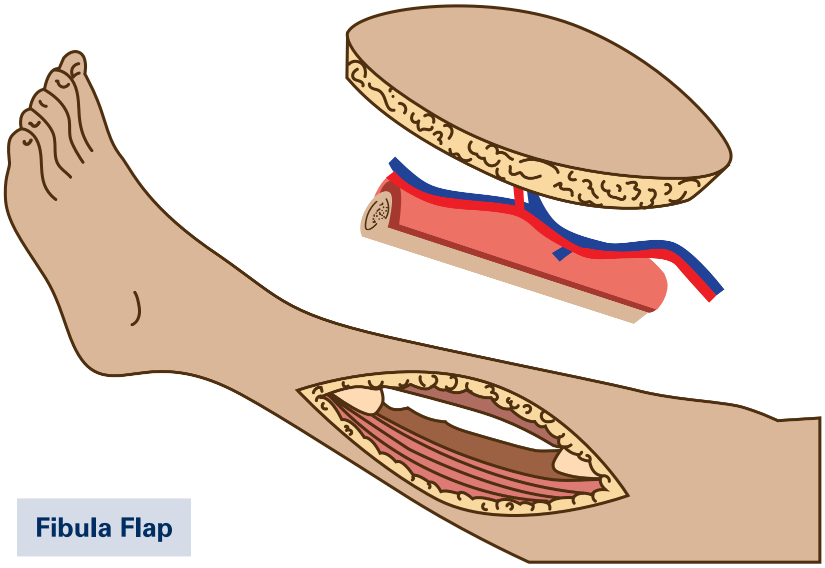
What are the potential complications?

All surgeries have risk, such as bleeding or infection. The risks are low, but you should be aware of what they are.

Fibula Flap

What does surgery involve?

Your surgeon will remove one of the bones from the lower part of your leg. The fibula bone runs on the outside of the leg from the knee joint to the ankle joint. It is a small thin bone that can be removed entirely without affecting your ability to bear weight. The fibula bone is removed (flap) along with two blood vessels, one of which supplies blood to the flap (artery) and one which drains blood from the flap (vein). The bone is transferred to the head and neck and secured into position with small plates and screws. The blood vessels supplying and draining the flap are then joined to blood vessels in your neck. These blood vessels keep the flap alive.



What will my leg be like afterwards?

Occasionally, a piece of skin will be taken in addition to the fibula bone. If the piece of skin that is removed is large, it will need to be replaced with a skin graft. If a skin graft is used, the dressing over the top of it will be removed about five days after surgery. The dressing will need to be changed twice a day for about a month.

What can I expect after the operation?

The area of your leg where the bone has been removed will likely be sore. You will receive pain medication during your hospital stay and at the time of discharge.

What are the potential complications??

All surgeries have risk such as bleeding or infection. The risks are low, but you should be aware of what they are.

In a small number of cases, one of the blood vessels supplying or draining the flap can develop a blood clot. This means that the flap isn't getting fresh blood or if the drainage vein clots, then the flap becomes congested (turning dark in color) with old blood. This complication usually happens within the first few days following surgery and may mean you have to return to the operating room to have the clot removed. Removing the clot is not always successful. If this happens, the flap is considered a failed flap and an alternative surgery will be considered.

Will my ability to walk be affected?

Removing the fibula bone does not normally result in long-term problems with walking. You will work with physical therapy (PT) while you are in the hospital, and you will receive a special boot to wear for about a month when standing or walking.

Latissimus Dorsi Flap (Lat Dorsi)

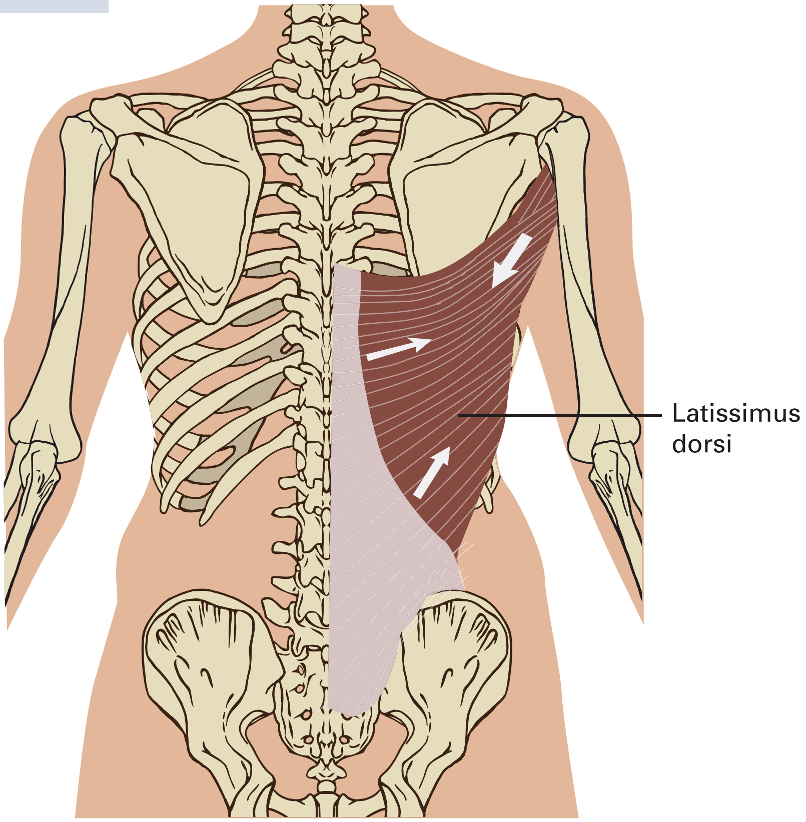
What does the surgery involve?

A large muscle from your upper back is lifted and moved into place. Due to the size of the muscle, the area that is used may seem bulky at first but will shrink down.

What happens to the area of the back where the muscle is removed?

It will be closed with either stitches or staples. A drain will help prevent accumulation of blood and fluid under the skin.

Latissimus Dorsi Flap (Lat Dorsi)



What are the potential complications?

All surgeries have risk, such as bleeding or infection. The risks are low, but you should be aware of what they are.

When appropriate, the drain in your back will be removed. If the area continues to drain and collect under the skin, you may get what is called a seroma which may require a procedure to allow further drainage.

Pectoralis Major Flap (Pec Flap)

What is a Pectoralis Major Rotational Flap?

The **pectoralis major**, also known as a pec major, is a thick fan-shaped muscle at the upper front of the chest wall. It makes up the bulk of the chest muscle in males and is under the breast in females. The pectoralis major pedicled flap maintains its own blood supply and is one of the most common ways of replacing tissue in the head. It can be used to replace large areas, has an excellent blood supply, and has good results.

What does surgery involve?

Your surgeon will tunnel a piece of skin and muscle from the pectoralis major, along with its attached blood vessels, and transfer it to the required area of the head and neck. The area where your pectoralis major is taken from is known as a **donor site**. It will be primarily closed with stitches or skin glue. To remove excess fluid or blood from the donor site, a JP drain will be placed and monitored. This will be removed when appropriate.

Pectoralis Major Flap

What will my chest be like afterwards?

Your chest will have a bandage for protection that will be taken off on the second day following surgery. The staples will be removed 7-14 days after surgery. Right after surgery you may experience some pain when moving your arm on the donor side. This may require pain medication. You will have a scar on your chest that will fade with time.

What are the potential complications?

All surgeries have risk, such as bleeding or infection. The risks are low, but you should be aware of what they are.

