CHAPTER ONE

Healthy Breasts: A Primer

Take a moment and think about your breasts. What's the first thing that comes to mind? If you are like most women, you have a definite opinion about them. And you're not happy. You think they are too small, too large, a bit uneven, or not firm enough. Many women define their sexuality by how their breasts look to them and how they think they look to their sexual partners. Surveys show that more than 40% of women, when asked how they felt about their breasts during puberty, reported they were embarrassed, shy, worried, or unhappy. Wouldn't it be wonderful if women learned at an early age to understand and appreciate this part of their anatomy?

Many women are afraid of their breasts: afraid of breast cancer, fearful of mammography, uncertain about how to examine themselves for lumps. They don't completely understand why their breasts go through so many changes every month and what those changes mean, except perhaps that they have something to do with hormones. They eye their breasts with trepidation whenever something "unusual" occurs, such

as tenderness, pain, nipple discharge, or lumps, not knowing if they should be worried (in most cases, no, but you should be examined), and worrying nonetheless.

This chapter helps you replace worry with knowledge. With knowledge comes understanding, and with understanding comes the power to take control of your breast health. And that knowledge begins with the basics of breast development and function so that you can recognize what is normal, what is not normal, and what you can do about it.

Breast Basics: What You Need to Know

The female breast is the object of sexual desire, a source of nutrition, and a thing of beauty, but the anatomical definition is much more mundane: it is a modified sweat gland composed primarily of fat and glandular tissue. The size, shape, and health of your breasts are the product of your heredity, hormones, environment, and lifestyle. Heredity plays a large role in determining the appearance and health of your breasts. There's nothing you can do about your heredity: if your genes are coded for big breasts, you will naturally have big breasts. You can, however, have some effect on your hormone levels by controlling, to a large extent, your environment and lifestyle.

The Budding Breast

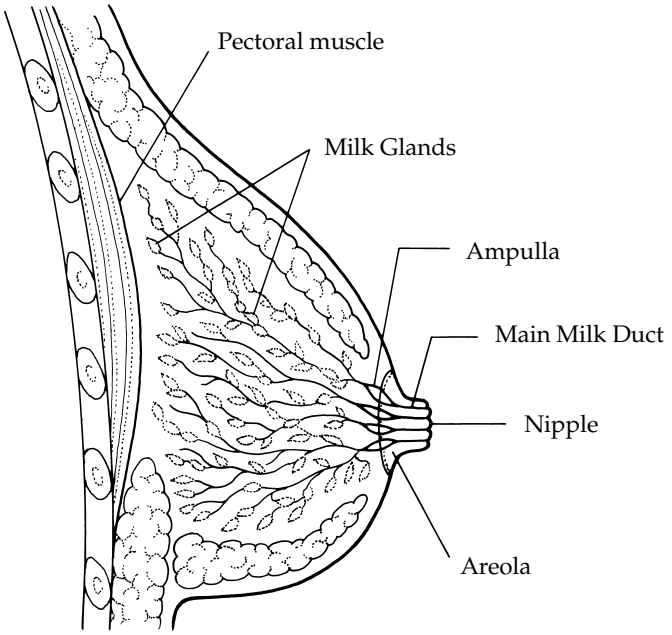
Female breast development begins in the womb at 6 weeks after conception. As the fetus develops, the female hormones estrogen and progesterone lay the groundwork for breast development. Estrogen stimulates the growth of ducts in the breasts, and both estrogen and progesterone promote development of the milk-producing glands, called lobular glands. At about the same time, the mother is producing hormones that assist in breast growth, including insulin, adrenal steroids, growth hormone, prolactin, thyroid-stimulating hormone, and luteinizing hormone.

The breast tissue, or mammary gland, is the first portion of

the breast to develop. Along the area from the groin to just above the armpit, a parallel set of glands form on the fetus. This "milk ridge" disappears by week 9 of the pregnancy except for one pair of glands, which later develop into breasts. On rare occasions, one or two paired glands along the ridge remain, and an infant is born with an extra nipple. This is known as polymastia, and often appears as a mole.

