

# TerranearPMC Safety Share

## Week of October 16, 2017 – Breast Cancer Awareness (Part 1)

October is National Breast Cancer Awareness Month or NBCAM. While it has been tradition for football players and other athletes to have some type of pink article on their uniform during October, for some reason, this year, it has not been the case. I do not know what has changed as this was an excellent way to raise awareness and to show support for all those fighting breast cancer as well as to remember those that succumbed to this disease. Breast cancer awareness began in 1985 as a way for NBCAM to promote mammography. Today NBCAM show cases many events around the country as a way to raise awareness and support funding and advocate the need to find a cure.

Breast cancer has been known since ancient Egyptian where records indicate that this civilization recognized this disease more than 3,500 years ago. One of the descriptions refers to *bulging tumors of the breast that has no cure*.

In 460 B.C., Hippocrates, the father of Western Medicine, described breast cancer as a humoral disease. He postulated that the body consisted of four humors - blood, phlegm, yellow bile, and black bile. He suggested that cancer was caused by the excess of black bile as it was noted that the observed tumors would yield a black fluid. He named the disease *karkinos*, a Greek word for “crab,” because the tumors seemed to have tentacles, like the legs of a crab.

In 200 A.D., the Roman physician, Galen, described breast cancer and suggested medications like opium, castor oil, licorice, sulphur, salves etc. for medicinal therapy of the breast cancers.

Until the 17th century, the theories of Hippocrates and Galen were considered unquestionable. However, it was during this time when the humoral theory of cancer originating from an excess of black bile was challenged. It was hypothesized that the disease came from a chemical process that transformed lymphatic fluids to a bitter substance. Then in 1713 the famous physician, Bernardino Ramazzini (most notable for his work in occupational medicine and his now famous question to patients – “what is your occupation,” as a way to understand the possible causes of a patients’ illness) developed a hypothesis that high frequency of breast cancer in nuns was due to lack of sex. He believed that without regular sexual activity, reproductive organs, including the breast may decay and develop cancers. Meanwhile, another school of thought postulated that women who had regular sex but still developed cancer were practicing “vigorous” sex. This could be leading to lymphatic blockage. And even still, other theories included blaming curdled milk, or depressive mental disorders, and even blaming childlessness, while others blamed sedentary lifestyle.

It was in 1757 when Henri Le Dran, a leading French physician suggested that surgical removal of the tumor could help treat breast cancer, as long as infected lymph nodes of the armpits were removed. Thus it was argued that surgical therapy was the only effective practice. This lasted well into the twentieth century and led to the creation of the radical mastectomy or extensive removal of the breast. By mid-nineteenth century, the development of antiseptic, anesthesia and blood transfusions further supported the practice of surgery.

William Halstead of New York made radical breast surgery the standard practice for the next 100 years. He developed radical mastectomy that removed breast, axillary nodes (nodes in the armpits),



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and both chest muscles in a single *en bloc* procedure or in a single piece to prevent spread of the cancer while removing each of these individually. This protocol is often referred to as radical mastectomy. Although radical mastectomies helped women survive longer, especially if performed early, many women did not choose it since it left them disfigured. In addition there were problems like a deformed chest wall, lymphedema or swelling in the arm due to lymph node removal and pain.

At the very end of the 19<sup>th</sup> century, Scottish surgeon George Beatson discovered that removing the ovaries from one of his patients shrank her breast tumor. As this caught on, many surgeons began removing both ovaries and performing a radical mastectomy for breast cancers. This reduction of the tumor after removal of the ovaries was due to the fact that estrogen from ovaries helped in growth of the tumor and therefore, their removal helped reduce the size of the tumor.

However, it was soon noted that women who had their ovaries removed, were producing estrogen via adrenal glands. In 1952 Charles Huggins began removing a woman's adrenal gland (adrenalectomy) in an effort to starve the tumor of estrogen. This process was followed by removing the pituitary gland as this (at the base of the brain) was another site of estrogen production stimulation.

In 1955, it was suggested that cancer was not localized but rather is spread throughout the body. This led to further evidence of breast cancer's capability to metastasize, resulting in simpler breast-conserving surgery followed by radiation or chemotherapy while showing such treatment was just as effective as radical mastectomy.

By 1995, less than 10 percent of breast cancer-inflicted women had a mastectomy. This time also saw the development of new therapies including hormone treatments, surgeries and biological therapies. Mammography was also an important practice for early detection of the cancers.

Today, scientists are exploring preventative treatments that involve isolating specific genes, such as BRCA 1 and BRCA2. Both the BRCA1 and BRCA2 genes are important in suppressing tumors and repairing damaged DNA. Mutations in the BRCA1 and BRCA2 genes give rise to a predisposition to cancer which is referred to as Hereditary Breast and Ovarian Cancer (HBOC) syndrome. There are more than 500 different mutations that can occur in the BRCA1 gene on chromosome 17 and raise a woman's risk for breast cancer. There are also more than 300 potential mutations of the BRCA2 gene on chromosome 13 that are associated with HBOC.

Without a doubt, we have come a long way since breast cancer was first recognized. We are on the verge of attacking this disease in a most aggressive and proactive manner so that the eradication of breast cancer is within our grasp. With the positive steps for further research and financial support, we can make this happen. Next week's topic will focus on the treatments and preventive measures that today's women (and men) can take to reduce their risk of breast cancer.

**Make bold choices and make mistakes. It's all those things that add up to the person you become.** Angelina Jolie (Breast Cancer Survivor)

