Melanoma Surgery

Patient Handbook

ROGEL CANCER CENTER

MICHIGAN MEDICINE

Staff of the following programs provided information for this handbook:
Rogel Cancer Center Surgical Oncology Division,
Patient Education Program, Medical Oncology, the Multidisciplinary Cutaneous Oncology program, and Physical Therapy

Note: We will refer to this booklet during many of your visits. Please bring it with you to all appointments.

Introduction

The doctors and nurses at the University of Michigan Surgery Oncology Clinic created this booklet to explain melanoma and the treatment options available to you. This is not a comprehensive guide to treatment options – they are changing every day. Rather, we hope this guide helps you move forward with a firm understanding of melanoma, how it is treated, and what the experience may include. With this information in hand, you will be prepared to make thoughtful decisions along with your medical team.

The information in this booklet will be reviewed and discussed throughout your treatment.

Please bring this booklet with you to all appointments.

You will find blank pages at the back of the book to use for questions, appointments or other notes.

Melanoma Surgery: A Patient's Guide

ROGEL CANCER CENTER
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RESOURCES

About Melanoma

Melanoma is a disease in which cancer cells form from skin cells called melanocytes. Melanocytes are found throughout the lower part of the epidermis See Figure 1. They make melanin, the pigment that gives skin its natural color. When skin is exposed to the sun, melanocytes make more pigment, causing the skin to tan, or darken.

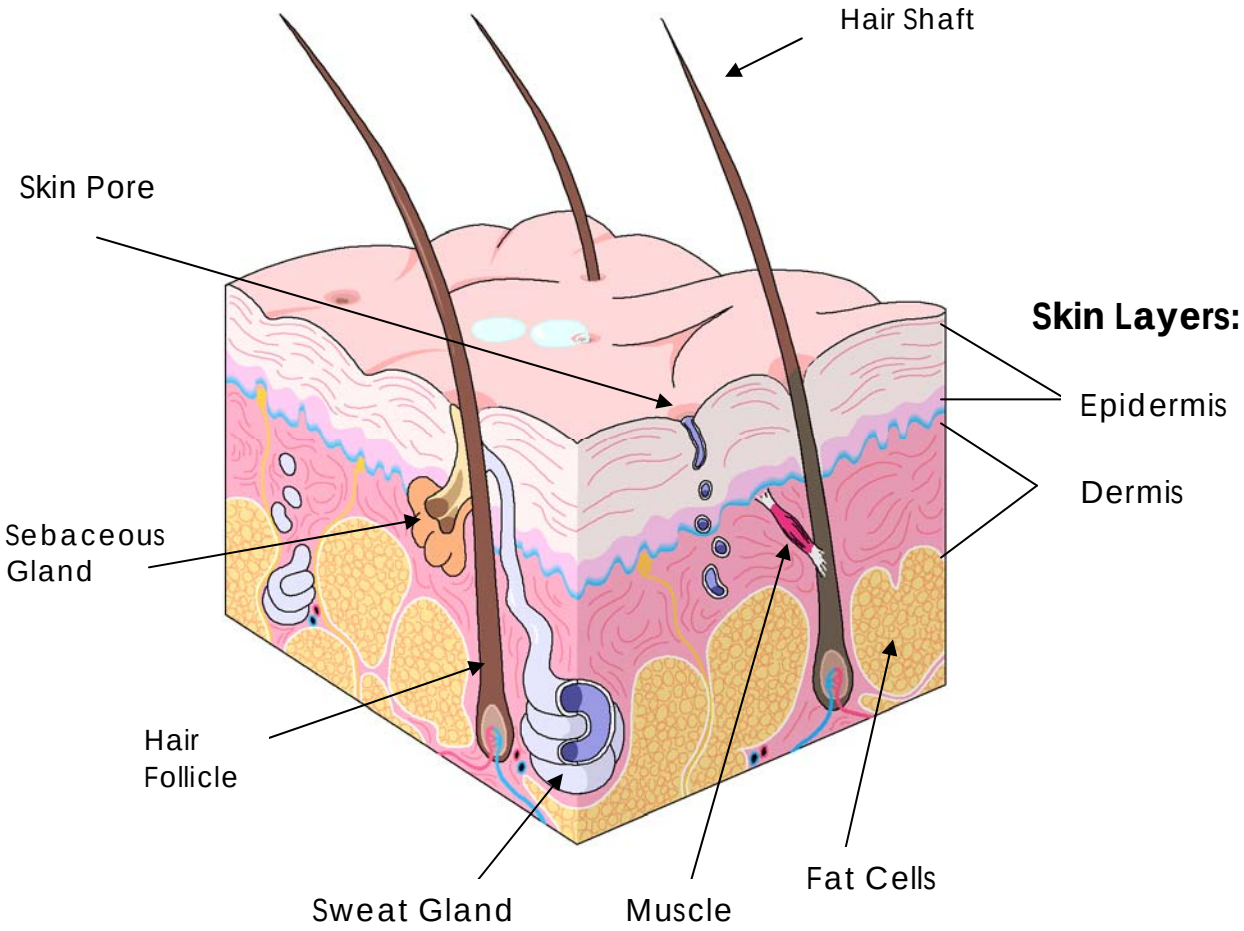


Figure 1. Anatomy of the Skin

(This section is excerpted from the National Cancer Institute's "What You Need to Know About Melanoma" available at www.cancer.gov)

Anatomy of your skin

The skin is the body's largest organ. It protects against heat, sunlight, injury, and infection. It helps regulate body temperature, stores water and fat, and produces vitamin D.

The skin has two main layers: the outer epidermis and the inner dermis. (See Figure 1).

- The epidermis is mostly made up of flat, scale like cells called squamous cells.
- Round cells called basal cells lie under the squamous cells in the epidermis.

  The lower part of the epidermis also contains melanocytes.
- The dermis contains blood vessels, lymph vessels, hair follicles, and glands.

  Some of these glands produce sweat, which helps regulate body temperature. Other glands produce sebum, an oily substance that helps keep the skin from drying out. Sweat and sebum reach the skin's surface through tiny openings called pores.

Melanocytes and Moles

Melanocytes produce melanin, the pigment that gives skin its natural color. When skin is exposed to the sun, melanocytes produce more pigment, causing the skin to tan, or darken.

Sometimes, clusters of melanocytes and surrounding *tissue* form noncancerous growths called *moles*. (Doctors also call a mole a *nevus*; the plural is nevi.) Moles are very common. Most people have between 10 and 40 moles. Moles may

be pink, tan, brown, or a color that is very close to the person's normal skin tone.

People who have dark skin tend to have dark moles. Moles can be flat or raised. They are usually round or oval and smaller than a pencil eraser. They may be present at birth or may appear later on—usually before age 40. They tend to fade away in older people. When moles are surgically removed, they normally do not return.

Cancer and the Skin

Cancer begins in cells, the building blocks that make up tissues. Tissues make up the organs of the body. Normally, cells grow and divide to form new cells as the body needs them. When cells grow old, they die, and new cells take their place.

Sometimes this orderly process goes wrong. New cells form when the body does not need them, and old cells do not die when they should. These extra cells can form a mass of tissue called a growth or *tumor*. Not all tumors are cancer.

Tumors can be *benign* or *malignant*:

Benign tumors are not cancer:

- They are rarely life threatening.
- Usually, benign tumors can be removed, and they seldom grow back.
- Cells from benign tumors do not spread to tissues around them or to other parts of the body.

Malignant tumors are cancer:

- They are generally more serious and may be life threatening.
- Malignant tumors usually can be removed, but they can grow back.
- Cells from malignant tumors can invade and damage nearby tissues and organs. Also, cancer cells can break away from a malignant tumor and enter the bloodstream or *lymphatic system*. That is how cancer cells spread from the original cancer (the *primary tumor*) to form new tumors in other organs. The spread of cancer is called metastasis. Different types of cancer tend to spread to different parts of the body.

Melanoma

Melanoma occurs when melanocytes (pigment cells) become malignant. Most of these pigment cells are in the skin. When melanoma starts in the skin, the disease is called cutaneous melanoma. Melanoma may also occur in the eye (ocular melanoma or intraocular melanoma). Rarely, melanoma may arise in the meninges (brain), the digestive tract, lymph nodes, or other areas where melanocytes are found. Melanomas that begin in areas other than the skin are not discussed in this booklet. The Cancer Information Service (1-800-4-CANCER) can provide information about these types of melanoma.

Melanoma is one of the most common cancers. The chance of developing it increases with age, but this disease affects people of all ages. It can occur on any skin surface. In men, melanoma is often found on the trunk (the area between the shoulders and the hips) or the head and neck. In women, it often develops on the lower legs. Melanoma is rare in people with dark skin. When it does develop in dark-skinned people, it tends to occur under the fingernails or toenails, or on the palms of the hands or soles of the feet.

When melanoma spreads, cancer cells may show up in nearby lymph nodes. Groups of lymph nodes are found throughout the body. Lymph nodes trap bacteria, cancer cells, or other harmful substances that may be in the lymphatic system. If the cancer has reached the lymph nodes, it may be a sign that cancer cells have spread to other parts of the body such as the liver, lungs, or brain. In such cases, the cancer cells in the new tumor are still melanoma cells, and the disease is called metastatic melanoma, not liver, lung, or brain cancer.

Staging

If the diagnosis is melanoma, the doctor needs to learn the extent, or stage, of the disease before planning treatment. Staging is a careful attempt to learn how thick the tumor is, how deeply the melanoma has invaded the skin, and whether melanoma cells have spread to nearby lymph nodes or other parts of the body. The doctor may remove nearby lymph nodes to check for cancer cells. (Such surgery may be considered part of the treatment because removing cancerous lymph nodes may help control the disease.) The doctor also does a careful physical exam and, if the tumor is thick, may order chest x-rays, blood tests, and scans of the liver, bones, and brain.

Stages of Melanoma

The following stages are used for melanoma:

Stage 0: In stage 0, the melanoma cells are found only in the outer layer of skin cells and have not invaded deeper tissues.

Stage I: Melanoma in stage I is thin:

- The tumor is no more than 1 millimeter (1/25 inch) thick. The outer layer (epidermis) of skin may appear scraped. (This is called an ulceration).

- Or, the tumor is between 1 and 2 millimeters (1/12 inch) thick. There is no ulceration.

The melanoma cells have not spread to nearby lymph nodes.

Stage II: The tumor is at least 1 millimeter thick:

- The tumor is between 1 and 2 millimeters thick. There is ulceration.
- Or, the thickness of the tumor is more than 2 millimeters. There may be ulceration

The melanoma cells have not spread to nearby lymph nodes.

