



LYMPHEDEMA

Your body's lymphatic system is part of your immune system, which protects you against infection and disease. It includes your spleen, thymus, bone marrow, lymph nodes and lymph channels, as well as your tonsils and adenoids. Your lymphatic system is crucial to keeping your body healthy. It circulates protein-rich lymph fluid throughout your body, collecting bacteria, viruses and waste products. Your lymphatic system carries these through your lymph vessels, which lead to lymph nodes. The wastes are then filtered out by lymphocyte (infection fighting cells that live in your lymph nodes) and ultimately flushed from your body.

Lymphedema refers to swelling that occurs most often in your arms or legs. It may affect just one arm or leg, but sometimes can involve both arms or both legs. The swelling occurs when a blockage in your lymphatic system prevents the lymph fluid in your arm(s) or leg(s) from draining adequately. As the fluid accumulates, the swelling continues. Swelling ranges from mild, hardly noticeable changes in the size of your limb(s) to extreme swelling that can make it impossible to use the affected arm(s) or leg(s).

Lymphedema symptoms include:

- Swelling of part or all of your arm(s) or leg(s), including your fingers or toes
- A feeling of heaviness or tightness in your arm(s) or leg(s)
- Restricted range of motion in your arm(s) or leg(s)
- Aching or discomfort in your arm(s) or leg(s)
- Recurring infections in your affected limb(s)
- Hardening and thickening of the skin on your arm(s) or leg(s)

Causes

Lymphedema occurs when your lymph vessels are unable to adequately drain lymph fluid from your arm(s) or leg(s). Lymphedema can be primary or secondary. This means it can occur on its own (primary lymphedema) or can be caused by another disease or condition (secondary lymphedema).

Primary Lymphedema

Primary lymphedema is a rare, inherited condition caused by problems with the development of lymph vessels in your body. It occurs most frequently in women and usually affects the legs rather than arms. Specific causes of primary lymphedema include:

- **Milroy Disease (Congenital Lymphedema)**—This is an inherited disorder that begins in infancy and causes a malformation of your lymph nodes, leading to lymphedema.
- **Meige Disease (Lymphedema Praecox)**—This hereditary disorder causes lymphedema in childhood or around puberty. It causes your lymph vessels to form without the valves that keep lymph fluid from flowing backwards, making it difficult for your body to properly drain the lymph fluid from your limbs.
- **Late-Onset Lymphedema (Lymphedema Tarda)**—This rarely occurs and usually begins after age 35.

Secondary Lymphedema

Secondary lymphedema can be caused by any condition or procedure that damages your lymph nodes or lymph vessels. Causes include:

- **Surgery** removing or severing your lymph nodes and lymph vessels. For instance, surgery for breast cancer may include the removal of one or more lymph nodes in your armpit to look for evidence that cancer has spread. If your remaining lymph nodes and lymph vessels can't compensate for those that have been removed, lymphedema may result in your arm.

- **Radiation treatment for cancer** can cause scarring and inflammation of your lymph nodes or lymph vessels, restricting flow of the lymph.
- **Cancer** cells can cause lymphedema if they block lymphatic vessels. For instance, a tumor growing near a lymph node or lymph vessel could become large enough to obstruct the flow of the lymph fluid.
- **Infection** can infiltrate your lymph vessels and lymph nodes, restricting the flow of lymph fluid and causing lymphedema. Parasites can also block lymph vessels. Infection related lymphedema is most common in tropical and subtropical regions of the globe and is more likely to occur in undeveloped countries.
- **Injury** that damages your lymph nodes or lymph vessels also can cause lymphedema.

Seeking Medical Advice

Make an appointment with your doctor if you notice any persistent swelling in your arms, legs or lymph nodes.

Tests and Diagnosis

Your doctor may try to rule out other causes of swelling in order to arrive at a diagnosis of lymphedema. Swelling can have many causes, including a blood clot or an infection that doesn't involve your lymph nodes. If you're at risk of lymphedema (for instance, you've recently had cancer surgery involving your lymph nodes) your doctor may assume you have lymphedema based on your signs and symptoms. If the cause of your lymphedema isn't as obvious, your doctor may order imaging tests to determine what is causing your signs and symptoms. Possible imaging techniques could include:

- **Radionuclide Imaging**—During this test you are injected with a radioactive dye and scanned by a machine. The resulting images show the dye moving through your lymph vessels, highlighting areas where the lymph fluid is blocked.
- **Magnetic Resonance Imaging (MRI)**—This scan gives your doctor a better look at the tissue in your arm(s) or leg(s) giving the ability to see characteristics of lymphedema.
- **Computerized Tomography (CT)**—This scan produces images of your arm(s) or leg(s) in cross sections.
- **Doppler Ultrasound**—This variation of the conventional ultrasound assess blood flow and pressure by bouncing high-frequency sound waves (ultrasound) off red blood cells.

