

Figure 23-1 Anatomic origins of common breast lesions.

colostrum (high in protein), changing to milk (higher in fat and calories) over the next 10 days as progesterone levels drop. The permanent changes produced by pregnancy may explain the reduction in breast cancer risk that is observed in women who give birth to children at young ages. Upon the cessation of lactation, epithelial cells undergo apoptosis and lobules regress. However, full regression does not occur, and as a result pregnancy causes a permanent increase in the size and number of lobules.

After the third decade, long before menopause, lobules and their specialized stroma start to involute (Fig. 23-2D) and the interlobular stroma converts from radiodense fibrous stroma (Fig. 23-2A) to radiolucent adipose tissue (Fig. 23-2E). To some extent, these changes are obscured by either endogenous sources of hormones (e.g., estrogen

from fat stores in obese women) or exogenous sources (e.g., menopausal hormone replacement therapy).

Disorders of Development

Milk Line Remnants

Supernumerary nipples or breasts result from the persistence of epidermal thickenings along the milk line, which extends from the axilla to the perineum. The disorders that affect the normally situated breast rarely arise in these heterotopic, hormone-responsive foci, which most commonly come to attention as a result of painful premenstrual enlargements.

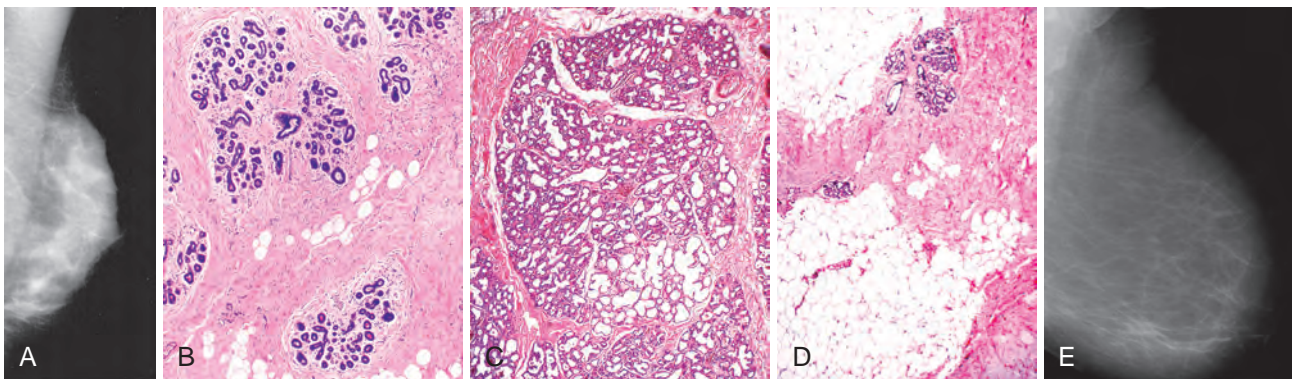


Figure 23-2 Life cycle changes. **A**, Mammograms in young women are typically radiodense or white in appearance, making mass-forming lesions or calcifications (which are also radiodense) difficult to detect. **B**, The density of a young woman's breast stems from the predominance of fibrous interlobular stroma and the paucity of adipose tissue. Before pregnancy the lobules are small and are invested by loose cellular intralobular stroma. **C**, During pregnancy, branching of terminal ducts produces more numerous, larger lobules. Luminal cells within lobules undergo lactational change, a precursor to milk formation. **D**, With increasing age the lobules decrease in size and number, and the interlobular stroma is replaced by adipose tissue. **E**, Mammograms become more radiolucent with age as a result of the increase in adipose tissue, which facilitates the detection of radiodense mass-forming lesions and calcifications. (**A**, **E**, Courtesy of Dr. Darrell Smith, Brigham and Women's Hospital, Boston, MA.)