Stage III: The melanoma cells have spread to nearby tissues:

- The melanoma cells have spread to one or more nearby lymph nodes.
- Or, the melanoma cells have spread to tissues just outside the original tumor but not to any lymph nodes.

Stage IV: The melanoma cells have spread to other organs, to lymph nodes, or to skin areas far away from the original tumor.

Recurrent: Recurrent disease means that the cancer has come back (recurred) after it has been treated. It may have come back in the original site or in another part of the body

Treatment of Melanoma

Local and Regional Therapy

Local, regional and systemic therapies are used to treat melanoma. Local therapy treats the primary tumor in the skin only. Wide excision surgery is an example of a local therapy.

Regional therapy involves evaluating the lymph nodes in an area or 'region'. A sentinel lymph node biopsy or lymph node dissection is an example of regional therapy.

Systemic therapy is intended to reach cancer cells that may have spread beyond the primary site and lymph nodes to the rest of the body. It may be given by mouth, by injection, or delivered directly into the bloodstream. An example of systemic therapy is the biologic therapy called interferon.

This surgical patient handbook will focus on local and regional therapies only. Information about other therapies for the treatment of melanoma can be found at the Patient Education Resource Center on level B1 of the UM Comprehensive Cancer Center building.

Clinical Trials

Your doctor may suggest that you consider participating in a clinical trial (a research study or *protocol*) for the treatment of melanoma. Clinical trials are one very important reason that the University of Michigan Rogel Cancer Center is able to offer our patients access to the latest cancer treatments.

Clinical trails (also called "protocols") may involve testing of new treatments, supportive care or other research to understand cancer (such as tissue banking). The goal of a trial is usually to find ways to improve therapy or decrease side effects. While a trial or study is active or in-progress, we will not know whether any potential improvement has been achieved. The trial must be closed and the research analyzed before the treatment being studied can be made widely available to patients.

For more information about clinical trials, visit the Clinical Trials section of the Rogel Cancer Center website: www.rogelcancercenter.org

There may be some risks associated with research. Your doctor will discuss both the potential risks and benefits in detail with you and obtain your written permission before starting you on a research protocol.

Oversight committees at the University of Michigan Health System conduct an extensive review of all clinical trials. These committees include an "institution review board" or IRB made up of other cancer doctors, doctors in other specialties and lay people. The IRB reviews all protocols before they are available to patients and again at different times during the research to be sure the protocol remains appropriate and safe for patients.

All patients on a protocol receive the best care possible, and their reactions to the treatment are watched very closely. If the treatment doesn't seem to be helping, a doctor can take a patient out of a study. Also, the patient may choose to leave the study at any time. If a patient leaves a study for any reason, standard care and treatment will be initiated.

Clinical trials are voluntary. Your melanoma will be treated whether you decide to join a protocol or not.

Types of Melanoma Surgery

Wide Local Excision

You have been diagnosed with melanoma after the biopsy of a skin lesion. In most cases, it is recommended to remove more skin around the area of melanoma. This is done with a procedure called a wide local excision.

A wide local excision is a procedure in which an area of skin and tissue surrounding the melanoma is removed. The skin and tissue removed (called the "excision") will extend down to your muscle, but no muscle will be removed. The amount of tissue removed *around* the melanoma depends on the Breslow depth of the melanoma (found on the original biopsy pathology report). Your surgeon will recommend that 1 – 2 cm (approximately ½ - 1 inch) of skin and tissue be removed surrounding the melanoma. This additional skin and tissue is removed to help prevent a recurrence of the melanoma. There is a 30-60% chance that the melanoma will recur at the primary site if this additional skin and tissue is not removed.

During surgery, the surgeon will mark a 1-2 cm circle around the original melanoma. Often, the surgeon will reshape this circle to an ellipse shape (the shape of a football). This shape improves the "closure" of the incision. There may be times that the incision is so big that the surrounding tissues aren't able to stretch over the site to close it. If this is the case, a skin graft is used to cover the open area. However, in order to avoid a skin graft, the surgical area may be closed using a rotational or advancement flap. This involves loosening the surrounding tissues from their underlying structures and then moving them to cover the defect. This can not always be done and sometimes a skin graft will still need to be done.

The incision will be closed with sutures. Because the wide excision removes a large piece of tissue and skin, the incision is often under tension. This means that the sutures will need to remain in place for 14-21 days. On rare occasions when there is no tension on the incision, absorbable sutures may be used.

Skin Graft

Some patients require the placement of a piece of skin over the excision site to help it close. This piece of skin is called a graft. Grafts are stapled or sutured in place over the surgical site. The site where the graft skin is taken from is called the 'donor site'.

Skin grafts are used to help close excisions that involve:

- large areas requiring replacement skin, or
- parts of the body that have little loose skin; such as ankles, elbows, ears and other joints

Skin grafts heal over several weeks. The graft will leave a scar; as will the donor site. It will fade over time, but will still leave a scar.

Split Thickness Skin Graft

A split thickness skin graft is a procedure in which your surgeon removes a very thin layer of skin from the donor site, usually the front of your thigh. The graft is placed in the open skin area left by the wide local excision. This allows the primary site to heal more quickly than it would without a graft.

With this procedure you will usually go home the same day. In some cases you may be admitted to the Observation unit overnight. This will be decided by your doctor.

Full Thickness Skin Graft

In this procedure a deeper layer of skin including hair follicles and other skin structures are removed from the donor site and placed in the surgical area. The post operative care is the same as a split thickness skin graft with the exception of the donor site. (Refer to the Next Steps section for complete instructions on caring for the donor site).

The donor site of a full thickness skin graft is closed like an incision, usually with absorbable sutures. Your surgeon may use the same site as the sentinel lymph node biopsy for the donor site in order to avoid an additional incision.

Assessing Lymph Node Involvement

Why are lymph nodes important?

Cancer cells can break off from the initial melanoma tumor and travel to other parts of the body through the lymph fluid (or the blood stream). Once in the lymph fluid, they pass through the lymph nodes. The presence of cancer cells in lymph nodes is an indication that the cancer can spread and is a more aggressive type of cancer.

Learning whether or not cancer is present in the lymph nodes, and how many nodes are involved, are important factors in the treatment of melanoma. This information can help you and your doctor decide whether systemic therapy or other treatments may be beneficial. In addition, if there is cancer in the lymph nodes, removing that cancer is useful.

If lymph nodes are found to be enlarged on physical examination, a procedure called a fine needle aspiration is often done prior to surgery. This procedure is performed in the clinic. During the procedure a needle is inserted into the

enlarged node and cells are removed. The cells are then examined by a cytopathologist underneath a microscope.

If the cells examined include malignant or cancerous cells, a surgery called a lymph node dissection is recommended. If there are no cancerous cells present, only a biopsy would be recommended.

Most of the time, when patients are examined in the clinic, their lymph nodes are not enlarged. In that case a sentinel lymph node biopsy is recommended. This procedure is able to find very small amounts of cancer in a lymph node, long before there is enough to enlarge the lymph node. Again, finding even a few cancer cells in a lymph node is an important factor in determining treatment for your melanoma.

Sentinel Lymph Node Mapping

The 'sentinel node' is located in the group of lymph nodes that are the first to drain the area of your body where the melanoma is located. For example, a melanoma on the arm drains to the axilla (or armpit) while melanoma on the leg drains to the groin. If the melanoma is located on the trunk it can drain to either the axilla or groin or both areas. Sometimes it can even drain to other areas such as the neck, behind the knee, or elbow. At each site there can be more than one sentinel node.

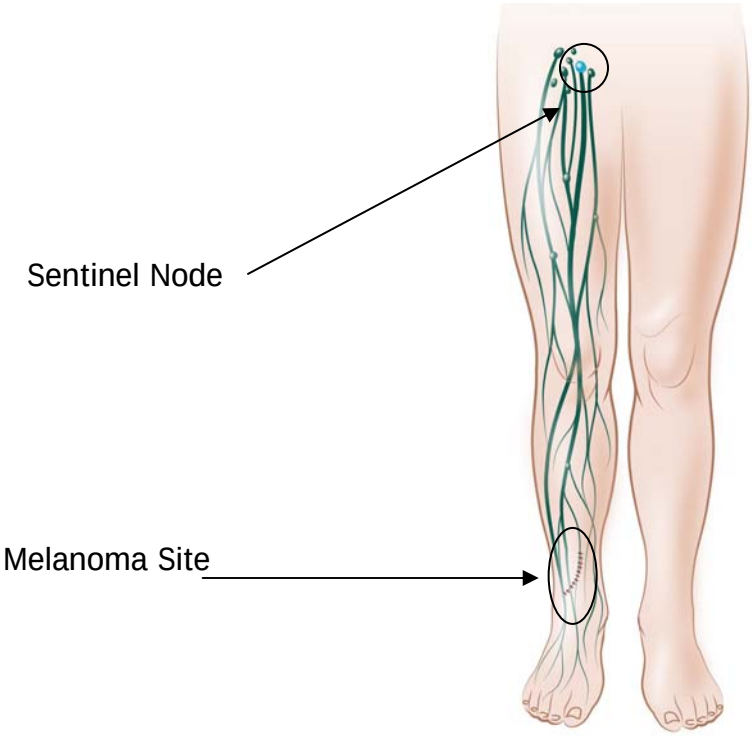


Figure 2: Sentinel Node in groin lymph node group

Lymph fluid drains from the site of the tumor to one or two lymph nodes first before going to the other nodes in the region. The "sentinel node(s)" is the first lymph node to which a tumor drains, and therefore is the most likely to have cancer if the cancer has spread to the nodes.

Once the sentinel lymph node(s) is found, it will be removed and sent to pathology to see if it contains cancer.

Locating the Sentinel Node

There are two techniques used to locate the sentinel nodes that drain a surgical area. In most cases both will be used.

The first technique uses an injection of a radioactive solution to make the nodes visible on an x-ray. The other technique involves injecting blue dye into the area around the melanoma and examining the first nodes to become blue by absorbing the blue dye. Surgeons use both of these techniques to locate the sentinel node.

Your sentinel lymph node biopsy will begin in the Nuclear Medicine Department the day before your surgery or the morning of your surgery.

Nuclear Medicine is located on level B1 of the Main Hospital.

This procedure involves the injection of a weak radioactive solution to make the sentinel node radioactive and visible on x-ray. It is important to remember that the solution will cause the lymph nodes to show up on the x-ray as black dots. This does NOT mean that there is cancer in the lymph nodes, but is a way to find the sentinel lymph node so it can be tested. You will spend approximately 2 hours in the nuclear medicine department between the injection and the completion of the x-ray. You will be awake during this part of the procedure and after it is completed you will go home or to admitting for your surgery.