One of the blood vessels that supplies blood or drains the flap can develop a blood clot. This means that the flap isn't getting fresh blood or cannot drain old blood. If this happens, it's usually within the first few days following surgery and would require another surgery to remove the clot. Removing clots is not always successful and, on occasion, a new reconstruction graft site may be considered.

Platysma Flap

A broad sheet of muscle on either side of the neck that can be lifted and rotated into the hole. It can be used inside the mouth or on the outside of the face. It's a nice choice for the face because the color is often a good match.

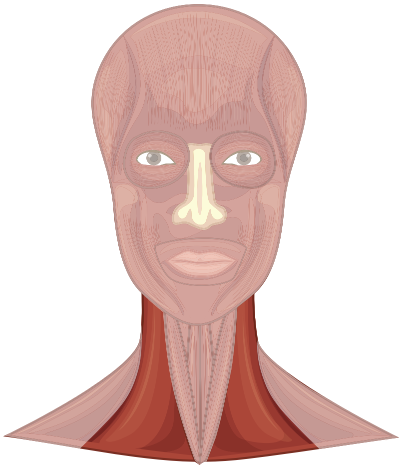
What will my neck look like after surgery?

Often on the side of the neck that the Platysma muscle was removed, there will be a bulky area that will go down over time but will most likely not completely go away.

What can I expect after my operation?

The area of your neck where the flap was removed will be sore. You will recieve pain medication during your hospital stay and at the time of discharge. You will also work with physical and occupational therapists to learn exercises to keep you strong.

All surgeries have risk, such as bleeding or infection. The risks are low, but you should be aware of what they are.



Platysma Flap

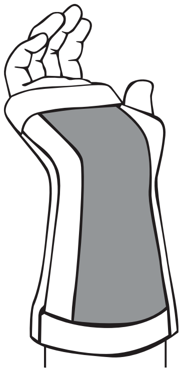
Radial Forearm Flap

What does the surgery involve?

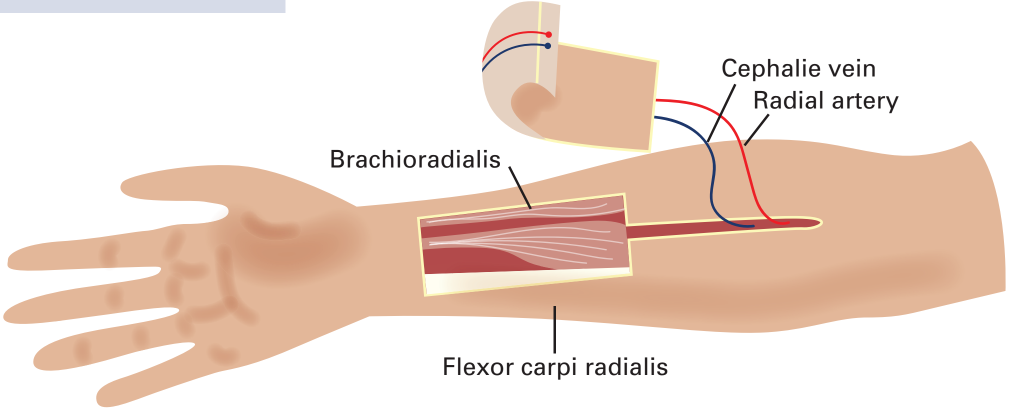
Tissue is taken from the inside surface of your forearm near the wrist along with two blood vessels – one of which supplies blood to the flap (artery) and one of which drains blood from it (vein). The vessel which supplies blood to the flap is the artery. This has a pulse you can feel at the base of the thumb. The blood vessels supplying and draining the flap are joined to blood vessels in your neck. These blood vessels keep the flap alive while it heals into its new place.

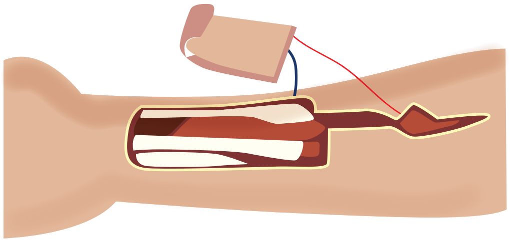
What will my arm be like after surgery?

Your arm will have a dressing placed on it and will be in a special sling or splint. The dressing will be replaced about five days after surgery. The dressing will need to be changed twice a day for a month. There will be stitches near your elbow that will be removed 10-14 days after surgery. The special splint will need to be worn for two-four weeks. You will need to take it off to shower and put it back on when done.



Radial Forearm Flap





What are the potential complications?

All surgeries have risk, such as bleeding or infection. The risks are low, but you should be aware of what they are.

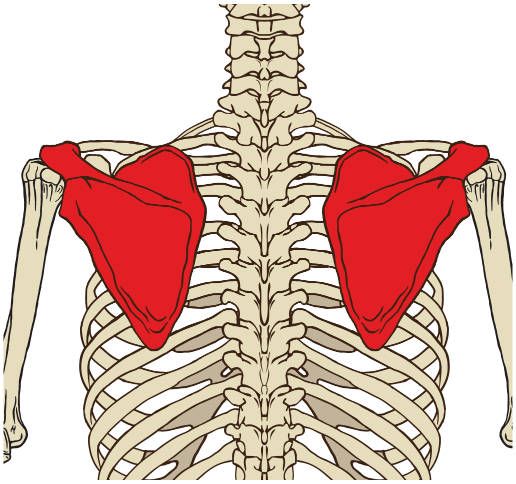
The nerve that supplies feeling to the skin over the base and side of the thumb is sometimes bruised when the flap is removed. This can mean that the area ends up with a tingly sensation or numbness that may last for several months following surgery. Sometimes, it can be permanent. You may also notice that your hand does not feel as strong as it was before surgery and sometimes it will feel colder in the winter months than it used to.

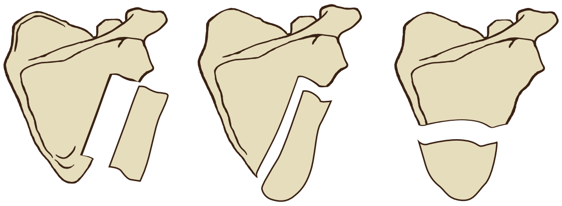
Scapula Flap

What is a Scapula Free Flap?

A scapula free flap is one way of filling a bony hole in the upper or lower jaw. Your surgeon will remove a piece of bone from your shoulder blade (scapula bone) with the skin and transfer it to the head and neck securing it into position with small titanium plates and screws. The blood vessels supplying and draining the flap are then joined to blood vessels in your neck. These blood vessels will keep the flap alive while it heals.

Scapula Flap





What happens to the area in the shoulder blade where the bone was removed?

The hole in the scapula bone will heal on its own. It could take several months to heal completely, but over time you should be as strong as you were before surgery.

What can I expect after surgery?

The area of your shoulder where the bone was removed will likely be sore. The doctor will prescribe pain medication. There may also be a JP drain to collect any blood. This drain will be removed when appropriate.

What are the potential complications?

All surgeries have risk, such as bleeding or infection. The risks are low, but you should be aware of what they are.

You might have limited shoulder movement, but this is most often due to swelling in the area. Gentle exercise will help reduce stiffness. Physical therapy might be prescribed to you while you are in the hospital. If the flap isn't getting fresh blood, or it cannot drain the old blood, a blood clot can form in one of the blood vessels. This usually happens in the first few days after surgery.

HOSPITAL STAY

Recovery

Depending on the type of surgery, you may either go to the post-anesthesia care unit (PACU) or to the surgical intensive care unit (SICU) to recover after surgery. If you go to the PACU, the tube that was placed to breathe for you will be removed and you will start waking up. You will be closely monitored by your healthcare team. Once you are safely awake, you will be transitioned to a floor in the hospital for further management and monitoring.

