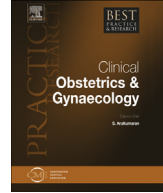




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## Q6 Breast development and disorders in the adolescent female

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### A B S T R A C T

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Breast development in the female is a process that becomes noticeable during puberty, and defines a girl's transition into adulthood. Various conditions can disrupt or alter the normal development, which may lead to abnormal breast changes and features. Further, the finding of a breast mass in adolescence can be unsettling to the patient and her family. While the majority of these breast changes and/or masses tend to be benign and self-limited, the appropriate evaluation is always warranted. This chapter will focus on the normal and abnormal development of breasts. We will also discuss the evaluation and management of breast masses that can be found in the adolescent female.

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### Introduction

Breast development is the first notable somatic change in a female initiating puberty. As it is a heralding sign of female maturity, a delay or abnormality can be quite disconcerting to an adolescent or her family. Thus, providers may be called upon to evaluate the female breast and to assess normal versus abnormal development.

While most lesions in the breast are benign, prompt evaluation and treatment is warranted to minimize potential concerns. Thus, providers of adolescent females should also be familiar with the normal and abnormal development of the breast, as well as common masses seen in the adolescent. When lesions or deformities in which a provider is unfamiliar arise, referral to a provider who specializes in the care of the adolescent breast is warranted. This chapter will elaborate on the normal

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breast, discuss lesions that can cause abnormalities of the breast, and discuss evaluation and management that is pertinent to breast pathology seen in the adolescent female.

### Normal breast development

Development of the breast is initiated between 4 and 6 weeks of gestation, when the ectodermal cells on the anterior body wall thicken into a ridge known as the “milk line” or “milk ridge.” This ridge runs the length of the axilla to the groin (Fig. 1). The areas of the ridge above and below the pectoralis muscle recede while in utero, leaving the mammary primordium, which is the origin of the breast tissue [1]. The lactiferous ducts and mammary glands develop from this tissue. The developing mesenchyme that surrounds this becomes the fibrous and fatty portions of the breast [2]. The nipple appears at 8 months gestation. The breast bud, under the stimulation of maternal estrogen, becomes palpable at 34 weeks of gestation [2]. This bud regresses within the first months of life, as the estrogen stimulation is no longer present.

The breast tissue remains dormant until puberty is initiated. Once thelarche is initiated, adipose tissue and ductal tissue grow in response to estrogen. Progesterone stimulation results in lobular growth and alveolar budding [1]. Clinical palpation has been shown to be a reliable method of detecting glandular breast tissue [3]. The normal development of the breast is also classified by the Sexual Maturity Rating into 5 stages with the average time period for full breast development is 4.2 years [4]. Some important considerations are the variations that can occur during thelarche. These include differences in the sequence of events, which can be considered normal.

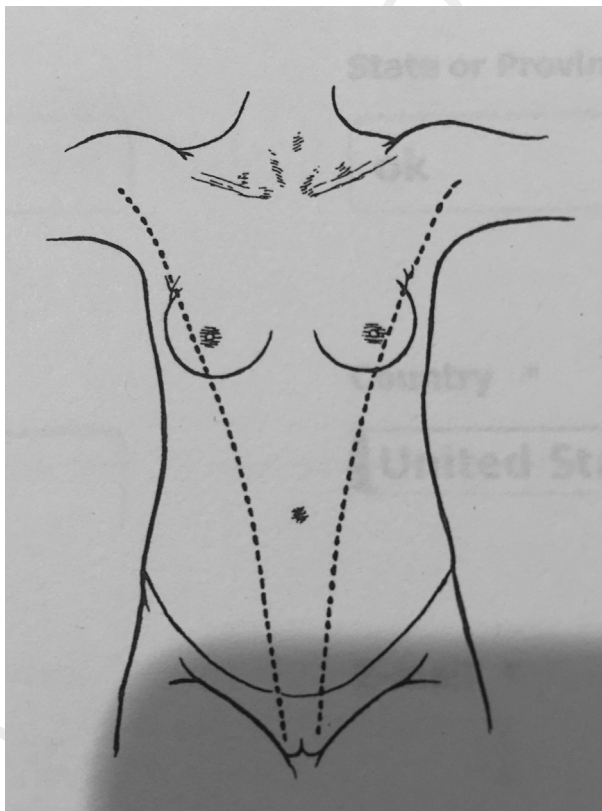


Fig. 1. The “milk line” corresponding to the embryologic mammary ridge. (With permission granted from Carpenter/Rock Textbook titled Pediatric & Adolescent Gynecology, Edition 2, Figure 27.1).

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