Anatomy and morphology of the breast

While the descriptive anatomy of this variably sized organ has been well known for decades, so that recent reviews have been unnecessary, this does not apply to factors relevant to the vascular and morphologic anatomy discovered in recent years.

In fact, progress and developments in plastic surgery of the breast and rapid improvement in the treatment of breast cancer have refined our knowledge of the vascularisation of the breast and its lymphatic drainage, justifying — if there were any need — the confirmation of our empirical notions derived from clinical experience by anatomic studies directed beyond a simple description of the classical pedicles towards a better understanding of the different vascular plexuses. The concepts so defined have in their turn affected clinical practice, allowing technical variations excluding any further risk of vascular impairment.

At the same time the morphologic anatomy has become more demanding, a number of definitions corresponding to precise concepts — the term residual mammary volume, to cite only one example — having made their appearance within the last twenty years.

These concepts are really essential to correct analysis of our results, allowing a better evaluation of what constitutes the harmony of an operated breast, and certainly a better and more constructive understanding of defects and inadequacies.

Descriptive anatomy

Structure

The mammary gland, ie everything contained within the cutaneous envelope of the breast, consists, in proportions varying from one woman to another and at the different stages of reproductive life, of glandular tissue proper, connective tissue and adipose tissue.

Glandular tissue

Histologically, the glandular tissue is composed of acini grouped in clusters, constituting the basic units or lobules, surrounding alveolar ducts into which they empty. The alveolar ducts drain into an intralobular duct, the assembly of lobules grouped around the same intralobular duct forming a mammary lobe. The excretory ducts of the lobes, or lactiferous ducts — one per lobe — converge towards
the nipple after exhibiting just beneath this a dilatation called the lactiferous sinus. The lactifers open to the exterior by the lactiferous orifices.

This structure of the breast results in the glandular elements predominating at the periphery, while the excretory structures and the connective tissue are predominant in the central portion of the gland. The glandular tissue itself is not distributed uniformly in the four quadrants; it is denser in the superolateral quadrant and the axillary tail, which may account for the greater frequency of malignant lesions in this region.

Although the lobules, and also the lobes, are separated by fibrous septa which are thicker around the lobes than the lobules, it is not possible to define a mammary lobe so as to allow segmental surgery of the breast. The gland is divided into quadrants for topographic purposes only.

**Adipose tissue**

Its ectodermal embryologic origin implies that the glandular tissue is intermingled with the subcutaneous adipose tissue. The adipose lobules are present in variable amount amidst the glandular tissue, the proportion varying with the degree of general obesity, age, pregnancy and lactation.

In fact, we have observed in young girls operated in the post-pubertal period two very different types of mammary hypertrophy. If the relation between height and weight has remained normal during this period, the hypertrophic breast is most often firm, elastic and rather white on section, and histologic study of the operative specimen shows a preponderance of glandular tissue. If puberty has been associated with excessive weight gain, and whether or not the patient has subsequently lost weight, the breast is of softer consistence, independent of the degree of skin distension, and markedly yellower on section, while the glandular tissue is proportionately reduced and sometimes present mainly in the retro-areolar region, histologic study confirming the predominance of adipose tissue.

Although every pubertal weight increase is not associated with mammary hypertrophy, a period of rapid weight gain at the time of puberty is harmful, apart from its other affects, as it may lead to the development of hypertrophy of a predominantly fatty nature. This stresses the importance of monitoring the weight in this sometimes tricky period of reproductive life.

The adipose tissue is also present at the periphery of the gland, forming an anterior layer constituting the subcutaneous adipose sheet, and a thinner posterior retroglandular layer.

The thickness of the subcutaneous fatty layer varies with the general degree of adiposity, and decreases from the periphery towards the areolar region, where the gland is now separated from the coverings of the areola and nipple only by a little connective tissue and the areolar muscle.

Posteriorly, the adipose tissue is less thick. In any case, it remains intermingled with the glandular tissue and is situated in front of the superficial fascia.