If you go to the SICU, you may need additional support from the ventilator for 24 hours or longer. During this time, you will receive medication to keep you comfortable.

Surgical Intensive Care Unit (SICU)

The SICU is staffed with a highly skilled team of registered nurses and doctors who specialize in the care of complex medical conditions. During your stay in the SICU, your surgeon will continue to see you and make recommendations, but your immediate post-operative care will be managed by SICU doctors.

You may be kept asleep for up to 24 hours (or longer) while the SICU team ensures the safety of the flap. Excessive movement can compromise your flap. You will remain on the ventilator during this time. When you wake up, you will not be able to talk because the breathing tube sits between your vocal cords. If you had a tracheostomy placed during surgery, you will not be able to talk until day five following your surgery when we put in a smaller tracheostomy tube. You will have to communicate by writing or other using nonverbal communication, such as your hands.

The time spent on the ventilator varies by patient, but we typically like to remove the ventilator within 24-48 hours.

While in the SICU, you will remain connected to lines, tubes, and monitoring devices. You may receive a large quantity of IV fluids while in surgery that may leave you swollen. This fluid weight will go away in a week or more. It’s important to do the cough and deep breathing exercises to prevent pneumonia.

As you improve, equipment is removed and you will be encouraged to become more active. You may be able to get out of bed and sit in the chair on the first day following surgery. Activity is very important for increasing your strength, preventing blood clots, and healing.

The entire team will assemble every morning to review your status and make goals for the day.

Step Down

Once you come out of the Intensive Care Unit (ICU), it will be time to prepare yourself to go home. You will start by staying out of bed most of the day to build strength. Sitting in a chair and walking around the unit helps you build strength, breathe better, digest food, and circulate blood. You will still have some pain. The goal is to control the pain enough so you feel like you can get up, move, and take part in your own care.

Most people go home with a feeding tube and a tracheostomy (for more information, see the Tracheostomy section and the Feeding Tube section of this guide). The tracheostomy is there to protect your airway when there is a lot of swelling in your mouth. The feeding tube allows for food to bypass your mouth to your stomach so you can get the nutrition and medication you need to heal. The nurse will explain everything they are doing as they are doing it, and encourage you to practice your own care. The more you practice the skills, the more comfortable you will be doing the care at home.

You may start with handling the feeding tube, giving your own tube feedings, and administering your medication. You will receive step-by-step instructions on your care at home to refer to after discharge. If you go home with a tracheostomy, the nurse will have you practice how to clean the skin around the tracheostomy, change or clean the inner cannula and how to suction yourself to clear your airway of secretions. You will also be instructed on how to clean and care for any incisions or wounds you may have to care for at home.

Physical Therapist

A physical therapist is a healthcare provider who specialize in the treatment of disease, deformity or weakness using physical methods such as massage, heat treatment and exercise. The physical therapist will teach you exercises to help you keep or regain your strength.

Occupational Therapist

An occupational therapist is a healthcare provider who encourages rehabilitation through daily life activities. They will teach you exercises to use during your hospital stay.

Medications

- Take only medications approved by your doctor.
- Get all medications in liquid form (if available.) If a medication does not come in a liquid form, ask your local pharmacist if it is okay to crush a medication or open a capsule to dilute it. With some medications this isn't an option and you will need to talk to your doctor about alternatives.
- Please see the *Feeding Tube and Nutrition* section of this book to have a step-by-step instruction of how to administer medications through your feeding tube.

Incision Care

If You Have Stitches/Staples

- Clean twice daily unless instructed differently by your surgery service.
- Clean the incision site with half hydrogen peroxide and half water using Q-tips or gauze or plain water. Your surgery team will instruct you on the correct wound care for you.
- Loosen and remove any crusts that have formed once softened.
    - Keep area clean and dry.
    - Use ointment twice daily until healed as directed by your surgical team.
    - Avoid exposing your incisions to the sun. Sun tanning can darken incision lines.
- After cleaning your incision site, place Bacitracin on sutures/staples for the first 7-10 days after surgery. After the staples and/or sutures are removed, you can use petroleum jelly.

If You Do Not Have Stitches/Staples

Clean the incision site three times a day unless instructed otherwise. You can cleanse with soap and water, pat dry. Loosen and remove any crusts that have formed once softened.

If You Have Steri-Strips

Leave the steri-strips in place. They will begin to tatter and loosen but do not remove them unless approved by your doctor. The edges can be cut as they loosen and curl. Your doctors will tell you if you can shower when the steri-strips are in place.

Wound Care

Skin Graft Harvest Site

- The skin graft harvest site is where a thin layer of skin was removed and used to cover a different incision site.
- This site is often located on your thigh or upper arm.
- If the area is on your thigh, a Tegaderm™ is placed on top of the skin graft harvest site to allow it to heal. This is usually removed in 5-7 days. After the Tegaderm comes off, apply bacitracin twice daily until the wound heals.
- If this area is on your upper arm, it is usually closed with stitches. Please put bacitracin on the site twice daily until your stitches are removed. After your stitches are removed, you can use petroleum jelly.

Skin Graft

Xeroform Wound Care

Replace your skin graft dressings twice per day.

1. Ensure you are in a clean environment and wash your hands before dressing changes. Gather supplies.
2. Remove the old dressing and discard it. Of note, ACE bandages can be safely reused; if the dressing is soiled, simply hand wash with a mild soap and completely dry before using.
3. Place xeroform dressing on the skin graft. Try to avoid the healthy skin surrounding the skin graft.
4. Apply bacitracin along the incisions.
5. Wrap the surgical site with Kerlix™, a white fluffy gauze.
6. Then place an ace bandage around the Kerlix gauze.
7. Finally, replace either the volar splint on your arm or the aircast on your leg.

Wound Vac Therapy

Sometimes, the decision is made to place a Wound Vac on your skin graft to help promote healing. Home care nursing will be prescribed at the time of discharge to help change the dressing. While the wound vac in in place, your home care nurse will perform these dressing changes as prescribed. Please keep the Wound Vac on your skin graft site until instructed otherwise by your surgical team.

Leaving the Hospital

There are several options for where you can go when you are too well to be in the hospital. A discharge planner will meet with you to discuss your options. Insurance and medical advice are important factors for you to consider.

Home

The nurses will teach you and your friend/family member who will be staying with you, how to take care of you. Someone should stay with you 24/7 (full time) for the first few days while you get used to being home and taking care of yourself. To prepare to go home, you will start the process by doing all your own care while you are in the hospital A home care nurse may be set up to assist you as well, but they will only come to your house a couple of times a week.

Rehabilitation Facility

If you are doing very well surgically and medically, but are still too weak to care for yourself, you may consider going to rehabilitation (rehab) facility. Rehab is designed to help you get your strength back and prepare you to go home.

Skilled Nursing Facility

If you have complex medical needs and need additional assistance taking care of yourself, a nursing home is a good next step. Nurses there will continue to help take care of you but include you in the care to help get you ready to go home when you are appropriately healed.