Puberty

Aside from a slight nipple discharge called "witch's milk," which occurs in 80 to 90% of all infants during the first few days of birth, breast development lies dormant for the next 10 to 12 years. Then estrogen levels rise, which causes the hormone receptors in the breasts to stimulate the growth of the milk glands (see figure below). For some girls, this is accompanied by itchiness or slight pain under the nipple. This initial step into puberty typically begins before a girl's first menstrual period.



The Breast

Once menstruation begins (usually between years 11 and 15), a girl's breasts respond to the release of hormones from the brain, adrenal glands, and ovaries. Breast tenderness and swelling are the two most common symptoms during this time.

The Reproductive Years

Breast changes are associated with the menstrual cycle. When a young woman begins menstruation, all of the hormones involved in the process—follicle-stimulating hormone (FSH), estrogen, luteinizing hormone (LH), and progesterone—prepare the breasts for the possibility of nursing.

During the first half of the cycle, approximately 14 days before ovulation, FSH is released from the pituitary gland. FSH prompts the production of estrogen by the follicles, which are the eggs enveloped in a sac on the ovaries. As the blood's estrogen level rises, it causes the milk glands to swell, making the breasts firmer and larger. Once estrogen reaches a high level, FSH stops its work and LH takes over. Estrogen and LH initiate *ovulation*, which is when the follicle releases a mature egg. The second half of the menstrual cycle has begun.

As the egg travels down the fallopian tube on its way to a potential pregnancy, the ovary produces another hormone, *progesterone*. Progesterone prepares the breasts for breast-feeding and prompts the lining of the uterus to transform into an environment rich in blood vessels and glandular tissue for the approaching egg.

The most direct effect of hormones on the breasts is caused by the combination of estrogen and progesterone, which initiate an increase in ductal and lobular tissue, respectively. These changes result in the breast tenderness and swelling that affect many women during their menstrual cycle. They may also notice that their breasts feel lumpy during the second part of their cycle, which is normal. To alleviate any fear you have about these lumps, examine your breasts periodically through-

out your menstrual cycle. If you notice your breasts are lumpy or lumpier during the second part of your cycle, you'll know the lumps are a normal part of your cycle.

If fertilization does not occur, estrogen and progesterone levels decline and menstruation begins. Without the high levels of these two hormones, breast swelling, tenderness, and lumpiness disappear. If, however, pregnancy is initiated, the breasts will undergo changes that prepare them for breast-feeding. Pregnancy and breast-feeding are covered in depth in Chapter 2.

Perimenopause and Menopause

For most women, their menstrual periods begin to change in regularity in their late 30s to early 40s as estrogen and progesterone levels decline. This period is commonly known as *perimenopause.* Internally, the supply of follicles is so low that they are unable to produce sufficient estrogen to maintain menstruation. As menstruation decreases (which often occurs gradually over months or even years), other body changes take place, including breast soreness and the formation of lumps or cysts in the breasts. Most of these lumps are benign and occur because the breast tissue shifts during this stage of life. (Chapter 11 discusses benign cysts and lumps.) Other symptoms of perimenopause include dry, flushed skin and backache.

Some women skip perimenopause and directly enter *menopause*, which is when menstrual flow stops completely. Unless you are on hormone replacement therapy (see Chapter 6), the dramatic decline in estrogen and progesterone causes the breast tissue to soften and thin. Fat then takes its place. Eventually follicle production of estrogen ceases completely and the role of the adrenal gland, which produces the hormone androgen (which is converted to estrogen), takes over whatever small amount of estrogen production occurs in the body. Around age 70, however, this alternate supply of estrogen also stops.

Variations in Breast Development

Female breasts can vary greatly in size and shape. The three most common variations are very small breasts, very large breasts, and asymmetrical breasts. All three types of development are the result of heredity, hormones, or both, and each can have a significant impact on your posture, how you feel about yourself, and how society views you. Other less common variations include amastia (absence of a nipple), inverted nipples, and extra breast tissue.

Very Small Breasts

The term "very small" is subjective. Although women with very small breasts can breast-feed and there are no physical or medical problems associated with having very small breasts, the psychological impact can be great. Some women who have very small breasts report feeling self-conscious, unattractive, and unappealing to the opposite sex. Women who want to change their appearance can wear a padded bra or may decide to have breast augmentation (see Chapter 12).