Once in the operating room, the surgeon will perform the second technique to identify the sentinel lymph node. To begin the procedure, your surgeon injects blue dye around the area of your melanoma biopsy. This injection is done after you are asleep from the anesthesia.

The dye will travel through the tissue and into the lymph nodes nearest your tumor site. This dye will assist the surgeon in locating the sentinel node for removal.

In rare cases the radioactive solution and/or dye will not move toward the lymph nodes which means that no sentinel node can be identified. In this case the procedure will be stopped and your surgeon will discuss the next steps with you.

What are the side effects of sentinel lymph node biopsy?

Side effects of sentinel node biopsy can include minor pain or bruising at the biopsy site and the rare possibility of an allergic reaction to the blue dye used in finding the sentinel node. Some patients develop a small fluid collection, about the size of a golf ball, at the site of the sentinel lymph node biopsy. This does not usually bother patients too much and will resolve on its own within a few weeks of the surgery. Contact your surgeon's office if it persists longer than this, becomes painful, red, or becomes larger than a golf-ball.

You may experience some numbness in the back of your upper arm or inner thigh near the site of your sentinel lymph node biopsy. This will improve over time, but might not completely resolve.

Additionally, some people experience swelling of the entire arm or leg called lymphedema. This is not common after sentinel lymph node biopsy and it can be treated with physical therapy. However, for patients who have lymphedema, it can be a life-long issue.

The blue dye used in the sentinel lymph node mapping is eliminated from your body in your urine. This changes the color of your urine to blue-green for about 24 hours after the procedure. This causes no harm. The area of the injection with blue dye will have a blue color to it. Many patients described the area as looking like a blue bruise. The color will lessen with time, although it will be visible for several weeks to several months after the procedure.

If I have a sentinel lymph node biopsy, does this mean that I don't need a lymph node dissection?

If there is no cancer found in the sentinel node, then our approach is to not perform a lymph node dissection. This is because the chance that there may be cancer in another lymph node that wasn't removed is very small.

However, if the sentinel lymph node does show cancer, there is no way to know whether any other lymph nodes contain cancer. Therefore, the standard of care is to proceed with a lymph node dissection in which the remaining lymph nodes in the same area are removed. If cancer is found in the sentinel node, the dissection will be scheduled as a second operation.

When will I find out if there was cancer in the sentinel lymph node?

Your surgeon will call you 5-7 days after your surgery with the pathology results. This will allow the necessary time for the pathologist to closely examine the sentinel lymph node tissue and prepare a pathology report.

Lymph Node Dissection

Your surgeon will recommend a lymph node dissection if the sentinel node(s) contain cancer or if the lymph nodes can be felt on physical exam and a fine needle aspiration confirms that the node contains cancerous cells. During a lymph node dissection, the surgeon makes an incision and removes the fatty tissue where the lymph nodes are located.

The number of lymph nodes removed depends on the individual person and where the tumor is located on the body, such as in the groin, armpit, or neck. In this surgery an area of tissue containing lymph nodes, called a fat pad, is

removed, the lymph nodes are not removed individually. When the pathologist reviews the tissue the lymph nodes will be counted and reviewed individually to look for cancer cells.

Axillary Lymph Node Dissection

During an axillary lymph node dissection (called an 'ALND') a fat pad is removed from your axilla or armpit. Tissue is removed from this area and from around your chest wall muscle. Between 10-30 lymph nodes are usually removed. You will need to take special care of your arm after an axillary lymph node dissection.

Inguinal Lymph Node Dissection

During an inguinal lymph node dissection a fat pad in your groin is removed. This removes approximately 8-15 lymph nodes. Sometimes a small muscle located in your outer thigh is moved over to help cover the area where the tissue was removed and protect the blood vessels supplying your leg. You will need to take special care of your leg after inguinal node surgery.

Review the instructions in the Postoperative Care section called 'Next Steps'.

What are the side effects of a lymph node dissection?

Approximately 10-30% percent of the patients who undergo a lymph node dissection experience chronic problems related to the dissection, such as swelling of the entire limb (lymphedema), or pain or discomfort in the area of the dissection.

Further information about lymphedema and its treatment can be found on page 41.

Some steps you can take to prevent lymphedema include:

- Avoid having blood drawn from your arm on the affected side.
- Do not have your blood pressure taken on the affected arm.

- Be careful to avoid infection in that arm or leg; and contact your doctor or nurse practitioner if you see swelling or signs of infection.

There are nerves that run through the tissue where the lymph nodes are located that provide sensation to the skin. In most cases, these nerves are cut during the surgery. This does not affect mobility or strength in your limb, but can cause mild numbness.

Some of the other possible complications associated with this type of lymph node removal include:

- Temporary limitations in movement of the involved limb after surgery
- Infection of the surgical area
- Accumulation of blood in the surgical area (hematoma)
- Accumulation of clear fluid in the surgical area (seroma)

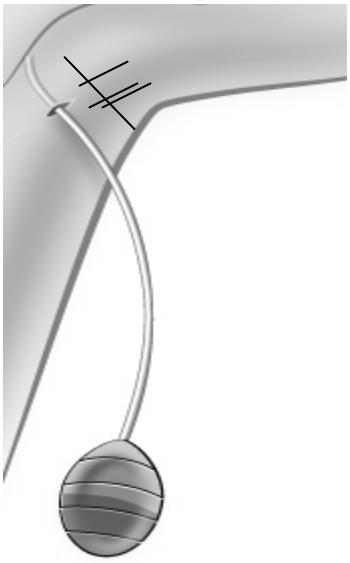
What will happen the day of the surgery?

An axillary lymph node dissection is done as an outpatient procedure, while an inguinal lymph node dissection may require an overnight stay in the Observation Unit.

Further information about drains, exercises, and postoperative care can be found in the Next Steps section

Since the remaining tissues tend to "leak" some lymph fluid when the lymph nodes are removed, a drain is left in place for the first 2 to 3 weeks after the operation, or until the area heals. The drain is a flexible plastic tube that exits the skin and is connected to a plastic collection bulb. See Figure 3.

When the drainage diminishes to a certain amount, the drain is removed in the clinic.



The drain can be removed when the total drainage is less than 30 ccs each day, for 2 days in a row.

Figure 3: Postoperative drain

Preoperative Considerations

Preparing for Surgery

Once you have made your treatment decision all necessary surgeries and appointments will be scheduled. This is a complex process; involving many different people and departments.

Our surgical schedulers will work with you to make this process as smooth, uncomplicated and quick as possible. They will contact you within 72 hours of your clinic visit with your appointment times and dates.

They can be reached at (734-936-6360

Please allow the surgical scheduler 72 hours after your initial appointment to schedule all necessary appointments. She will contact you after this time with your surgery dates.

We know that waiting for surgery can be very difficult once the decision has been made. Please let us know how we can make this process better for you.

It is important to be in the best possible health for surgery. It is important to eat a well-balanced diet, get exercise, and rest. Smoking can greatly impact surgical risk and recovery. If you smoke, we recommend that you quit. We do not recommend that you simply stop smoking without help ("cold turkey"). This can be harmful to your health and is usually not successful. Discuss the best options for quitting smoking with your physician.

Medications & Supplements to Avoid

Many medications have an effect on bleeding or on the anesthesia that is given during surgery or procedures. **It is important that you review all medications and supplements with your doctor or nurse before any procedure is performed.** This includes all medications (prescription and those purchased "over the counter") as well as any herbal supplement (pills, teas, etc.) or vitamins.

Notify your nurse if you take Coumadin or other blood thinners. You will need special instructions before surgery.

This document contains a list of some of the common aspirin containing medications or those known to affect bleeding. Many medications for colds, flu, headaches and other ailments contain some amount of aspirin. It is important to read the labels for acetylsalicylic acid which is the name for Aspirin. New medications are available daily, so be sure to ask your doctor or pharmacist about medications and supplements not found on this list.

Drugs that Affect Bleeding

One (1) week prior to surgery any medication that contains aspirin, aspirin products, ibuprofen and certain herbal products should be discontinued because they promote bleeding. Note, this list is selective and does not include all medications that affect bleeding.

Products containing aspirin (Do not take for 1 week prior to surgery)

Alka-Seltzer	Anacin	Anexsia w/Codeine	Anodynos
A.S.A.	Ascriptin	Aspergum	Axotal
B-A-C	Bayer	BC Powder	Bexophene
Buffaprin	Bufferin	Buffinol	Cama Arthritis Strength
Congesprin	Cope	Damason-P	Darvon
Dasin	Dia-Gesic	Dolorn #3 Tablets	Doxaphene
Easprin	Ecotrin	Emagrin Forte	Empirin
Equagesic	Equazine M	Excedrin	Fiogesic
Fiorgen PF	Fioricel	Fiorinal	4-way Cold Tablets

Gemnisyn	Liquiprin	Lortab ASA	Magnaprin
Marnal	Measurin	Meprobamate	Midol
Momentum	Norgesic	Norwich	Orphengesic
Pabalate	P-A-C	Pepto Bismol	Percodan
Persistin	Presalin	Robaxisal	Roxiprin
Saleto	Salocol	Sine-Off	Soma compound
St. Joseph Aspirin	Supac	Synaigos-DC	Talwin
Trigesic	Vanquish	Zorprin	

Products containing ibuprofen and Non Steroidal Anti-Inflammatory Drugs (NSAID's). (Do not take for 1 week prior to surgery)
Please note, this list is selective and does not include all medications that affect bleeding.

Advil	Aleve	Anaprox	Ansaid
Arthotec	Cataflam	Clinoril	Daypro
Disalcid	Feldene	Haltran	Ibuprofen
Lodine	Lodine XL	Medipren	Midol 200
Motrin	Naperelan	Nalfon	Nuprin
Orudis	Oruvail	Relafen	Rufen
Trilisate	Tolectin	Voltaren	Voltaren Xr
Naprosyn	Naproxen		

Herbs and supplement products that may affect bleeding
(Do not take for 2-3 weeks prior to surgery):
Notify your doctor of any herb or supplement that you are taking prior to surgery. This list only applies to herbs that are taken in the form of a supplement. You do not need to avoid these herbs in your diet or food. These herbs only affect bleeding in the amounts generally taken as supplements, not in the amounts normally found in food preparations.

Gingko biloba	Ginger	Ginseng	Vitamin E
Feverfew	Cayenne	Garlic	Bilberry fruit

Herbs and supplement products that may affect anesthesia
(Do not take for 2-3 weeks prior to surgery): St. John's Wort

Advanced Directives

All individuals who are scheduled for surgery are asked whether or not they have an Advanced Directive, Power of Attorney for Health Care, or a Living Will. Written materials are available to educate you on these topics. Ask your doctor or nurse if you need more information or stop by the Patient Education Resource Center for further materials.