Complications

Lymphedema in your arm(s) or leg(s) can lead to serious complications.

- **Infections**—Lymphedema makes your affected arm(s) or leg(s) particularly vulnerable to infections, including cellulitis (infection of the skin) and lymphangitis (inflammation of the lymphatic vessels). Any injury to your arm(s) or leg(s) provide an entry point for an infection.
- **Elephantiasis**—This condition occurs when your arm(s) or leg(s) become so hardened with thickened skin that you have difficulty moving it. Elephantiasis may make the skin on your arm(s) or leg(s) very weak, leading to chronic ulcers and repeated infections.
- **Lymphangiosarcoma**—This rare form of soft tissue cancer can result from the most severe cases of untreated lymphedema. Lymphangiosarcoma originates in the lymph nodes and lymph vessels.

Treatment and Drugs

Lymphedema cannot be cured. Treatment focuses on minimizing the swelling and controlling the pain. Lymphedema treatments include:

- **Exercise**—Light exercises that require you to move your affected arm(s) or leg(s) may encourage movement of the lymph fluid out of your limb(s). These exercises should not be strenuous or make you tired. Instead, they should focus on gentle contraction of the muscles in your arm(s) or leg(s). Exercises help pump the lymph fluid out of your affected limb(s). Your doctor or physical therapist can teach you exercises that may help.
- **Wrapping your arm(s) or leg(s)**—Bandages wrapped around your entire limb(s) encourage lymph fluid to flow back out of your affected limb(s) toward the trunk of your body. When bandaging your arm(s) or leg(s), start by making the bandage tightest around your fingers or toes. Wrap the bandage more loosely as you move up your arm(s) or leg(s). A lymphedema therapist can show you how to wrap your limb(s).
- **Massage**—A special massage technique called manual lymph drainage may encourage the flow of lymph fluid out of your arm(s) or leg(s). Manual lymph drainage involves special hand strokes on your affected limb(s) to gently move the fluid to healthy lymph nodes, where it can drain. Massage is not for everyone. Avoid massage if you have a skin infection, active cancer, blood clots or congestive heart failure. Also avoid massage on areas of your body that have received radiation therapy.

- **Pneumatic Compression**—If you receive pneumatic compression, you will wear a sleeve over your affected limb(s). The sleeve is connected to a pump that intermittently inflates putting pressure on your limb(s). The inflated sleeve gently moves lymph fluid away from your fingers or toes, reducing the swelling your limb(s).
- **Compression Garments**—Compression garments include long sleeves or stockings made to compress your arm(s) or leg(s) to encourage the flow of the lymph fluid out of your affected limb(s). Once you have reduced the swelling in your limb(s) through other measures, your doctor may suggest you wear compression garment to prevent your limb(s) from swelling in the future. Obtain a correct fit for your compression garment by getting professional help. Ask your doctor where you can purchase compression garments in your community. Some people will require custom-made compression garments.
- **Surgery**—In cases of severe lymphedema, your doctor may consider surgery to remove excess tissue in your arm(s) or leg(s). While this reduces severe swelling, surgery cannot cure lymphedema.

Prevention

If you are at risk of developing secondary lymphedema, you can take measures to help prevent it. If you have had, or are going to have, cancer surgery ask your doctor whether your particular procedure will involve your lymph nodes or lymph vessels. Ask if your radiation treatment will be aimed at any of your lymph nodes, so you will be aware of the possible risks. To reduce your risk of lymphedema, try to:

- **Protect your arm(s) or leg(s)**—Avoid any injury to your affected limb(s). Cuts, scrapes and burns can invite infection, which can cause lymphedema. Protect yourself from sharp objects. For example, shave with an electric razor, wear gloves when you garden or cook, and use a thimble when sewing. If possible, avoid medical procedures, such as blood draws and vaccinations in your affected limb(s).
- **Rest your arm(s) or leg(s) while recovering**—After cancer treatment, avoid heavy activity with the affected limb(s). Early exercise and stretching are encouraged, but avoid strenuous activity until you have recovered from surgery or radiation.
- **Avoid heat on your arm(s) or leg(s)**—Do not apply heat, such as a heating pad, to your affected limb(s).
- **Elevate your arm(s) or leg(s)**—When you can, elevate your affected limb(s).
- **Avoid tight clothing**—Avoid anything that could constrict your arm or leg, such as tightfitting clothing. Avoid blood pressure readings in the affected arm, ask that it be taken in the unaffected arm.
- **Keep your arm(s) or leg(s) clean**—Make skin and nail care a high priority. Inspect the skin on your arm(s) or leg(s) every day. Watch for changes or breaks in your skin that could lead to infection.

Date & Version #	Change Summary
02/06/2014 Ver. 1	Original