

Blood Supply from the Breast comes primarily from the Internal Mammary

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Description

The breast is an organ whose structure reflects its special function: the production of milk for lactation (breast feeding). The epithelial component of the tissue consists of lobules, where milk is made, which connect to ducts that lead out to the nipple. Most cancers of the breast arise from the cells which form the lobules and terminal ducts. These lobules and ducts are spread throughout the background fibrous tissue and adipose tissue (fat) that make up the majority of the breast. The male breast structure is nearly identical to the female breast, except that the male breast tissue lacks the specialized lobules, since there is no physiologic need for milk production by males.

Anatomically, the adult breast sits atop the pectoralis muscle (the "pec" chest muscle), which is atop the ribcage. The breast tissue extends horizontally (side-to-side) from the edge of the sternum (the firm flat bone in the middle of the chest) out to the midaxillary line (the center of the axilla, or underarm). A tail of breast tissue called the "axillary tail of Spence" extend into the underarm area. This is important because a breast cancer can develop in this axillary tail, even though it might not seem to be located within the actual breast.

Blood Supply

The blood supply from the breast comes primarily from the internal mammary artery, which runs underneath the main breast tissue. The blood supply provides nutrients, such as oxygen, to the breast tissue. The lymphatic vessels of the breast flow in the opposite direction of the blood supply and drain into lymph nodes. It is through these lymphatic vessels that breast cancers metastasize or spread to lymph nodes. Most lymphatic vessels flow to the axillary (underarm) lymph nodes, while a smaller number of lymphatic vessels flow to internal mammary lymph nodes located deep to the breast. Knowledge of this lymphatic drainage is important, because when a breast cancer metastasizes, it usually involves the first lymph node in the chain of lymph nodes. This is called the "sentinel lymph node," and a surgeon may remove this lymph node to check for metastases in a patient with breast cancer.

Many additional changes are seen in the breast tissue during pregnancy and lactation due to the changes in hormones during those times. As you learn about breast cancer, we will repeatedly reference the anatomy of the breast. Understanding

the different parts and functions will help you better grasp the details of breast cancer.

The breast tissue is encircled by a thin layer of connective tissue called fascia. The deep layer of this fascia sits immediately atop the pectoralis muscle, and the superficial layer sits just under the skin. The skin covering the breast is similar to skin elsewhere on the body and has similar sweat glands, hair follicles, and other features. A clinician will examine the skin in addition to the breast tissue itself when performing a breast exam.

Lobes, Lobules and Milk Ducts

A healthy female breast is made up of 12–20 sections called lobes. Each of these lobes is made up of many smaller lobules, the gland that produces milk in nursing women. Both the lobes and lobules are connected by milk ducts, which act as stems or tubes to carry the milk to the nipple. These breast structures are generally where the cancer begins to form.

Breast cancer is the common term for a set of breast tumor subtypes with distinct molecular and cellular origins and clinical behavior. Most of these are epithelial tumors of ductal or lobular origin (see the image below). Worldwide, breast cancer is the most frequently diagnosed life-threatening cancer in women and the leading cause of cancer death among women.

Breast cancer can spread when the cancer cells get into the blood or lymph system and then are carried to other parts of the body. The lymph (or lymphatic) system is a part of your body's immune system. It is a network of lymph nodes (small, bean-sized glands), ducts or vessels, and organs that work together to collect and carry clear lymph fluid through the body tissues to the blood. The clear lymph fluid inside the lymph vessels contains tissue by-products and waste material, as well as immune system cells.

The lymph vessels carry lymph fluid away from the breast. In the case of breast cancer, cancer cells can enter those lymph vessels and start to grow in lymph nodes. Breast cancers can start from different parts of the breast. The breast is an organ that sits on top of the upper ribs and chest muscles. There is a left and right breast and each one has mainly glands, ducts, and fatty tissue. In women, the breast makes and delivers milk to feed newborns and infants. The amount of fatty tissue in the breast determines the size of each breast.

There are many different types of breast cancer. The type is determined by the specific kind of cells in the breast that are affected. Most breast cancers are carcinomas. The most common breast cancers such as ductal carcinoma in situ (DCIS) and invasive carcinoma are adenocarcinomas, since the cancers start in the gland cells in the milk ducts or the lobules (milk-producing glands). Other kinds of cancers can grow in the breast, like angiosarcoma or sarcoma, but are not considered breast cancer since they start in different cells of the breast.

Breast cancers are also classified by certain types of proteins or genes each cancer might make. After a biopsy is done, breast cancer cells are tested for proteins called estrogen receptors and progesterone receptors, and the HER2 gene or protein. The tumor cells are also closely looked at in the lab to find out what grade it is. The specific proteins found and the tumor grade can help decide the stage of the cancer and treatment options. To learn more about the specific tests done on breast cancer cells, see Understanding a Breast Cancer Diagnosis.