If you have an Advanced Directive, please bring a copy to the preoperative evaluation or to the admitting lounge on the day of your surgery. The copy will be placed in your medical record. Be sure to notify your health care team that you have completed an Advanced Directive document.

The Preoperative Appointment

Directions and Maps to the Preoperative Center at Domino Farms can be found at the back of this booklet.

To prepare you for surgery and for the recovery after surgery, you will be scheduled to return for a preoperative appointment. A complete history and physical exam is required of all patients within 30 days of a surgical procedure. This appointment will be scheduled at the Surgical Pre-Operative Center at the Domino Farms complex. Every patient is prepared for surgery differently depending on medical history, type of surgery and postoperative needs. Therefore, some appointments may last 1-2 hours, while others may take 4-6 hours and will include several additional appointments.

Plan to be at the preoperative center in Domino Farms at least 2 hours for this appointment, but expect that additional time may be necessary.

About the Preoperative Appointment:

This appointment includes a complete history and physical examination, an explanation of your surgery and its risks and benefits, and instructions to prepare you for the surgery.

You will meet with a nurse practitioner or a physician's assistant and a nurse the day of your pre-surgery evaluation. Your surgeon does not normally see you the day of your preoperative evaluation. If you have a question regarding your surgery that isn't answered at the preoperative appointment, please contact your surgeon's office directly.

Your physical health and medical history must be evaluated prior to all surgical procedures.

At this visit you will:

- Have a complete history and physical exam including a review of all of your medications and use of supplemental herbs & vitamins.
- Sign your consent to have surgery. You will receive a copy of this consent to take home with you.
- Complete pre-surgical testing that may include an EKG, X-rays and laboratory tests. These tests will be performed that day.
- Receive comprehensive education about your surgery, its risks, benefits and anticipated recovery. The clinic nurse will also review any assistance you may need with equipment, education or resources before, during and after your surgery.
- See the anesthesiologist in the anesthesia clinic. This additional appointment may not be scheduled for all patients. The medical team will decide if this is indicated at the time of your preoperative appointment.

Please bring the following to your preoperative appointment:

- The family member(s) or friend who will be caring for you after surgery.
- A list of your current medications and supplements; their dosages (amounts) and how often you take your medications. Please include all prescription meds, non-prescription (over the counter medications), vitamins, supplements, herbs and homeopathic remedies.
- Any recent (less than one year old) cardiac tests that have been done at a non University of Michigan facility, such as a stress test or EKG. If you have a cardiac history, you will need your cardiac physician to send a letter of clearance to proceed with surgery.
- Any recent (less than one year old) pulmonary tests that have been done at a non-University of Michigan facility, such as a Chest X-ray.
- Physician letter of approval to discontinue any blood thinning medication (such as Coumadin®, Plavix®, Lovenox®).
- The phone number where you (the patient) can be reached the day before surgery. We will need to record this in case of emergency should we need to contact you.

Scheduling the Preoperative Appointment:

The surgery scheduler will be calling you with your appointment times. Please allow at least 72 hours after your clinic visit to receive your appointment dates and times.

Special Considerations:

- If you have a cardiac history (for example a past heart attack, history of angina or heart failure), please bring a letter for "Cardiac Clearance" from your cardiologist or internist. In addition, please bring a copy of your most recent EKG, stress test, and/or echocardiograms to the preoperative appointment.

- If you are on any blood-thinning medications such as Coumadin® or Plavix®, you will need to bring a letter from the prescribing physician

approving discontinuation of this medication for 5-7 days before surgery (these include medications containing aspirin and non-steroidal medications such as Motrin® and Aleve®). If you are uncertain of any medication, you should discuss this with your doctor.

Female patients: this physical exam does not include a pelvic exam or Pap smear. You will need to see your primary doctor when you are due for your annual gynecologic exam.

What if I need to Reschedule or Cancel the Appointment?

If you need to reschedule or cancel your Pre-Surgery Appointment please call the surgery scheduler at (734) 615-0073 or (734) 763-3470.

Blood Donation

Whenever surgery is performed, a certain amount of blood is lost. Patients undergoing surgery for melanoma do not routinely require blood transfusions. In fact, it is rare and only in emergency situations that a patient would require a blood transfusion.

Remember, you will most likely NOT need a blood transfusion.

The University of Michigan Hospital has a blood bank, which works in partnership with the American Red Cross. Together these organizations provide patients with necessary blood and /or blood products. Your safety is top priority. Careful testing is performed to ensure compatibility and to minimize the risk of disease transmission, such as hepatitis and AIDS.

Please discuss your concerns with your doctor. You may also contact the Blood Transfusion and Apheresis Center at the University of Michigan at (734) 936-6900.

The Day of Surgery

The schedule for your day of surgery will depend on the type of surgery you are having.

Will I Be Hospitalized?

Most melanoma surgeries are done on an outpatient basis and do not require hospitalization. In general, patients undergoing inguinal lymph node dissections or skin grafts will be admitted from the recovery room and will stay one night in the observation unit.

Patients Having a Lymph Node Dissection

If you are having an inguinal lymph node dissection, you will be admitted to the observation unit on the same day of surgery. You may hear someone say that you are an "ADP" patient. These letters stand for Admission Day Procedure.

Patients undergoing an axillary lymph node dissection will have outpatient surgery and will be discharged home from the recovery area.

Individuals who require monitoring or treatments while preparing for surgery are admitted to the hospital the day before surgery. This is not common.

Patients Having a Sentinel Lymph Node Mapping Procedure

Patients undergoing a sentinel lymph node biopsy have a complex schedule involving appointments prior to surgery.

Your injection may be done either the afternoon before or the morning of your surgery. Your nurse or the surgery scheduler will let you know the date and time of your injection.

It is important to report directly to the Nuclear Medicine Department, located on level B1 of University Hospital, for the lymph node mapping procedure. You will spend about two hours in the nuclear medicine department.

Once in the operating room, the surgeon will perform the sentinel lymph node biopsy and then additional melanoma surgery as necessary. You can go home from the hospital that day, as long as you are feeling okay.

Patients Having an Outpatient Procedure

If you are scheduled to have surgery as an outpatient, you will have surgery and then be released to home on the same day. You will most likely have surgery in the morning and spend the afternoon recovering. Trained personnel will monitor you as the effects of anesthesia wear off. You will be released when your condition is stable and your recovery is proceeding well. If your condition requires monitoring, you will be admitted. Pack an overnight bag and store it in your car just in case. Also, you must bring someone along who will be able to drive you home. If you plan to travel home by taxi or bus you must have another person with you. Your surgery will be cancelled if you arrive without someone else to make sure you get home safely. Please discuss any transportation problems with your doctor or nurse before the day of the procedure.

When you are released, you will be given:

- Detailed instructions about how to care for yourself at home
- Prescriptions for any needed medication
- A telephone number to call if questions or concerns arise

You will not be released from the outpatient surgery area unless you have a driver present.

Postoperative Considerations

Surgical Drains and Dressings

Dressings (Surgical sites NOT involving a skin graft).

You will have a dressing placed over the surgical site in the operating room. This original dressing should remain in place for 48 hours.

The type of dressing used will vary by the type of surgery, the location of the incision and the surgeon who performed the surgery. Different surgeons use different dressings in different locations.

Most lymph node biopsy dressings have an outer dressing and an inner dressing. The inner dressing is made up of glue that is used to seal the skin. This will appear dry and flaky and will fall off on its own over time.

The outer dressing usually consists of a layer of gauze or a clear plastic film covering (called Tegaderm®). This dressing should be removed in 48 hours.

At the wide local excision site, you will have a bulky dressing that can be removed in 48 hours. After the bulky dressing is removed, you may place a light dressing over the site for comfort if you desire.

Removing the dressing over a surgical site and looking at the incision for the first time can be stressful. Please discuss your concerns with your nurse, surgeon or social worker, and make them aware of your feelings. If you are admitted to the hospital, the initial dressing will be removed before you leave and a nurse will assist you. If you are at home, it may be helpful to have a family member or close friend with you to help with the first dressing change.

After removing the outer dressing, you may shower (no baths or hot tubs). Avoid running water directly on the incision. Pat the incision area dry. After the first week you may wash your incision with soap and water.

We do not recommend the use of special lotions, antibiotic ointments or creams on the incision area. It's best to let it heal on its own.

Fluid Collections:

Fluid collections under any incision are normal, and may feel like a soft or hard lump. This is part of the body's way to heal. It will usually go away on its own in one to two months. Please notify your doctor/nurse if the fluid collection continues to increase in size, becomes painful over the entire area, or has a reddened area greater than 1 inch in size around the incision area.

Surgical Drains

A surgical drain is a soft flexible plastic tube that is connected to a plastic collection bulb. Drains are used to prevent fluid from collecting at the surgery site while the body is healing. They usually remain in place for 1-3 weeks postoperatively, or until the drainage decreases to a small amount (30 milliliters or less each day, for 2 consecutive days). Drains are not left in longer than 4 weeks.

While your drain is in place:

1. Do not drive until after your drain is removed (at the discretion of your surgeon)
2. It is okay to shower
3. Keep the drain-collecting bulb anchored to your clothing to prevent accidentally pulling it out.

**The drain can be removed when the total drainage less than 30 mls each day,
for 2 days in a row.**

4. Clean the drain insertion site daily using this procedure:
   - Remove the old drain-sponge dressing.

   - Prepare a small cup of solution: ½ tap water and ½ hydrogen peroxide

   - Dip a clean cotton-tipped swab in the solution and cleanse around the drain area (do NOT dip a used swab back into the clean solution).

   - Apply a clean drain sponge around the drain and tape as necessary.

Emptying the Drain

Empty the collection bulb on your drain 3 times daily (or more often if necessary) using the following procedure:

1. Open the small lid on the top of the bulb and pour the drainage into the measuring container or cup.

2. Squeeze the bulb and hold it while closing the lid. The bulb needs to be collapsed to create the suction needed to drain the incision area.

3. Measure the drainage amount in the cup and record it on the drain record sheets located on page 65 of this book. Record each drain amount separately.

4. Call your nurse practitioner when the total daily drainage is less than 30 milliliters or 30cc's for 2 days in a row. Note that one milliliter (written as 'ml') and one cubic centimeter (written as 'cc') are equal.

Stripping the Drain

Strip the tubing 3 times daily (or more often if there are many blood clots) using the following procedure: See Figure 4.

