The breast, by definition, is “the soft protuberant body adhering to the thorax in females, in which the milk is secreted for the nourishment of infants” or “the seat of affection and emotions; the repository of consciousness, designs and secrets…” — Merriam-Webster

### General Anatomy

The epidermis of the nipple and areola is highly pigmented and somewhat wrinkled, and the skin of the nipple contains numerous sebaceous and apocrine sweat glands and relatively little hair. The 15 to 25 milk ducts enter the base of the nipple, where they dilate to form the milk sinuses. Slightly below the nipple’s surface, these sinuses terminate in cone-shaped ampullae. The circular areola surrounds the nipple and varies between 15 and 60 mm in diameter. Its skin contains lanugo hair, sweat glands, sebaceous glands, and Montgomery’s glands, which are large, modified sebaceous glands with miniature milk ducts that open into Morgagni’s tubercles in the epidermis of the areola. Deep in the areola and nipple, bundles of smooth muscle fibers are arranged radially and circularly in the dense connective tissue and longitudinally along the lactiferous ducts that extend up into the nipple. These muscle fibers are responsible for the contraction of the areola, nipple erection, and emptying of the milk sinuses.

The majority of the breast parenchyma extends inferiorly from the level of the second or third rib to the inframammary fold, which is at about the level of the sixth or seventh rib, and laterally from the edge of the sternum to the anterior axillary line. The mammary tissue also extends variably into the axilla as the glandular Tail of Spence. The posterior surface of the breast rests on portions of the fasciae of the pectoralis major, serratus anterior, external abdominal oblique, and rectus abdominis muscles.

### Fascial and Ligamentous System (Fig. 1.1)

The mammary tissue is enveloped by the superficial fascia of the anterior thoracic wall, which continues above with the cervical fascia and below with the superficial abdominal fascia of Camper. The superficial layer of this fascia is poorly developed, especially in the upper part of the breast. It is an indistinct fibrous-fatty layer that is connected to, but separate from, dermis and breast tissue. This superficial fascial layer can be used effectively for suspension of the high-tension wound repair of breast-contouring procedures as described by Lockwood. The deep layer is better developed, lying in part on the pectoralis fascia. Between these two fasciae is the retromammary space filled with loose tissue that allows the breast to move freely over the chest wall. Projections of the deep layer of the superficial fascia cross this retromammary space, fuse with the pectoralis fascia, and form the posterior suspensory ligaments of the breast. The breast parenchyma may accompany these fibrous processes into the pectoralis major muscle itself. Therefore, complete removal of the breast parenchyma necessitates excision...
of the pectoralis fascia and a layer of muscle as well. The superficial layer and skin are linked to the deep layer by the ligaments of Cooper, which are fibrous and elastic prolongations that divide the gland into multiple septa and give suspensory support to the breast. The breast parenchyma is made up of 15 to 25 lobes of glandular tissue, each emptying into a separate milk duct terminating in the nipple.

The superficial layer and skin are linked to the deep layer by the ligaments of Cooper, which are fibrous and elastic prolongations that divide the gland into multiple septa and give suspensory support to the breast. The breast parenchyma is made up of 15 to 25 lobes of glandular tissue, each emptying into a separate milk duct terminating in the nipple.

**Horizontal Septum and Ligamentous Structures**

The ligamentous suspension is a regularly situated fibrous structure that acts as a guiding structure for the main nerves and vessels to the breast and nipple-areola complex. The ligamentous suspension is comprised of a horizontal septum, originating at the pectoralis fascia along the fifth rib, bending upward into vertical ligaments at its medial and lateral border (Fig. 1.2). Cranially, and in an anterior direction, the vertical ligaments merge into the superficial fascia. The line of fixation of this ligamentous circle follows the borders of pectoralis major to a great extent. The horizontal septum is largely attached to the costal origin of pectoralis major along the fifth rib. The vertical ligaments follow the medial and lateral border of the muscle, and the cranial attachment of the superficial fascia corresponds to the deltopectoral groove. The ligamentous suspension can be found equally in female and male breasts.

The horizontal fibrous septum is a thin lamina of dense connective tissue that emerges from the pectoralis fascia at the level of the fifth rib and, traversing the breast from medial to lateral, extends to the middle of the nipple. It thereby divides the gland into a cranial and a caudal part. While heading to the nipple, it also divides the lactiferous ducts, emptying into the lactiferous sinuses, horizontally into two even planes of duct openings into the nipple. Thus the horizontal septum separates two anatomical units of glandular tissue (Fig. 1.3). The separation of the glandular tissue follows certain proportions insofar as the various volumes in different-sized breasts seem to be caused mainly by the cranial parenchymal layer of the horizontal septum. The cranial glandular layer in breasts of different size ranges from about 2 to about 7 cm, while the caudal glandular layer always has a constant thickness of about 2 cm. Clinically, the horizontal septum can thus act as a useful guide for achieving symmetry in breast reductions.

At its medial and lateral borders the horizontal septum becomes even denser and curves upward into vertically directed ligaments. The medial vertical ligament is a strong structure that originates from the sternum at the level of the second to the fifth rib. The lateral vertical ligament is a rather weak fibrous structure that emerges from the pectoralis fascia at the lateral edge of pectoralis minor. The horizontal septum and its vertical extensions thereby build constantly a sling of dense connective tissue that connects the gland.