



Farrow Medical Innovations, Inc.

Edema Explained for the Patient

Disclaimer: This is a simple explanation to help give a basic understanding of edema. This information should not be used to make diagnosis or treatment decisions and certainly should not be used to disregard any recommendations or information given to you by your physician. If you have any questions or any symptoms that you would like explained, see your physician.

Edema is defined by Webster's dictionary as an abnormal infiltration and excess accumulation of serous fluid in connective tissue or in a serous cavity. In layman's term, excess fluid where it should not be, such as an arm, leg, or trunk of the body.

When we speak of edema, we need to understand how the body manages fluids. The heart pumps blood through arteries to the lungs and then the body. The arteries divide into smaller and smaller branches until they become capillaries, the smallest blood vessels in the body. The capillaries branch back together to form veins, which deliver the blood back to the heart and lungs.

The heart needs help to push blood back up the leg veins while you are standing or even if your legs are on the floor while you are seated. The body uses 2 mechanisms to help the heart.

1. The calf muscles squeeze the veins and help push blood back to the heart.
2. The veins have one-way valves in them that prevent blood from flowing backwards, especially while the calf muscles are squeezing them.

The heart, arteries, and veins are known collectively as the cardiovascular system. The cardiovascular system is essentially a transportation system for the body. Through it, the body transports fluid, oxygen, communication molecules, nutrients, waste, etc. ("goods") throughout the body. Organs, such as the brain, lungs, heart, intestines, liver, kidneys, etc. produce and regulate the amount of fluid and "goods" in the cardiovascular system. The smallest vessels, the capillaries, are where most of the exchange between the cardiovascular system and the rest of the body occurs.

3141 Briarcrest Dr., Suite 518 • Bryan, Texas 77802

Ph: (877) 417-5187 • Fax: (714)-415-5570



Farrow Medical Innovations, Inc.

The body has a separate system for collecting excess fluid, protein, and debris outside of the cardiovascular system called the lymphatic system. The lymphatic system is composed of lymphatic vessels and organs and covers the entire body. It filters and reconditions collected fluid and debris for delivery back to the cardiovascular system.

So, what causes edema? There are multiple and sometimes complex causes of edema. The most common forms of edema are caused by the following:

1. Too much pressure inside of the capillaries and veins.
2. Too little protein in the blood.
3. Leaky arteries and veins.
4. Blockage or damage of the lymphatic vessels.

Too Much Pressure in the Capillaries and Veins

What can cause too much pressure in the capillaries and veins?

- **Malfunctioning kidneys**, where too much salt is retained in the body.
- **Heart failure**, where the heart cannot pump enough blood through the body. The body responds by adding more fluid to the vascular system, which can actually make the situation worse.
- **Venous blockage**.
- **Defective venous valves (venous insufficiency)**. Peripheral veins have one-way valves that help blood return back to the heart even against gravity. In venous insufficiency, the valves don't work properly and fluid slips back through the valves causing pooling and congestion in the veins and then extremity.
- **Prolonged immobility or muscle weakness**. Without proper exercise, the tone of the cardiovascular system degrades and fluid more easily pools in and escapes from the vascular system.
- **Excessive relaxation of the artery walls**. This leads to too much blood going too the body, but not enough coming back.

3141 Briarcrest Dr., Suite 518 • Bryan, Texas 77802

Ph: (877) 417-5187 • Fax: (714)-415-5570



Farrow Medical Innovations, Inc.

Too Little Protein in the Blood

Protein in the blood holds fluid in the arteries and veins. Without sufficient protein, fluid leaks out of the arteries and veins into the surrounding tissues. Too little protein in the blood is commonly caused by failing kidneys, liver disease, severe burns, or not eating enough protein.

Leaky Arteries and Veins

Leaky arteries and veins can be caused by allergic reactions, bacterial infections, vitamin deficiencies, and burns among other things, which lead to the edema.

Blockage or Damage of the Lymphatic Vessels

In underdeveloped countries, a frequent cause of blocked lymphatic vessels is parasites, which causes *lymph* edema or accumulation of lymphatic fluid. In developed countries, a birth defect or damage to the lymphatics is the predominant cause of lymphedema.

In all of the aforementioned types of edema, the lymphatic system was functioning, but was overwhelmed. In the case of lymphedema, it is a defect in the lymphatic system that is the cause. Without a properly functioning lymphatic system, the body cannot effectively process excess fluid and protein in the body's tissue. This leads to edema and build of waste in the affected area, which can lead to tissue death, scarring, and/or infection. Arm edema that occurs after radical breast cancer surgery is a common example of lymphedema.

© 2006 Farrow Medical Innovations, Inc.

3141 Briarcrest Dr., Suite 518 • Bryan, Texas 77802

Ph: (877) 417-5187 • Fax: (714)-415-5570