Very Large Breasts

On the other end of the spectrum are very large breasts. Some young women develop *virginal hypertrophy*, in which the mechanism that controls breast growth malfunctions and allows the breasts to keep growing. This results in a breast size that is out of proportion with the rest of the woman's body. Very large breasts can cause physical and emotional problems, including back pain, and the weight and stress of wearing a bra can result in painful indentations on the shoulders from the straps. Teenage girls with very large breasts are often the subjects of ridicule and ill-spirited gossip. Their size often makes it impossible for them to participate in sports or to dress like their peers.

Pregnancy can also lead to very large breasts, especially among women who are well developed before they become

pregnant. Once the woman delivers, breast size may not return to the prepregnancy level. Women who gain a significant amount of weight may also experience uncomfortably large breasts. Many surgeons encourage weight loss rather than reduction surgery for these situations.

Asymmetrical Breasts

No two breasts in a pair are exactly alike. In some women, the cup size differs for each breast, which is perfectly normal. During adolescence this is often true because the breasts are still developing. Eventually, however, the growth rate generally evens out and the breasts are very similar in size and shape. In some cases, however, a woman's breasts are noticeably uneven. This can cause great emotional anguish for some women, in which case surgery—to either increase the size of the smaller breast or decrease the size of the larger one—may be an option. Specially made bras can make the breasts appear evenly matched under clothing.

Other Breast Variations

Inverted nipples, either on both breasts or just on one, are common. They are usually caused by scar tissue or other tissue from birth, although the inversion may not be apparent until the breasts begin to develop. Unlike breast size and shape, inverted nipples do make breast-feeding difficult (see Chapter 2).

A variation that often is not noticeable until a woman becomes pregnant is extra breast tissue, which is most commonly found under the armpit. Because breast tissue swells during pregnancy, a pregnant woman with extra breast tissue may notice swelling and hard lumps under her arm, yet it will not be apparent when she's not pregnant. This breast tissue can develop the same problems and conditions as normal breasts.

Women, Society, and the Female Breast

Throughout ancient times and up to the Victorian era, the female form appeared to be held in high esteem. Many art forms displayed the female breast either partially or completely uncovered, even among religious works. The Sistine Chapel, for example, depicts many bare female breasts. With the arrival of the Victorian age, female seminudity was quite acceptable in the art world, and in society women's clothing displayed much of the breasts. Voluptuous-looking breasts were much in fashion for several centuries, but in North America in the 1920s, a flat, boyish look became popular. This fad did not last long, however, and as the newly introduced brassiere became popular in the 1930s and 1940s, women's breasts were once again enhanced. It was during the second half of the twentieth century that the female breast became widely idolized.

Fueling the fascination with the female breast may have been the introduction of two icons: *Playboy* magazine (and similar men's magazines) and the Barbie doll. *Playboy* molded many men's attitudes about sexuality and the female body, especially the breasts. Part of the message sent to men was that young, firm, big breasts were the ideal. Barbie, with her sizable breasts, had the figure young girls were taught to covet. Thus, men knew what they wanted, and women knew it too. Advertising perpetuated the ideals. As media advanced technologically, it infiltrated every part of North Americans' lives, especially television, cable, and the Internet. Throughout it all, one thing became clear: sex sells, and young, big-breasted women really sell. The female breast became the symbol of female sexuality.

Despite the women's movement and cries for equal opportunity and against sexual harassment, most women still worry about their breast size. Evidence of this lies in the fact that approximately one million women per year get breast

implants, and most of these operations are elective (unrelated to mastectomy) and for breast augmentation. So although most women may hate the fact that men have an image of the ideal female breast that women cannot fulfill, they try to fulfill it anyway.

Not every culture shares the North American attitude about the female breast. In much of the world, the female breast is respected for its beauty and its purpose, especially when it comes to breast-feeding. Among western European countries, topless beaches and public baths are common. Women in more primitive cultures, as in parts of Africa, rarely cover their breasts.

You've seen that your genes are responsible for the general appearance of your breasts. But there are other factors over which you do have some control when it comes to your breasts—factors that ultimately affect breast health including whether you get pregnant or breast-feed, your diet, how you handle stress, and how much exercise you get. If you are or plan to become pregnant, or if you plan to or are breast-feeding now, don't miss the next chapter. What you learn may ease any fears or questions you have about the changes that occur in your breasts during those special times, as well as help make you more comfortable and confident with those changes.