Equipment for Home

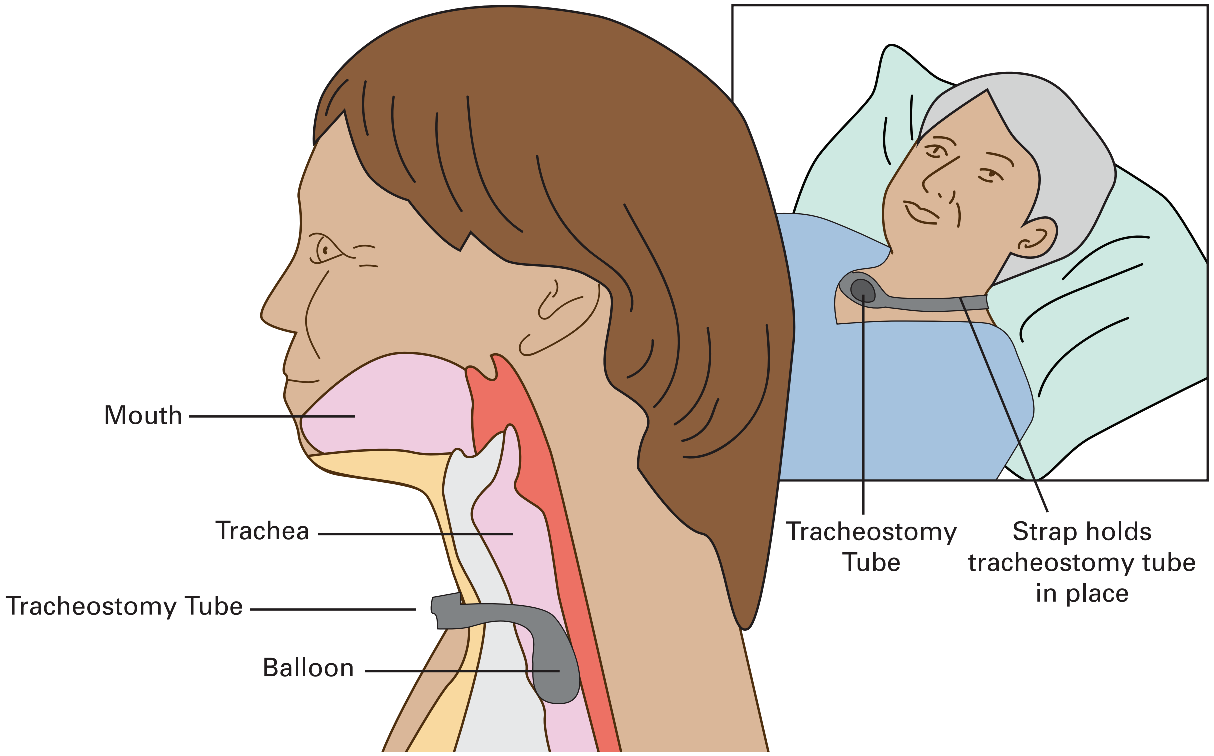
A discharge planner will arrange for your at-home supplies. The supplies vary based upon what needs you will have at discharge. You will likely need tracheostomy supplies, supplies for enteral nutrition, and supplies for wound care. You may receive some of these supplies at the time of discharge. A medical supply company will deliver the rest of the supplies to you once you're at home.

- Please call the clinic BEFORE you run out of supplies as it can take several days to receive them.

If you have a tracheostomy, you must have suction catheters and a suction machine with you at the time of discharge. You need to have the suction machine and suction catheters with you at all times; make sure these items are with you whenever you leave your home. You will receive instructions on how to use and care for the machine as well as how to care for the suction catheters before discharge.

TRACHEOSTOMY

A **tracheostomy** is a tube placed in the front of your neck into your airway. It allows air into your lungs when swelling in your mouth has the potential to block off your airway. Most patients who are having major facial surgery will have a tracheostomy and will go home with it in place. When your doctor is certain the swelling in your mouth is decreased enough to allow enough air to get to your lungs, the tracheostomy will be removed. Usually, this is within a few weeks.



Care for your Tracheostomy

Suctioning your Tracheostomy

Follow these steps for suctioning your tracheostomy:

1. Wash hands.
2. Take several deep breaths before, during and after each suction.
3. Prepare supplies (get saline, gauze, suction machine, and catheter ready).
4. Turn on suction machine.
5. Take some deep breaths.
6. Squirt 3-5cc saline in tracheostomy.
7. Cough.
8. Insert catheter about four inches.
9. Cover vent on the tubing while pulling the catheter out no longer than 10 seconds.
10. Repeat steps 1-9 until airway is clear.

You should clear your airway several times a day even if you do not feel congested. Once you are home, if you are unable to clear airway, remove and clean your inner cannula. **If you do not find relief, call 9-1-1**.

Cleaning your Tracheostomy

Clean your tracheostomy three times a day. Follow these steps for cleaning your tracheostomy:

1. Wash hands.
2. Prepare supplies (get saline, gauze, suction machine, and catheter ready).
3. Cough/suction to clear any secretions.
4. Using fingers to support tracheostomy, remove inner cannula.
5. If you have a disposable inner cannula, replace it with new one.
6. If you have a non-disposable inner cannula, clean it with a brush and peroxide then rinse with water till clean. Dry the cannula with gauze only. **Do not use tissues.** Lint from tissues can irritate your airway.
7. Replace the inner cannula.
8. Clean around the base of the tracheostomy with a ½ water, ½ peroxide solution. **Do not use well water.** We recommend using a gallon of distilled water (available at grocery stores) to care for your tracheostomy.

Additional Tips

- Tracheostomy ties should have enough slack so that you can put one finger between the ties and your neck.
- Filters: You may wear a tracheostomy bib to prevent excessive dust, smoke and fumes interfering with your breathing. You can purchase these at medical supply stores. To prevent water from entering your airway when showering, use a shower shield (a cover made specifically for a tracheostomy/stoma), or an infant bib with the plastic side out.
- Don't smoke, and limit your contact to secondhand smoke. Smoking can delay your healing and add to complications.

The Tracheostomy Care guidelines, provided by the University of Michigan, can be found at **www.med.umich.edu/1libr/NursingUnits/TracheostomyWhatYouNeedToKnow.**

Tracheostomy Removal

Your surgical team will determine when it is safe to remove your tracheostomy. Sometimes this can be done before you leave the hospital, and sometimes you may need the tracheostomy longer.

Once your tracheostomy is removed, a hole in your neck remains where the tube used to be; this is called a stoma. The stoma will heal over a course of 7-14 days. It is important to keep an occlusive dressing over the stoma site; this is a type of dressing that doesn't allow anything in or out of the stoma.

- To promote healing, provide counter pressure to the dressing any time you cough, talk, sing, etc. to prevent air from escaping the stoma site. By doing this, it will heal faster. If you forget to provide counter pressure it will be okay, it may just take longer to heal.
- Please do not submerge your neck underwater until the stoma is completely healed, which could be 14 days or longer.

FEEDING TUBE AND NUTRITION

Nutrition Following Oral Maxillofacial Surgery

Depending on the type of surgery you have, you will either be able to eat a modified textured diet, or you will receive nutrition through a feeding tube. Ask your surgeon about which pathway you will take following surgery.