1. Grasp the tubing closest to your body (at the insertion site) with one hand and hold the tubing tightly. This hand will keep

the tubing from pulling out of your body.

2. Take an alcohol swab in the other hand. Using the swab, pinch the tubing tightly just below your first hand.

3. Keeping the tubing pinched, slide the alcohol swab down the tubing toward the collection bulb and away from your body.

You should notice any clots in the tube are forced down the tube and into the collection bulb.

This is called “stripping” or “milking” the tube.

The tube may become flat from the suction. This is okay.

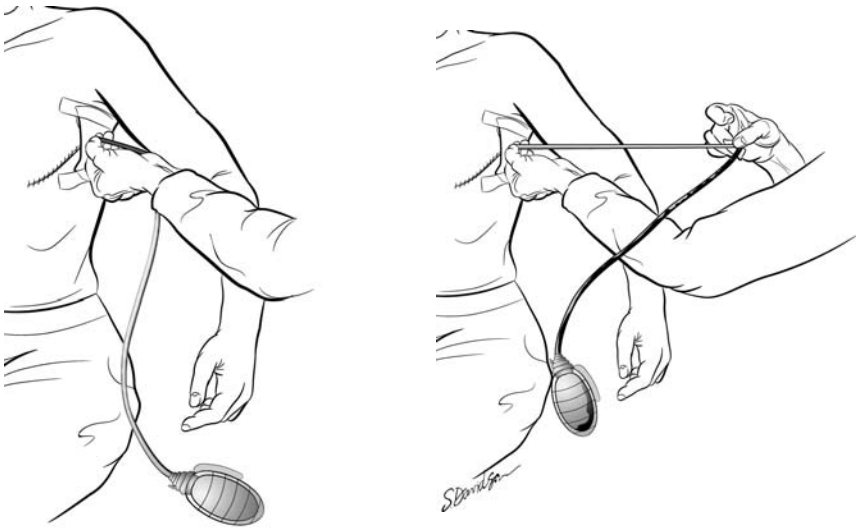


Figure 4: Stripping the Drain

After your drain is removed:

Your drain will be removed in the surgery clinic. Once it has been removed you may notice a small collection of fluid at the site. A small collection of fluid is normal (about the size of a walnut or quarter). This will not harm you and will reabsorb into the tissue within a month or

two. If the fluid becomes larger than this (about the size of an orange), you should notify the surgical nurse practitioners at the phone numbers listed in the back of this book. This fluid collection is not an emergency.

Once the drain has been removed, you should follow these guidelines:

1. Keep the site dry with a gauze dressing over it for the first 48 hours.

2. Stop using the hydrogen peroxide; use only soap and water for cleaning.

3. Some leaking at the drain site is normal. If the site continues to leak after 3 days, contact the surgical nurse practitioners. A continuously leaking site can lead to infection.

Notify the surgical nurse practitioners of any large fluid collections.

Special Instructions after Inguinal Lymph Node Dissection Surgery

What special care do I need after surgery?

When lymph nodes are removed from an area, the body's ability to drain that area may be affected. This can cause fluid to collect at the surgical site. Also, the groin area can be difficult to keep clean and dry, which is important for good healing. You will be asked to follow the directions below to reduce any side effects of the surgery and to promote healing. If you have questions or are unable to perform these tasks, we ask that you contact your surgical team for assistance.

Swelling

Your leg will be more prone to swelling. This can be temporary or can become chronic. It is common to experience some swelling in the first

few days after surgery. To reduce swelling, you will be instructed to elevate your leg above the level of your heart throughout the day as well as at night until your postoperative clinic appointment. You should avoid placing your leg in a downward (dependent) position for any extended amount of time.

Make sure you fill your prescription for a compression stocking BEFORE your surgery

To decrease the risk of chronic swelling (called 'lymphedema') you will be given a prescription during your preoperative appointment for a special stocking. This stocking is made of material that helps prevent swelling in your leg. It is called a compression stocking. You will begin wearing this after your drain(s) is removed and will continue to wear it for 4-6 months after surgery. After that, you can use the stocking as needed. You should have this prescription filled before your surgery. Compression stockings are available at most medical supply stores.

If swelling persists, it is important to notify your health care provider. They may prescribe physical therapy to assist in treating the swelling. A more comprehensive description of lymphedema can be found in the next section of this handbook.

Incision and Skin Care

Because the inguinal area is dark, moist, and includes areas in skin folds and around joints (the hips), the surgical area can sometimes be hard to heal. For these reasons you will need to pay close attention to keeping the surgical area clean and dry. You should keep a dry, non-sterile gauze dressing or pad over your incision to absorb moisture and keep it away from your incision. You should change this daily and as needed to keep

the area dry. You can find non-sterile gauze pads at most pharmacies or drug stores.

You may shower 48 hours after surgery. Avoid running water directly on the incision area. Pat the incision area dry after showering and place a clean gauze pad over the incision. Do not use any lotion, antibiotic ointment, creams, powders, or healing gels on the incision area. It is best to let the incision heal on its' own. It is most important to keep the area clean and dry. These products may create a moist area that only helps bacteria to grow. (In some cases, you will be given betadine swabs to clean the area twice a day).

Avoid baths, swimming pools and hot tubs until approved by your surgeon. Be sure to look at your incision daily and call if you see any redness, drainage, pus, or other changes that concern you.

Dressings and Staples

You will have a gauze dressing placed over the surgical incision in the operating room. The outer dressing usually consists of a layer of gauze held by tape. The original outer dressing is removed either in the hospital, or at home 48 hours after the procedure. Looking at a surgical incision for the first time can be stressful. It may be helpful to have a family member of close friend with you to help remove the outer dressing.

Inguinal surgical areas are held together with metal staples or sutures. Sutures and staples provide strength to hold the incision closed. They will remain in place until the incision area is healed. The surgical team will monitor your incision and decide when to remove the sutures/staples. This is done 14-21 days after surgery.

Beginning Other Activities

You should plan on being at bedrest, with your leg elevated, most of the time for the first week after the surgery. Lying in a recliner or sofa with the leg elevated is also acceptable.

Avoid sitting for prolonged periods – the only exceptions are the bathroom and the dinner table.

Special Instructions after Axillary Lymph Node Dissection Surgery

Exercising / Movement

(This section has been reproduced with permission from: Exercises Following Axillary Surgery; a UMHS booklet written by Mary Wakefield, PT with support from The Division of Physical Therapy of the Physical Medicine and Rehabilitation Department and the Breast Care Center)

The following activities have been approved by your physician to help you increase the motion and strength of your shoulder and improve your posture after surgery. Your physician or the nurse specialist can answer more specific questions you might have: for example, when to expect full range of motion and the amount of weight you may lift when exercising your operated arm.

When Should I Start?

Exercises should be started immediately following surgery. Several exercises require above-the-shoulder movement and should be started after the drains are removed. These exercises are boxed and noted as "drain out only" exercises.

Why Should I Exercise?

Posture exercises are important because there is a tendency after surgery to "protect" the surgical area, which often leads to poor posture. The poor posture over time can lead to upper back and neck problems. The shoulder mobility exercises are done to prevent a frozen shoulder, which can occur very quickly when the shoulder is not used. A frozen shoulder can be very painful, so it's essential that you begin the shoulder mobility exercises as soon as possible, refer to the descriptions below.

When Can Exercises Be Discontinued?

Exercises can be discontinued when your posture is good, you can perform all the mobility and strengthening exercises with ease, and you are using your arm for everyday activities.

Posture

Your posture, or the way you carry your head, neck and trunk, will ultimately affect the movement of your shoulder. Maintaining correct posture will increase your overall comfort in the post-operative period. It is helpful to correct your posture by looking in a mirror frequently during the day. Check to see that your back is erect as possible, shoulders are level and that your chin is tucked.

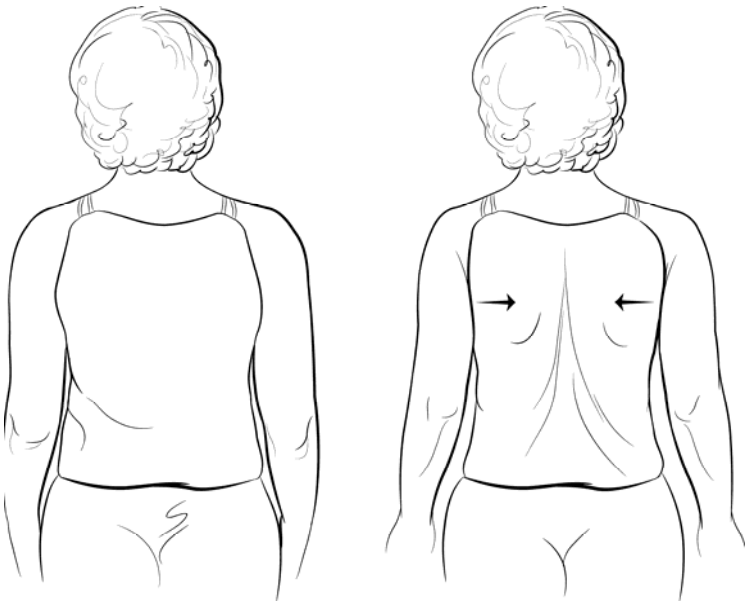
Perform these exercises slowly, 10 repetitions each, twice daily. Continue until they become part of your regular daily activities.

Posture Exercises

Exercise A: Chin Tuck: Sitting in a relaxed position, back erect, move your head backwards as far as possible, tucking in your chin. Make a double chin as you continue looking straight ahead. Hold for 5 seconds, relax and repeat. (see illustration below)

Exercise B: Shrug your shoulders up and toward your ears, hold for 5 seconds, relax and repeat. (see illustration below)

Exercise C: Squeeze your shoulder blades together, hold for 5 seconds, relax and repeat. (see illustration below)



Exercise D: Roll your shoulders up, back and down in a circular motion, relax and repeat. (see illustration below)

Shoulder Mobility

Using your arm in daily functional activities is an excellent means of regaining the shoulder mobility that you had before surgery. Some examples of these activities are: washing and brushing you hair, drying your back with a towel, fastening your brassiere, letting your arms swing as you walk and reaching into cabinets. The following exercises will help you regain full shoulder mobility. Perform these exercises slowly 5 repetitions each, twice daily. Continue these exercises until full arm mobility is achieved.