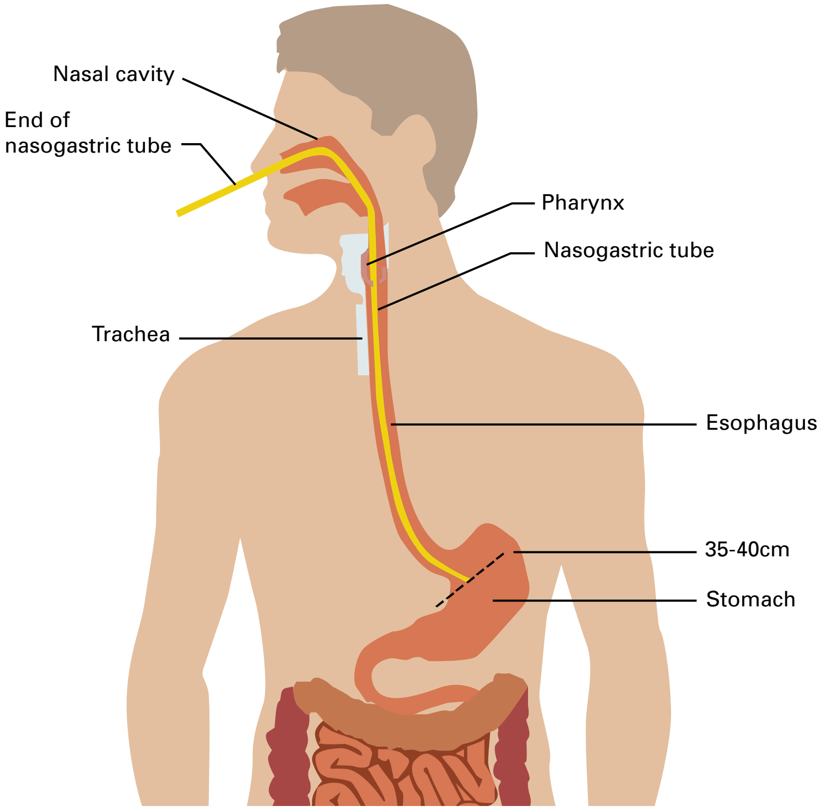
Patients Fed Via Feeding Tube

If the plan is to place a feeding tube during surgery, it will most likely be placed in the nose and extend into the stomach (see picture on following page). This is called a **nasogastric feeding tube**. Some patients may already have an existing feeding tube that will be used for feeding.

A registered dietitian (RD) will perform a nutrition assessment to choose a formula and amount that provides enough calories and protein for healing after surgery. This assessment will be based off height, weight, type of surgery and nutritional status before surgery. It is important to inform the RD or team of food allergies you have.

Following the nutrition assessment, tube feeds will be started using a pump at a low continuous rate (usually 20-30 mL/hr) and advanced slowly to the goal set by the dietitian. Before you go home, you will likely be fed with **gravity feeds**. This means tube feeds will be delivered without a pump. Instead, a clamp is used to control how quickly feeds are given. Gravity feeds are given throughout the day, similar to eating three meals a day. You will receive one to two cartons of tube feeds at a time, depending on your goal tube feed amount.

The nursing staff will train you on how to administer gravity feeds and you will receive supplies for continuing feeds after discharge. Some patients may use gravity bags or a syringe for tube feeds. A case manager will meet with you before discharge to assess coverage for home tube feeds. If your insurance does not cover tube feeds at home, the dietitian will provide you with over-the-counter substitutes to the formula selected. Generally, these include oral nutritional supplements that provide about 300-350 calories and 15-20 grams of protein per bottle.



Instructions for Tube Feeding at Home

1. Start with a clean work surface and assemble your supplies:
    a. Formula
    b. Feeding bag and tubing
    c. Water
    d. 30-60cc syringe
2. Wash hands.
3. Start your tube feeding in a seated upright position. Your head should be above your stomach.
4. Check tube for placement. Each tube should be marked with ink (or a stitch) at the point where it is inserted into the body. Make sure tube is in right place. If it does not seem to be correctly positioned, call your doctor or visiting nurse.
5. Flush the tube with 30cc of water.
6. Close the roller clamp on the feeding bag.
7. Shake the can of tube feeding and pour it into the bag.
8. Attach the feeding tubing and place the bag above your stomach level. (Some people place it on a nail in the wall.)
9. Open the roller clamp and adjust the rate as tolerated.

After Feeding

- Flush your feeding tube with 30cc water. After you detach the feeding bag, rinse it out as directed.
- To prevent nausea, vomiting, and aspiration (accidentally breathing in food or fluid into the windpipe), you need to sit with your head and chest above your stomach during and for 30-60 minutes after feeding.

Steps for Giving Medications Through the Feeding Tube

Most medications will be prescribed to you in a liquid form. Unfortunately, some medications only come in a capsule, pill, or tablet. Discuss your medications with your local pharmacist to determine liquid options, and to see if it is safe to crush a pill (or open the capsule) and dissolve the medication in water.

1. Start with a clean work surface and wash your hands.
2. If the medication is in pill form, crush it into a fine powder and mix with 30cc of water.
3. If the medication comes as a liquid, you must still mix it with 30cc of water.
4. If the medication comes in a capsule, open the capsule and empty the contents into 30cc of water
5. Check placement of feeding tube by checking the mark on the tube where it comes out of your nose.
6. Flush the tube with 30cc water
7. Draw up the medications with the syringe.
8. Slowly insert the medications into the tube. Be sure to be sitting upright.
9. Flush with 30cc water.
10. Clamp off the tube.

Problem Solving When on Tube Feeds

Diarrhea, Gas or Bloating

- May be related to medications (bowel regimens or antibiotics).
- Feedings are being given too quickly.
- Not enough fiber or too much fiber, depending on the formula (check with your doctor or dietitian).

Nausea

- May be a side effect of medications or surgery.
- Feedings are given too quickly.
- Ask your doctor for anti-nausea medications.

Clogged Feeding Tube

- The best way to treat a clogged feeding tube is by preventing it.
- Make sure you are flushing your tube with water before and after feeds then every four hours otherwise (this will help with hydration as well).
- If your feeding tube becomes clogged:
  - DON'T use carbonated soda or beverage to try to unclog your tube.
  - DO flush with warm water.
  - Attach a 30 or 60mL syringe to the feeding tube. Pull back to see if that dislodges the clog. If not, flush syringe with warm water, reattach to tube, and attempt to flush the tube with warm water.
  - DO keep trying.
  - If the clog holds, try moving the syringe plunger back and forth. You can also clamp the tube and let warm water soak the clog for up to 20 minutes.
- Call your doctor's office or home infusion company if problems persist or if you have further questions.

Your surgeon will decide how long you are required to stay on tube feeds. This may depend on the extent of your surgery. Please talk to your surgeon about any questions you have regarding length of time on tube feeds and diet advancement following tube feeding.

For Patients Fed Orally

If you are being placed on an oral diet following surgery, you will most likely be instructed to eat a modified texture diet. Some patients may be required to use a syringe depending on their ability to open the mouth. Here is some information regarding possible diets that you may be placed on.

Full Liquids/No Chew Diet

Sometimes referred to as a blenderized diet, these are foods that are cooked until tender then processed in a blender or food processor to the point where they can be consumed in a cup, straw, or syringe. These foods should not require any chewing. Here are some examples:

- Easiest meals include milkshakes, smoothies, and blended soups.
- Protein sources like yogurt, milk, protein shakes, protein powders, blended meats/ cheese.
- Canned fruits and vegetables come very soft so are quick and easy to blend.
- Pureed meats thinned with gravy, creams, or sauces in a blender.

Note: Be sure to sift out any seeds or skins left over from blending meals.

Pureed Diet

Food is to be ground, processed or blended to a soft, smooth consistency; food items tend to be thicker than full liquids. This diet includes any full liquids, as well as the following:

- Pureed meat, fish, or poultry (does not need to be thinned)
- Scrambled eggs, cottage cheese, mashed potatoes
- Pureed fruits/vegetables, applesauce, smooth pie filling
- Pureed bread products (pancakes, casseroles, pastas, etc.)

Soft Diet

Food is easily chewed and is not rough in texture. It includes pureed foods and full liquids. Examples of a soft diet include:

- Tender meats with sauce/gravy, baked or broiled fish, egg or tuna salad.
- Well-cooked vegetables, canned fruits, ripe bananas, melons, peeled apples or pears.
- Cooked noodles, pancakes, casseroles, cooked cereals.
- Soups (do not need to be blended), cottage cheese, soft cheese, fruited yogurt.

Ways to Increase Calories and Proteins in Your Meals

If you're having trouble maintaining your calories or protein on a modified diet, read the tips below:

- Think of food like medicine. Scheduling meals and snacks can help increase overall calorie and protein intake.
- Try including a high-calorie and high-protein supplemental nutrition drink (available at local grocery stores) – either pre-mixed or a protein powder mixed with whole milk.
- Drink fruit juice, milk, or other calorie-containing beverages instead of water.
- Consume whole milk in place of skim or 1% milk.
- Add extra fats and oils (cheese, butter, margarine, cream cheese, sour cream, or avocado) to food.
- Make milkshakes or smoothies with ice cream or yogurt.
- Add peanut or nut butters for both extra calories and protein.

If you are still having trouble maintaining your calories or proteins after surgery, talk to your provider about seeing a registered dietitian. An RD can provide additional resources to improve your nutritional intake.

Visit **www.med.umich.edu/1libr/Nutrition/HighCalorieShakeandSmoothieRecipes.pdf** for high calorie shake and smoothie recipes.

FOLLOW UP

Post-Operative Appointments

While recovering from your operation, it is very important to maintain your post-operative appointments. Your first post-operative appointment is normally 7-10 days after being discharged from the hospital.

First Visit to Clinic After Surgery

During your first visit to the clinic after surgery:

- At this visit, your surgical site will be evaluated to see how well it is healing and if there is any sign of wound breakdown or infection.
- If your wound is appropriately healing, the speech language pathologist might be able to test your swallowing function to determine if you still need a feeding tube.
  - Before your feeding tube is removed, you must be able to swallow safely (without risk of anything going down your windpipe/trachea), and you have to be able to maintain enough calories and protein to continue to heal.
  - Your feeding tube can be removed right in the office setting, so there is no need for a return visit.
- Stitches, staples, and drains that you may have had when you were discharged from the hospital will be removed at this visit.
- If you went home with a tracheostomy, you will be evaluated at every post-operative visit to see if you can get your tracheostomy removed. If you can safely have your tracheostomy removed, this can be done at your post-operative appointment.
- We will review the results of your pathology with you. The results will help decide if you need to meet with radiation oncology or medical oncology doctors.
- From a surgical perspective, you will continue to follow up in the clinic every 2-3 weeks for about 6 weeks after surgery, or until you are healed. These appointments will be with your nurse practitioner or surgeon. They will decide if you need to be seen more frequently.
- Your medical team will review your long-term plan, including appointments every 3 months for the first year, and how often you may have to get CT scans.

Head and Neck Cancer Survivorship Clinic

Congratulations, you are now on the road to recovery! Follow-up care starts when there are no signs of cancer and is important for your long-term health. Initially, you will meet with your doctor often after treatment ends. The guidelines set forth by the National Comprehensive Cancer Network recommend the following surveillance visit schedule:

- For the first 2 years post-surgery: A visit every 3 months with a nasopharyngeal scope every other visit.
- For years 3-5: A visit every 6 months with a scope every visit.
- After year 5: A yearly visit with a scope.

In addition to the visits, you will get a CT scan post-surgery to create a baseline image that future scans will be compared to. We recommend you have your scans at the same facility to provide better comparison. The scans can be coordinated with your survivor return visits. You will get CT neck and CT chest scans yearly.

Additional Therapies After Surgery

While in the operating room, tissue samples are sent to the pathology department for review. Your tumor staging will determine whether you will require radiation or medical oncology. Your doctor or advanced practice provider will discuss these findings with you and what additional therapies they recommend based on the current guidelines.

What About Reconstruction Options?

Once your doctor decides you are cancer free and have healed from your surgery, you may have options available to you for reconstruction. Services vary from patient to patient and can be discussed with your surgeon or advanced practice provider.

Palliative Care

This is a special kind of patient- and family-centered healthcare that focuses on the effective management of pain and other distressing symptoms. Palliative care includes psychosocial and spiritual care, respecting the cultural values and beliefs of the patient and their family. The goal of palliative care is to anticipate, prevent and reduce suffering, and to support the best quality of life.

Hospice

This is a special kind of care that focuses on people who are nearing the end of life. This team of providers maximize comfort for the person who is terminally ill by reducing pain and addressing physical, psychological, social and spiritual needs. The goal is quality of life rather than length of life. Hospice might be beneficial for terminally ill patients with 6 months or less to live.

Oral Cancer Resources and Support Groups

- **The Oral Cancer Foundation**
  Reduce the incidence of oral and oropharyngeal cancers in the US, and support those who currently or have been impacted by the disease.
  OralCancerFoundation.org/dental

- **Support for People with Oral and Head and Neck Cancer**
  Support groups for people with oral and head and neck cancer.
  spohnc.org

- **Cancer Care**
  Professional oncology social workers provide free emotional and practical support for people with cancer, caregivers, loves ones, and the bereaved.
  CancerCare.org

- **National Foundation of Swallowing Disorders**
  Provide patient hope and improve quality of life for those with all types of swallowing disorders.
  swallowingdisorderfoundation.com

SPECIAL CARE

SPECIAL CARE: Speech-Language Pathology

What is a Speech-Language Pathologist?

A speech language pathologist is a clinician who evaluates and provides therapy to improve speaking and swallowing function. The speech pathologist works with the team to evaluate and prepare the patient before surgery. After surgery, the speech pathologist works to rehabilitate speech and swallowing function to allow you to return to the highest level of functioning possible.

Speaking and Swallowing Function

Cancers that develop in the oral cavity (tongue, jaw, hard or soft palate, floor of mouth or cheek musculature) are often initially treated with surgery. Following this surgery, you may experience changes in your speaking, eating or swallowing ability. The location and size of the cancer influences the extent to which you may have difficulty speaking or swallowing. Should you require additional treatment such as radiation, there might be additional changes that occur as you progress through this treatment.

Evaluation

Pre-operative Evaluation

Before surgery, you may meet the speech pathologist. During this visit, the clinician will evaluate your current speaking and swallowing function. They will explain the nature of the surgery as it affects communication and swallowing. We will also discuss your individual speaking or vocal demands so that we can develop a specific treatment plan to help meet your goals.

Post-operative Evaluation

Typically, you will be evaluated by the speech pathologist at your first post-operative visit if your surgical site is adequately healed. The surgeon will assess your healing at that visit, and when your tissue is appropriately healed, we can begin evaluations of swallowing and speech. The plan for therapy will be discussed at that time. The timing and amount of therapy needed varies. Therapy once a week for several weeks may be recommended.

There are two primary goals of a swallowing evaluation:

- Determine your ability to swallow food and liquid so that it moves through the throat without entering the windpipe (aspiration). If significant volumes of food or liquid are aspirated into the windpipe or lungs, there is an increased risk of developing pneumonia.
- Determine your ability to swallow food and liquid efficiently enough so that you can be adequately nourished and hydrated.

Feeding Tubes

Sometimes it is necessary for a temporary feeding tube to be placed at the time of surgery. If you have a temporary feeding tube, the swallowing evaluation will help determine when it is appropriate to remove the feeding tube. In some cases, this can be removed at the first post-operative visit. In more complicated surgeries, patients may require continued use of a feeding tube. Some individuals may take some food or liquid by mouth, but require continued supplemental nutrition through the tube to maintain the hydration and nutrition necessary for recovery.