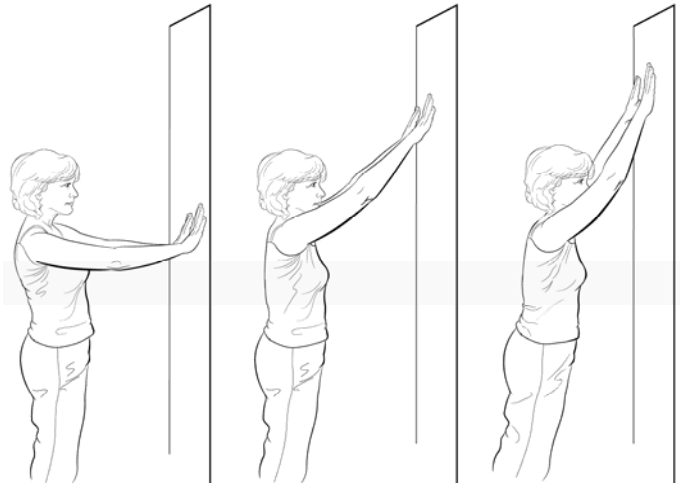
Mobility Exercises

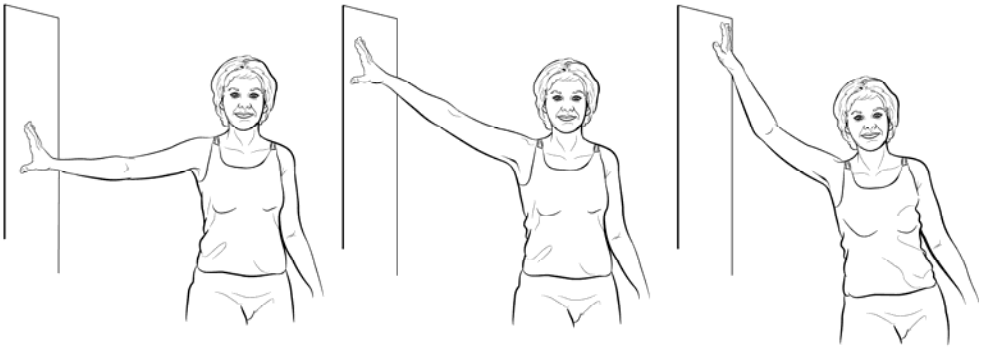
Perform this exercise only AFTER drains are removed

Exercise E: While standing arm length away from the wall:

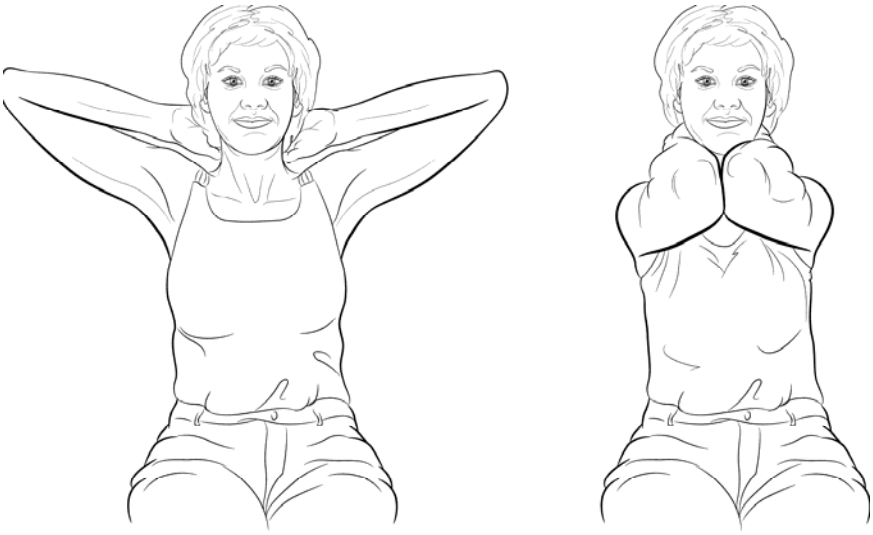
1. Face the wall, slowly walk both hands up the wall as far as possible. Step toward the wall, lean into the arm, hold for 5 seconds, relax and repeat.

2. Turn your side to the wall, slowly walk your affected hand up the wall as far as possible. Step toward the wall, lean into the arm, hold for 5 seconds, relax and repeat. (see illustration below)





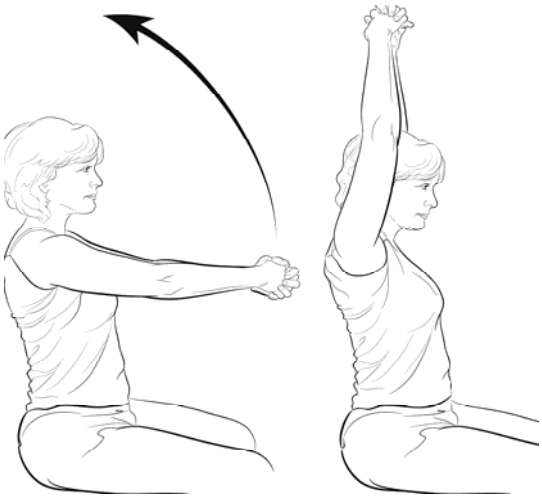
Exercise F: While sitting erect with hands at nape of neck, move elbows forward touch together and then push elbows apart, relax and repeat (see illustration below)



Exercise G: While sitting erect, put hands on shoulders and circle elbow forward up, out and down. Repeat. (see illustration below)

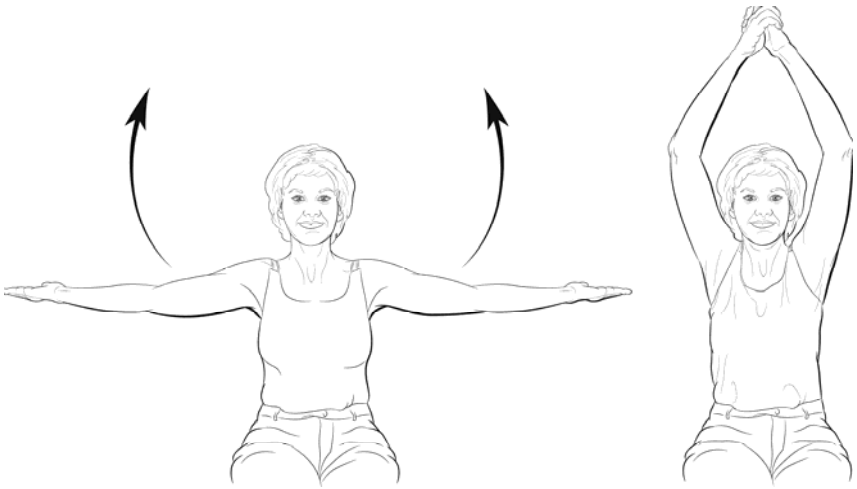
Perform this exercise only AFTER drains are removed

Exercise H: While sitting or lying down, clasp hands, lift arms up and over your head. Keep elbows as straight as possible, relax and repeat. (see illustration below)



Perform this exercise only AFTER drains are removed

Exercise I: While sitting or lying down, move your arms outward away from your sides, clasp hands overhead; return to sides. Keep elbows straight, relax and repeat. (see illustration below)



Increasing Arm Strength

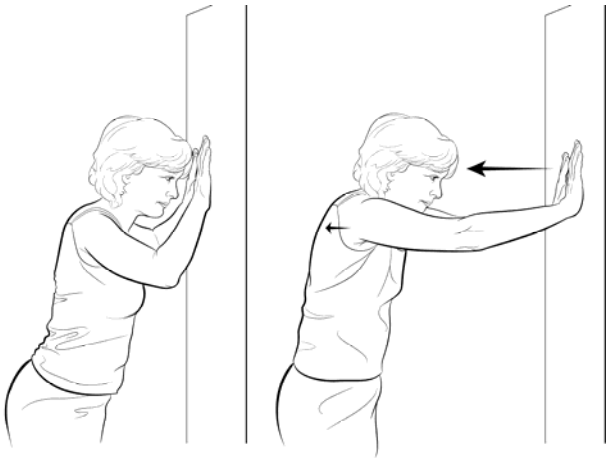
Daily functional activities and hobbies will also help to increase your arm strength. Some examples of these activities are grocery shopping, doing laundry, washing the car and preparing meals. For the first eight weeks after surgery, strengthening for the operated side is limited to lifting 10 pounds or less. After that time, check with your physician about lifting heavier loads. The following exercises are designed to help you regain the strength you had before your operation.

Remember to always warm up your arm with the mobility exercises before performing strengthening work.

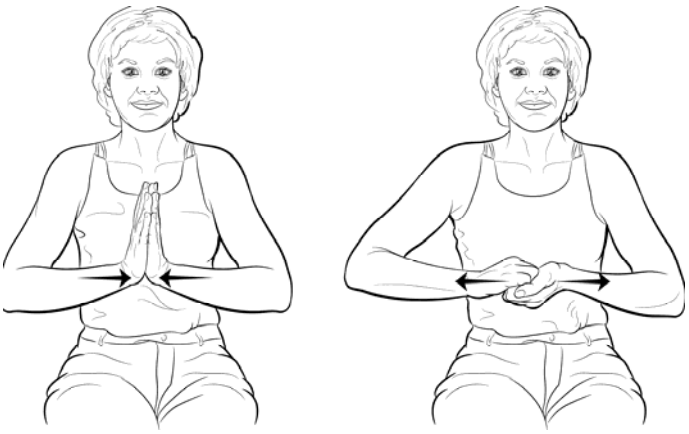
Perform these exercises slowly, 5 repetitions each, twice daily. Gradually increase the number of repetitions as tolerated. Continue these exercises until full preoperative strength is achieved.