Swallowing Evaluations

The following are the types of swallowing evaluations that you may undergo:

Clinical Swallowing Examination

The clinical swallowing exam is completed by the speech pathologist in a clinical setting. During this exam, you may be provided various liquids or foods to swallow, and the speech pathologist will evaluate your ability to efficiently chew or manipulate food and liquid. The clinician may feel the movements of your jaw or neck during swallowing and observe for signs of coughing or choking that may indicate more swallowing difficulty. The strength and movements of the lips, tongue, jaw, and voice box are also evaluated. The speech pathologist may try various strategies during this exam that may make it easier to swallow.

Videofluroscopic Examination of Swallowing (VFSS)

The VFSS is an examination that is completed in the radiology department using fluoroscopy. Video images are taken while you are swallowing different foods to evaluate the function of the oral cavity and throat, and look at airway protection when you are swallowing. We can determine whether food or liquid is entering the airway (aspiration) or moving properly into the food tube (esophagus) during this exam.

Fiberoptic Endoscopic Examination of Swallowing (FEES)

A FEES exam allows the clinician to see inside your throat when swallowing food and liquid. This exam involves placing a small endoscope through the nose and positioning it above the voice box. The clinician gives you small amounts of water or food that are dyed with food coloring so that the food is more visible as it passes through the throat. Strategies or postures that may improve swallowing are often tried during this exam to determine their effectiveness. This exam can be done in clinic and does not require a radiology evaluation.

What to Expect by Location of the Cancer

Tongue Cancers

The tongue is an important part of speaking and swallowing. Cancers may develop in various locations throughout the tongue. Removing a portion of the tongue can impact the clarity of your speech. The size and location of the tissue requiring surgical removal have the greatest impact on speaking. The larger the lesion the greater change in speech and swallowing function can be expected.

When the surgeon plans your surgery, they are very aware of the impact on speaking and swallowing. The surgeon attempts to maintain as much mobility and bulk of your natural tongue so that the impact on speaking and swallowing is minimized. In small lesions, the tissue can be removed and reconstruction is not necessary. However, if the lesion is large, the tongue will need to be reconstructed so that the tissue can contact the roof of the mouth to form speech and to chew food.

Cancers of the Lower Jaw/Mandible

The mandible (lower jaw) provides the bony support for the teeth and structures of the mouth. When a smaller portion of the bone (marginal mandibulectomy) is removed, there is little impact on speech. There may be some changes in chewing ability especially if teeth are removed at the time of the surgery. Sometimes, the nerves that provide sensation or movement to the lower lip can be affected. In a larger lesion when a segment of the jawbone is removed (segmental mandibulectomy), reconstruction will be needed. In these cases, there is greater impact on chewing and eating. The base of the tongue and the voice box are suspended from parts of the jawbone, and in some cases, there may be a greater chance that swallowing may be affected. Because the jaw supports the other structures of the mouth, you may notice some changes in speaking. Jaw surgeries can lead to a great deal of temporary swelling, which can affect eating and speaking.

Cancers of the Hard Palate/Maxilla

The **maxilla** is the bone that divides the nasal passage from the mouth and forms the roof of the mouth. This bone is also called the hard palate. When we chew, the tongue pushes up against the hard palate to break down the food. When we speak, the tongue contacts the hard palate to articulate speech sounds.

When part or all of the hard palate is removed something has to be put in its place to divide the nose from the mouth. If this were left open, food or liquid would flow freely from the mouth into the nose. Airflow during speech would also move into the nasal cavity, creating a more nasal tone in your speech.

Closing this wound is done either with a flap of bone or soft tissue that the surgeon uses to permanently reconstruct the hard palate. At other times, the hard palate is not reconstructed; rather, a prosthesis called an obturator is used to close the defect. An **obturator** is designed to cover the opening and can be removed by the patient.

A dentist or prosthodontist makes an obturator. The speech language pathologist may work with the dentist to assist in making the obturator so that speech and resonance are optimized. When tissue is removed, the edges of the wound will heal over time, which means that the obturator will require modifications as the shape of the opening changes.

Cancers of the Mouth Floor

The floor of the mouth serves as the support and attachment to the tongue. When surgery involves removing the floor of the mouth, there could be some changes in the movement of the tongue. This is particularly true if the lesion is near where the tongue attaches to the floor of the mouth. If tongue movement is restricted, you may see some reduced clarity of speech or reduced ability to chew food. Temporary swelling is common in these surgeries and can make speaking and eating more difficult at first.

Cancers of the Soft Palate

The soft palate is made up of several muscles that function to close off the nasal passage when speaking or swallowing. When surgery involves removing a portion of the soft palate, there is often a change in speaking ability. This may result in a more nasal tone to your speech. Leakage of fluids or food into the nasal passage when eating and drinking can also occur. The extent to which these changes occur is directly related to the amount of tissue that must be removed. The soft palate may be reconstructed at the time of surgery. At other times, a removable prosthesis is used to block the passage to the nose.

SPECIAL CARE: Dentistry

Oral hygiene is very important. Keeping your mouth and teeth clean will help you heal better and reduce the chances of developing infections or cavities. If you are undergoing radiation therapy, you may experience dry mouth. This increases the amount of bacteria that causes cavities and periodontal disease. Listed below are tips that will help you have a healthy mouth and prevent infection:

- Brush your teeth twice a day with a soft-bristled toothbrush (child size works well). Use a mild toothpaste and be sure to discuss a prescription-strength fluoride with your dentist. Use a circular motion and angle the brush at 45 degrees toward the gumline. Normal pressure may be used on the non-operative side, but less pressure should be used on the operative side. AVOID electric toothbrushes or a Waterpik® unless given permission by your surgeon.

- You can use a moistened Q-tip or cotton swab to wipe over the gums and tooth surfaces when brushing is not possible.
- Do an oral rinse after every meal. You may use a mild fluoride mouthwash. Make sure your mouthwash does not contain alcohol as this may make your dry mouth worse. A warm salt water solution may also be used. For a homemade mixture, use the following:
  - 1/4 tsp baking soda
  - 1/8 tsp salt
  - 1 cup warm water
- DO NOT smoke or use alcohol as both activities can lead to dehydration, dried mucosa, and irritation.

The following are dietary considerations that can help prevent a dry mouth. Follow these guidelines ONLY if approved by your surgeon and you are sufficiently healed enough to eat using your mouth:

- Avoid dehydration. Drink plenty of water throughout the day to minimize the effects of dry mouth.
- Avoid a diet heavy in refined sugars and starches, which can lead to cavities. A diet of meats, vegetables, and nuts is ideal to maintain a healthy mouth.
- Dairy products, such as milk and cheese, may prevent the development of cavities.
- Chewing a sugar-free or anti-cariogenic gum, like zylitol gum, may reduce dry mouth symptoms.

Visit your dentist regularly (even if you no longer have any natural teeth) for a complete oral examination. Besides checking your teeth or dentures, the dentist will look for signs of oral cancer and examine your gum ridges, tongue, palate, and jaw joints (temporomandibular joints or TMJ).

Regular Checkups Are Important – Even With Dentures

You may think that since you no longer have your natural teeth, you only need to see your dentist if you notice a problem. That is a dangerous myth. The supporting tissues under your dentures continue to change throughout the rest of your life. As the gums shrink, the denture and the gums become mismatched. This change happens little by little and is often not noticed by the denture wearer until significant damage has been done to the tissues, sometimes requiring surgery. Your dentist is trained to detect these changes and correct them early. Your dentist will also closely observe your tissues for signs of oral cancer, about half of which occurs in people with dentures.