Strengthening Exercises

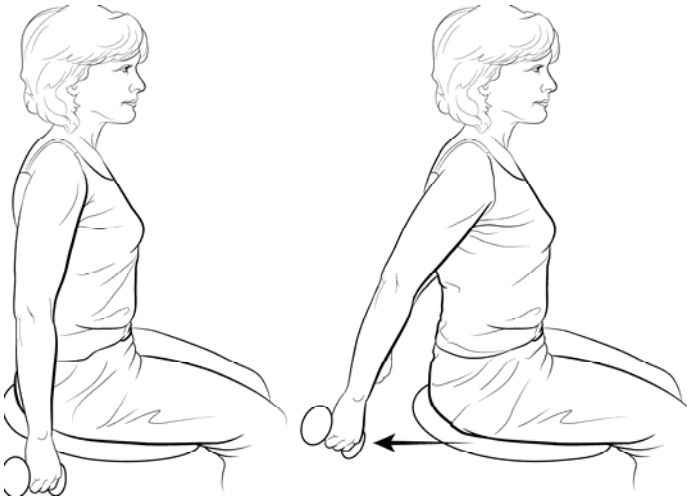
Exercise J: Standing tall, and facing a wall, put both hands on the wall at shoulder height. Start with your elbows bent. Push away from the wall, straightening your elbows and rounding your back. Hold for 5 seconds, relax and repeat. (see illustration below)



Exercise K: Sitting erect, hands in front of your chest, with elbows bent, push the heels of your palms together for 5 seconds. Hook your fingers together and pull 5 seconds, relax and repeat the sequence. (see illustration below)

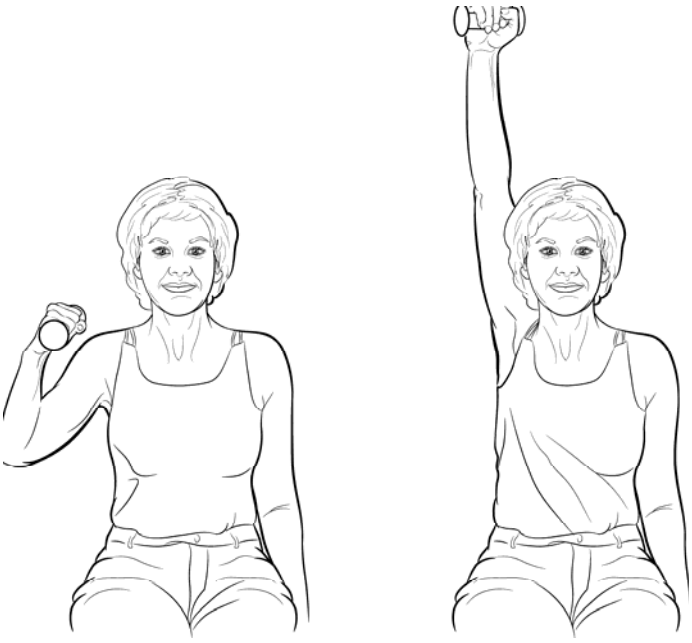


Exercise L: Sitting or standing erect, with arms at your side, hold a 2-pound weight in each hand and swing your arms back. Hold for 5 seconds, relax and repeat. (see illustration below)



Perform this exercise only AFTER drains are removed

Exercise M: Sitting with your back supported, hold a 2-pound weight and bend your elbow; then lift your arm as far as comfortable toward the ceiling. Alternate arms. (see illustration below)



Beginning Other Activities

As you become more comfortable with your improved mobility and strength you may want to gradually return to an enjoyable sport or get involved in a structured exercise program. Participation in water exercise classes or dance classes with emphasis on gentle sustained upper extremity movement may be useful. A recommended program would meet 2 to 3 times weekly, consisting of a warm-up with slow stretching exercises, followed by the primary activity, and ending with a cool-down session. Check with your physician for details about when you may begin these activities.

Important Tips to Remember

Activity

- Maintain good posture habits throughout the day.
- Perform your exercises slowly, twice daily
- Do not lift more than 10 pounds for 8 weeks following your surgery. This means you cannot lift children, purses, suitcases, cats, dogs, groceries or garbage **heavier than 10 pounds**. (a gallon of milk weighs 9 pounds). It also means pushing a grocery cart, pushing yourself out of bed, or pulling yourself up using the bed siderails cannot be done using your affected arm.
- Do use your arm in daily activities.

Swelling

- If you notice slight swelling or tightness in your arm, the swelling may be decreased by squeezing a ball in your hand while keeping your arm elevated higher than your heart.
- Alert your physician or nurse specialist if you are experiencing persistent swelling. Notify them that you have had lymph nodes removed.

- Swelling can be caused by eating salty foods or can occur on hot days.

Infection

When your lymph nodes are removed, you will need to watch for the following signs of infection:

- redness
- swelling
- warmth
- tenderness in your arm

Notify your physician or nurse specialist if you experience any of these.

Special Instructions after Skin Graft Surgery

Whether you have a split thickness or full thickness skin graft you will probably go home after surgery. However, in rare cases you may be admitted to the UMHS Observation Unit overnight.

Care of the Graft Site

The graft site will have a special dressing called a "bolster" dressing. This lies directly under a bulky dressing. The bolster dressing will be either stapled or sutured to keep the skin graft from moving. It is important that the graft stay in the correct place. At the first postoperative visit these sutures or staples will be removed and the skin graft evaluated. Often times, additional staples or sutures hold the new skin in place; these will be left in place for another 5-7 days.

DO NOT remove your surgical dressing. This will be done at your 1st postoperative visit

The skin graft will heal over the next several weeks. It will leave a scar as will the donor site. It will fade over time but it will not look like normal skin.

Other post operative care recommendations include:

- Skin grafts placed on your arm or leg: Elevate the arm or leg above the level of your heart for much of the day and night. It is important to avoid swelling of the arm or leg as it will effect how the graft heals.

- Skin grafts placed on your leg: You will need to use crutches or a walker until directed by your surgeon or nurse practitioner. These will be ordered for you at the time of your pre-operative visit.

- Skin grafts placed on your trunk or upper arm: You may not lift more than 5-10 pounds until directed by your surgeon or nurse practitioner.

- All skin grafts: No shower or soaking in a bath until directed, No driving until directed.

What special care do I need after skin graft surgery?

- Do not disturb your dressing

- Do not get your skin graft dressing wet. You will need to sponge bath until your doctor or nurse practitioner gives you permission to shower.

- If the surgery site is on your arm or leg, you will need to keep the arm or leg elevated above the level of your heart for most of the day and night. It is important to avoid swelling of the arm or leg as it will affect graft healing. You will be instructed at your postoperative visit as to when you can increase your activity.

- If the surgery site is on your leg, you will be given a prescription for crutches/walker at your preoperative history and physical. You will not be able to put any weight on your leg for 1-2 weeks. Your nurse

practitioner or physician will tell you when you can begin to increase the amount of weight placed on your leg.

- You may require a splint or sling.

You will begin daily dressing changes once the bolster dressing is removed in the clinic postoperatively. Your clinic nurse will teach you how to perform the dressing changes.

Skin Graft Dressings

Dressing changes to the surgery site will be done once a day after your first postoperative visit. **Do not change any dressings until instructed by your doctor or nurse practitioner**.

The procedure is:

- Wash your hands
- Remove the outer dressing
- Carefully remove the inner dressing, taking care of not to pull off the skin graft
- Evaluate the surgical area for signs of infection: redness, drainage (pus), odor
- Place either a Xeroform® or Vaseline® gauze directly on the graft, folding the edges of the dressing over so they do not lay on your normal skin (your doctor or nurse practitioner will tell you which type to use)
- Fluff one or two 4x4 gauze dressing pieces and place on top
- Cover with plain 4x4 gauze or an 'ABD' pad
- Wrap with either kerlex or ace as directed
- Replace the splint or sling as indicated

You will be given a prescription for the supplies you will need. These can be obtained at your local medical supply company or pharmacy. Please note, many insurance companies do not cover dressing supplies.

You will return to the clinic 5-7 days after the bolster dressing is removed to have the remaining sutures/staples removed and the graft evaluated. You will continue your dressing changes as instructed at this visit.

Care of the Donor Site

Once the skin graft is removed from the donor site a dressing is placed over the donor site and stapled in place. The care of the donor site will depend on the type of graft you have; split or full thickness.

Full thickness grafts: This type of donor site is closed like an incision with absorbable sutures and/or glue.

Split thickness grafts:

Several types of dressings can be used to heal donor sites for a split thickness skin graft. Your surgeon will decide which type is used. They include:

- Xeroform®

1. It is yellow in color and may be stapled in place.
2. The site will drain and be moist after surgery.
3. Use a hair dryer on a low setting and blow-dry the donor site area for 10 minutes daily.
4. The staples will be removed at your first postoperative visit
5. Over 2-3 weeks the dressings should dry up and the edges peel back until it is completely off the skin. The edges can be trimmed with a clean pair of scissors daily if needed.

- Tegaderm®
  1. A clear plastic film.
  2. This dressing is left in place.
  3. Contact your clinic nurse practitioner if you have drainage or the dressing becomes loose. Put a dry dressing over the Tegaderm® and contact the clinic.

- Acticoat®
  1. It is a fabric dressing, metallic in color.
  2. It is stapled into place. The staples will be removed in about 5 days.
  3. Acticoat® is kept slightly moist with water for the first five days.
  4. After five days, the Acticoat® must be kept dry.
  5. The Acticoat® will become like a scab.
  6. The edges will begin to lift and then can be trimmed with a clean pair of scissors.
  7. It should be off completely within 10-14 days.

Lymphedema

The following is a reprint of the PDQ statement on lymphedema written by cancer experts for health professionals and published by the National Cancer Institute. This and other credible information about cancer treatment, screening, prevention, supportive care, and ongoing trials, is available from the NCI.

Lymphedema is the buildup of lymph (a fluid that helps fight infection and disease) in the fatty tissues just under the skin. The buildup of lymph causes swelling in specific areas of the body, usually an arm or leg, with an abnormally high amount of tissue proteins, chronic inflammation, and thickening and scarring of tissue under the skin. Lymphedema is a common complication of cancer and cancer treatment and can result in long-term physical, psychological, and social issues for patients. See Figure 5.

The lymphatic system consists of a network of specialized lymphatic vessels and various tissues and organs throughout the body that contain lymphocytes (white blood cells) and other cells that help the body fight infection and disease. The lymphatic vessels are similar to veins but have thinner walls. Some of these vessels are very close to the skin surface and can be found near veins; others are just under the skin and in the deeper fatty tissues near the muscles and can be found near arteries.

Muscles and valves within the walls of the lymphatic vessels near the skin surface help pick up fluid and proteins from tissues throughout the body and move the lymph in one direction, toward the heart. Lymph is slowly moved through larger and larger lymphatic vessels and passes through small bean-shaped structures called lymph nodes. Lymph nodes filter substances that can be harmful to the body and contain lymphocytes and other cells that activate the immune system to fight disease.

Eventually, lymph flows into one of two large ducts in the neck region. The right lymphatic duct collects lymph from the right arm and the right side of the head and chest and empties into the large vein under the right collarbone. The left lymphatic duct or thoracic duct collects lymph from both legs, the left arm and the left side of the head and chest and empties into the large vein under the left collar bone.

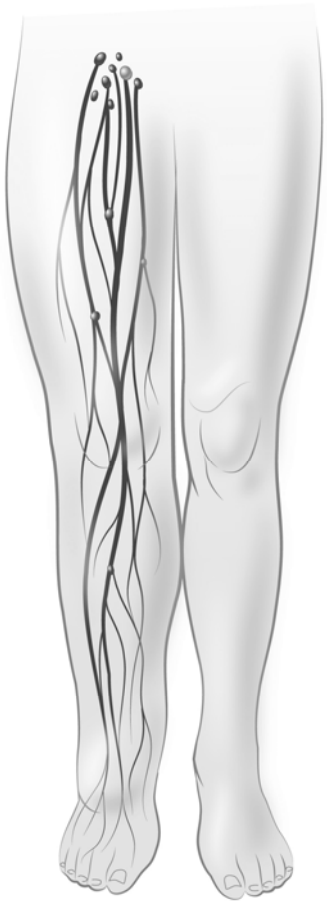


Figure 5: Lymphedema of the Leg

The lymphatic system collects excess fluid and proteins from the body tissues and carries them back to the bloodstream. Proteins and substances too big to move through the walls of veins can be picked up by the lymphatic vessels because they have thinner walls. Edema may occur when there is an increase in the amount of fluid, proteins, and other substances in the body tissues because of problems in the blood capillaries and veins or a blockage in the lymphatic system.

Lymphedema may be either primary or secondary. Primary lymphedema is a rare inherited condition in which lymph nodes and lymph vessels are absent or abnormal. Secondary lymphedema can be caused by a blockage or cut in the

lymphatic system, usually the lymph nodes in the groin area and the armpit. Blockages may be caused by infection, cancer, or scar tissue from radiation therapy or surgical removal of lymph nodes. **This summary discusses secondary lymphedema.**

Acute versus gradual-onset lymphedema

There are four types of acute lymphedema. The first type of acute lymphedema is mild and lasts only a short time, occurring within a few days after surgery to remove the lymph nodes or injury to the lymphatic vessels or veins just under the collarbone. The affected limb may be warm and slightly red, but is usually not painful and gets better within a week after keeping the affected arm or leg supported in a raised position and by contracting the muscles in the affected limb (for example, making a fist and releasing it).

The second type of acute lymphedema occurs 6 to 8 weeks after surgery or during a course of radiation therapy. This type may be caused by inflammation of either lymphatic vessels or veins. The affected limb is tender, warm or hot, and red and is treated by keeping the limb supported in a raised position and taking anti-inflammatory drugs.

The third type of acute lymphedema occurs after an insect bite, minor injury, or burn that causes an infection of the skin and the lymphatic vessels near the skin surface. It may occur on an arm or leg that is chronically swollen. The affected area is red, very tender, and hot and is treated by supporting the affected arm or leg in a raised position and taking antibiotics. Use of a compression pump or wrapping the affected area with elastic bandages should not be done during the early stages of infection. Mild redness may continue after the infection.

The fourth and most common type of acute lymphedema develops very slowly and may become noticeable 18 to 24 months after surgery or not until many years after cancer treatment. The patient may experience discomfort of the skin or aching in the neck and shoulders or spine and hips caused by stretching of the soft tissues, overuse of muscles, or posture changes caused by increased weight of the arm or leg.

Temporary versus chronic lymphedema

Temporary lymphedema is a condition that lasts less than 6 months. The skin indents when pressed and stays indented, but there is no hardening of the skin. A patient may be more likely to develop lymphedema if he or she has:

- surgical drains that leak protein into the surgical site
- inflammation
- an inability to move the limb(s)
- temporary loss of lymphatic function
- blockage of a vein by a blood clot or inflammation of a vein.

Chronic (long-term) lymphedema is the most difficult of all types of edema to treat. The damaged lymphatic system of the affected area is not able to keep up with the increased need for fluid drainage from the body tissues. This may happen:

- after a tumor recurs or spreads to the lymph nodes
- after an infection and/or injury of the lymphatic vessels
- after periods of not being able to move the limbs
- after radiation therapy or surgery
- when early signs of lymphedema have not been able to be controlled
- when a vein is blocked by a blood clot.

Risk factors

Factors that can lead to the development of lymphedema include radiation therapy to an area where the lymph nodes were surgically removed, problems after surgery that cause inflammation of the arm or leg, the number of lymph nodes removed in surgery, and being elderly.

Patients who are at risk for lymphedema are those with:

- Radiation therapy to the underarm area after surgical removal of the lymph nodes. The number of lymph nodes removed increases the risk of lymphedema.
- Surgical removal of lymph nodes in the underarm, groin, or pelvic regions.
- Radiation therapy to the underarm, groin, pelvic, or neck regions.
- Scar tissue in the lymphatic ducts or veins, under the collarbones, caused by surgery or radiation therapy.
- Cancer that has spread to the lymph nodes in the neck, chest, underarm, pelvis, or abdomen.
- Tumors growing in the pelvis or abdomen that put pressure on the lymphatic vessels and/or the large lymphatic duct in the chest and block lymph drainage inadequate diet or those who are overweight. These conditions may delay recovery and increase the risk for lymphedema.

Prevention

Patients at risk for lymphedema should be identified early, monitored, and taught self-care. A patient may be more likely to develop lymphedema if he or

she eats an inadequate diet, is overweight, is inactive, or has other medical problems. To detect the condition early, the following should be examined:

- comparison of actual weight to ideal weight
- measurements of the arms and legs
- protein levels in the blood
- ability to perform activities of daily living
- history of edema, previous radiation therapy, or surgery
- other medical illnesses, such as diabetes, high blood pressure, kidney disease, heart disease, or phlebitis (inflammation of the veins).

It is important that the patient know about his or her disease and the risk of developing lymphedema. Poor drainage of the lymphatic system due to surgery to remove the lymph nodes or radiation therapy may make the affected arm or leg more susceptible to serious infection. Even a small infection may lead to serious lymphedema. Patients should be taught about arm, leg, and skin care after surgery and/or radiation. It is important that patients take precautions to prevent injury and infection in the affected arm or leg, since lymphedema can occur 30 or more years after surgery.

Lymphatic drainage is improved during exercise; therefore exercise is important in preventing lymphedema. Patients should do hand and arm exercises as instructed after upper extremity lymph node removal. Patients who have surgery that affects pelvic lymph node drainage should do leg and foot exercises as instructed. The doctor decides how soon patients should start exercising after surgery. Physiatrists (doctors who specialize in physical medicine and rehabilitation) or physical therapists should develop an individualized exercise program for the patient.

Better recovery occurs when lymphedema is discovered early, so patients should be taught to recognize the early signs of edema and to tell the doctor about any of the following symptoms:

- feelings of tightness in the arm or leg
- rings or shoes that become tight
- weakness in the arm or leg
- pain, aching, or heaviness in the arm or leg
- redness, swelling, or signs of infection.

Treatment

Lymphedema is treated by physical methods and with medication. Physical methods include supporting the arm or leg in a raised position; manual lymphatic drainage (a specialized form of very light massage that helps to move fluid from the end of the limb toward the trunk of the body); wearing custom-fitted clothes that apply controlled pressure around the affected limb; and cleaning the skin carefully to prevent infection.

Lymphedema may be treated by combining several therapies. This is known as complex physical therapy (or complex decongestive therapy), which consists of manual lymphedema treatment, compression wrapping, individualized exercises, and skin care, followed by a maintenance program. Complex physical therapy must be performed by a professional trained in the techniques.

Surgery for treating lymphedema usually results in complications and is seldom recommended for cancer patients.

Psychosocial considerations

Because lymphedema is disfiguring and sometimes painful and disabling, it can create mental, physical, and sexual problems. The added stresses associated with lymphedema may interfere with treatment that is often painful, difficult, and time-consuming.

Patients with lymphedema may be helped by group and individual counseling that provides information about ways to prevent lymphedema, the role of diet and exercise, advice for picking comfortable and flattering clothes, and emotional support.

Further Information

The information in this section is a summary of current findings and is not comprehensive in its content. You may obtain the complete PDQ statement by calling 1-800-4-CANCER (the NCI). They have many resources available on lymphedema, its prevention and treatment.

When to Call Your Doctor

Contact your surgeon or nurse practitioner for any of the following reasons:

- Oral temperature of 101 degrees Fahrenheit or greater
- Persistent, severe or increasing pain
- Bleeding from the incision that is difficult to control with light pressure
- Persistent nausea or vomiting
- Fluid or drainage from the incision area
- 1 inch of redness or more around the incision area
- Incision becomes warm or hot to the touch
- Foul odor from the incision area
- Swelling of the entire surgical area
- Leakage around your drainage tube and the gauze dressing is wet
- Any significant change that causes you concern

How to Call Your Doctor

Contact Phone Numbers:

Monday through Friday; 8am to 4pm
Contact the surgical nurse practitioners whose phone numbers are found at the back of this book

Daily after 4:00 pm, all weekends and holidays:
Contact the UM page operator at (734) 936-6267, ask to have the Surgical Oncology Resident on-call paged.

Notes

Notes

Resources

Patient and Family Support Services

It is important to us that every patient receives the right support at the right time. We offer a wide array of support services and amenities to each cancer patient and family member at the University of Michigan Rogel Cancer Center. These services are described in detail in our ***Patient & Family Support Services Booklet.*** This booklet is available in the clinics or by calling the Cancer AnswerLine Nurses at 1- 800-865-1125. Please take a minute to examine the support and educational opportunities available to you and your family.

The lymphedema specialists from the department of Physical and Occupational Therapy provide education, exercises, tips for prevention and management strategies in their clinics. Talk to your doctor or nurse practitioner for a referral to these clinics.

ROGEL CANCER CENTER
MICHIGAN MEDICINE

Surgery Drain Record Sheet

Record your findings directly on this sheet, and bring it with you to your appointments.

	Drain #1	Drain #2		Drain #1	Drain #2
Date: ___ **Morning** **Mid Day** **Evening**	________ ________ ________ **Total:** _____	________ ________ ________ **Total:** _____	**Date:** ___ **Morning** **Mid Day** **Evening**	________ ________ ________ **Total:** _____	________ ________ ________ **Total:** _____
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Important Phone Numbers

(all numbers are **734** area code)

Doctors

Dr Alfred Chang	936-6000
Dr Michael Salbel	

Nurse Practitioners

Roxanne Cross	936-6000
Donna Sayre	

Appointments

East Ann Arbor Surgical Center	232-3053
Nuclear Medicine Department	936-5090
Preoperative Center at Domino Farms	936-3604
Surgical Scheduler	615-0073
Surgery Clinic Appointments	936-6000
Surgery Cancellation Number	936-8800

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After Surgery Questions

Refer to Surgery Phone Number Sheet for contact numbers during business hours

After 4:30pm weekdays, weekends and holidays

Surgical-Oncology Physician on Call: 936-6267

Resources

Cancer Center Nutrition Clinic	936-600
Patient & Family Support Services	877-907-0859

Operating Rooms

Main OR Family Waiting Room	936-4388
East Ann Arbor Surgical Center	232-3053