SPECIAL CARE: Prosthetics

Some people will benefit from an oral **prosthesis** (an artificial body part) that makes speaking or eating easier. Both your speech language pathologist and dentist will help create an oral prosthesis for you if it's necessary after surgery. The most common type of prosthesis is the **maxillary obturator prosthesis**, which are for people who have tumors removed from the top of their mouth.

Removing a tumor from the top of your mouth will create a hole or a defect that can go from inside the front part of the mouth to the very back. You cannot see it when looking in your mouth. These open spaces are then connected, which can affect speech and swallowing. People who have asurgery to remove tumors from the top of their mouth may require a maxillary obturator prosthesis, which is much like a denture. It will restore the opening at the top of the mouth and separate the cavities inside your mouth. This restores the person's speech and swallowing. It requires multiple revisions and adjustments as the person heals from the surgical treatment.

Prosthodontic Treatment

Prosthodontic treatment includes a variety of treatment steps. Initially, you will be seen by your dentist for counseling and instruction. You may be encouraged to go to a special physical therapist who specializes in oral physical therapy. You will be taught hygiene and maintenance instructions. You will undergo a few stages of creating an obturator for you after surgery:

- **Immediate** – A prosthesis may be placed at the time of surgery. You leave this in place until your first post-operative visit to allow your surgical site to heal.
- **Transitional** – This phase is started 10-14 days after surgery when surgical dressings or immediate prosthesis are removed. The transitional prosthesis is placed and modified until healing is complete. This phase may extend 2-24 months.
- **Definitive** – this phase begins when healing is complete. It involves creating a prosthesis intended for long-term use. Definitive treatment may involve fixed prosthesis (crowns) or removable prosthesis.

Any phase of treatment may be altered depending on:

- The nature of the disease and its staging
- Radiation
- Chemotherapy
- Surgical complications
- Morbidity (sickness)

Surgical splints may be used temporarily and usually at the time of surgery to guide soft and hard tissue healing. Options will be discussed with you during your visit with your dentist.

Side Effects and Management of Treatment Complications

Radiation

After your surgery, your cancer staging will be determined by a tissue sample collected during your operation. Based on this information, some treatments require you to undergo radiation therapy. Radiation can result in temporary and long-term side effects on your mouth and swallowing. Temporary side effects include mouth sores, dry mouth, and swelling. Long term, the muscles of the throat and mouth can become stiff or tighten, leading to difficulty chewing and swallowing. Radiation guards are silicone guards that protect the soft tissue inside your mouth where the radiation is being directed. It is imperative that these guards are made by your dentist before the radiation therapy simulation planning appointment.

Trismus

Trismus is a decreased ability to open your mouth and can occur when the jaw muscles are exposed to radiation. Trismus makes eating difficult and can affect your ability to properly clean your teeth and gums. If these muscles are in the field of radiation, you may be prescribed exercises and stretches. There are oral stretching devices on the market that may be available to you. Your various team members will discuss this with you as needed.

Mucositis

Mucositis are mouth sores that may occur during and right after radiation therapy. The soft tissues in your mouth will normally produce new cells on a regular basis. Radiation therapy decreases how quickly the body produces new cells during treatment, and for a period of 1-2 months after. Combined with the dryness, your cheeks can become quite uncomfortable. We recommend that you use a salt and baking soda rinse, as this buffers the acids which tend to burn the tissues. Mix ⅛ tsp. salt and ⅛ tsp. baking soda in a cup of warm water and rinse. Do this as often as you wish. If you find the tissues are still uncomfortable after this, please let us know and we can discuss other solutions.

Thrush

Oral candidiasis (also known as oral thrush or yeast infection) is a fungal infection of the oral mucosa (soft tissues) that can be noticed on the tissue inside the mouth. It is often associated with decreased salivary flow or immune suppression in combination with radiation therapy or chemotherapy. It can look like obvious white plaques that have a distinct odor and can be wiped off or as a burning sensation in the mouth with associated redness of the soft tissues. You should seek the advice of your dentist if you notice any of these symptoms.

Dysgeusia

Dysgeusia is a change in your taste to food or liquids. This can happen commonly with different medications or radiation therapy. Talk with your doctor about ways to diminish your altered sense of taste.

Dry-mouth

Xerostomia is a decreased production of saliva or spit in your mouth which can be a side effect of radiation therapy to the area of the salivary glands.

The following are some products for people with xerostomia (dry mouth). Some people have found these helpful. You may need to order direct from the company/website.

Over-the-counter Products

The following products are available over the counter and do not need a prescription:

- Salese lozenges - www.nuvorainc.com/salese.php
- Biotene gel, gum - www.biotene.com
- Xylimelts - **orahealth.com/products/xylimelts-for-dry-mouth-mint**
- Entertainer's Secret® (KLI Corp), spray - **entertainers-secret.com**
- Glandosane® (Kenwood/Bradley) spray
- Moi-Stir® Spray and Oral Swabsticks (Kingswood Labs)
- Optimoist® (Colgate-Palmolive) spray
- Saliva Substitute® (Roxane Labs) liquid
- Salivart® (Gebauer) preservative-free aerosol
- Salix® (Scandinavian Natural Health & Beauty) tablets
- Xero-Lube® Artificial Saliva (Scherer) sodium-free; spray
- Mucopolysaccharide Solutions
- MouthKote® (Parnell), spray

Prescription Products

Feel free to share this with your doctor or dentist.

- Caphosol artificial saliva - **live.caphosol.com/us/PAT/Home.aspx**
- Numoisyn lozenges and liquid - **alignpharma.com/products-healthcare-professionals-numoisyn.htm**
- Salagen (pilocarpine - cholinergic agonist medication) - **ncbi.nlm.nih.gov/pubmedhealth/PMH0000465**
- Evoxac (cevemeline - cholinergic agonist medication) - **ncbi.nlm.nih.gov/pubmedhealth/PMH0000452**

Dry Mouth and Denture Fit

Saliva helps your denture hold onto the gums. When your mouth is dry the denture can start to feel loose. This is made worse because the supporting tissues under your dentures continue to shrink the rest of your life. The amount of shrinkage is different from person to person. As shrinkage occurs, you may need to have your denture remade or relined more frequently than someone who has enough saliva.

Even with a perfect fit, you may still experience some looseness due to the lack of saliva. A denture adhesive may help. There are many types of adhesives available, and your dentist can offer advice on which one best fits your needs.

Dry Mouth and Oral Infections/Tooth Decay

Since saliva regulates the germs in the mouth, a person with dry mouth is more prone to infection in the mouth. Your dentist can discuss with you the signs and symptoms to look for.

If you have some natural teeth, tooth decay is the most frequent cause of tooth loss in older adults who have a dry mouth. Without saliva to regulate the germs that cause decay, damage can occur. Pain and infection can result as the disease progresses. Your dental provider can discuss products and prescriptions that can help prevent cavities.

Osteoradionecrosis (ORN)

Osteoradionecrosis (ORN) is non-healing, exposed bone in a previously radiated area of the body. Radiation therapy can affect your jawbone's ability to heal. Blood vessels in the bone supply nutrients to bone cells necessary for healing. Radiation can damage these blood vessels, making it hard for the bone to heal. For this reason, treatment (ex.: tooth extractions) in the area of radiation is usually avoided. If you need to have tooth extractions, gum surgery or implant placement, contact us so that we may determine if the treatment is in the area of radiation.

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Oral and Maxillofacial Surgery
Med Inn C213
1500 E. Medical Center Dr. SPC 5831
Ann Arbor, Michigan 48109