

BENIGN BREAST DISEASES

Essay

Submitted for
Partial Fulfilment of
M.S. Degree in General Surgery

By

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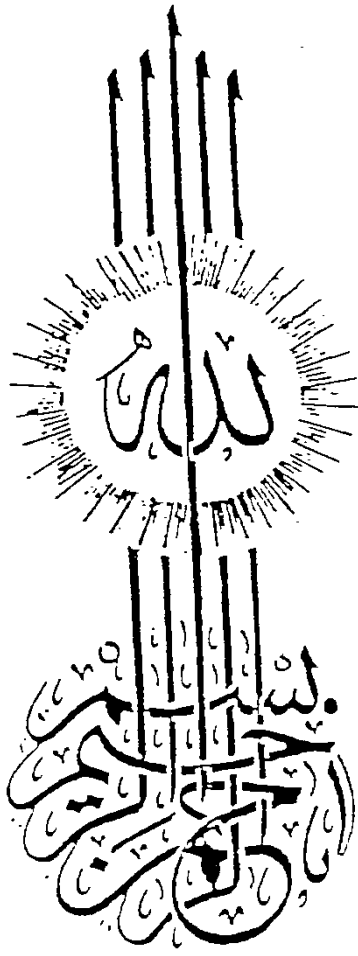
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1986



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صدق الله العظيم



ACKNOWLEDGEMENT

I owe a deep debt of gratitude to professor Dr. Abd El-Meguid El-Shinnawy, Professor of Surgery, Ain Shams University. His advise, guidance and encouragement throughout this work were greatly appreciated.

I, also, greatly appreciate the helpful comments and advice from Dr. Ibrahim Shamekh, Lecturer of Surgery, Ain Shans University.

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INTRODUCTION

From the standpoint of morbidity and mortality, cancer is by far the most important clinical problem that concern the breast today.

The aim of this work is to focus on most of the benign diseases of the breast for its vital importance in differential diagnosis from malignant diseases.

The relationship of benign breast diseases to cancer and the definition of the precancerous lesions of the breast are still controversial subjects. Better understanding of these lesion would have its shades on our dealing with cancer of the breast.

The breast is subjected to continuous functional and structural changes since early embryonic life and till the late menopausal life. Knowledge and understanding of these changes is a key point for dealing with breast lesion.

Also a thorough knowledge of the anatomy of the breast and its surgical applications is essential for both the diagnosis and the treatment of breast diseases.

Proper understanding of the clinical and pathological aspects of the different lesions and modern methods of investigation, would lead to their proper management.

The present work is an attempt to fulfill the above mentioned points.

SURGICAL ANATOMY

DEVELOPMENT AND HISTOLOGY

SURGICAL ANATOMY

The mammary glands are modified sebaceous gland (Ham & Comark, 1979).

The morphology of the female breast is very variable indeed, but the size of its base is fairly constant. It extends from the second to the sixth rib in the mid-clavicular line, and from the lateral border of the sternum to beyond the anterior axillary fold (Last, 1981).

About two thirds of the breast is situated on the pectoralis major muscle. The inferolateral part of the breast lies on the lower digitation of the serratus anterior, the inferomedial part of the external oblique and rectus abdominis muscle (Weatherley, 1980).

The axillary tail of Spence, is a glandular prolongation of the outer part of the breast, it passes up to the level of the third rib in the axilla. Here, it is in a direct contact with the anterior (pectoral) group of the axillary nodes. The axillary tail gets into the axilla through an opening in the axillary fascia known as "foramen of langer". It should be noted that the axillary tail is the only part of the breast beneath the deep fascia (Duplessis, 1975).

The nipples are directed outwards and forwards for the convenience of the sucking child, (Rains & Ritchie, 1982). The tip of the nipple accommodates the fifteen or twenty

opening of the lactiferous duct. In the deeper parts of the dermis, the smooth muscles form a loose layer continuous with the smooth muscles of the areola (Russell, 1983).

The areola is of a rosy hue, however, it become pigmented in pregnancy and after pregnancy never return to its original shade, it always return some pigment. Large modified sweat glands lie beneath the areola and open onto its surface, these are called areolar glands (of montgomery). Sebaceous glands and large sweat glands are present around the periphery of the areola. Smooth muscle fibres are disposed, both circularly and perpendicular to the skin surface, beneath the areola (Ham & Cormack, 1979).

Fascia of the Breast and Pectoral Muscles

The mammary gland is ectodermal in origin and situated between the superficial and deep layers of the superficial fascia.

The superficial layer of the superficial fascia immediately beneath the skin is extremely thin and difficult to identify. The deep layer passes immediately deep to the mammary gland. Connective tissue extension of this deep layer may pass across the retromammary space and unite with the deep pectoral fascia on the pectoralis major muscle (Rehman, 1978).

The deep fascia covers the anterior aspect of the pectoralis major muscle and is attached in the midline to the anterior aspect of the sternum and superiorly to the clavicle. Laterally and inferiorly this fascia continues downward to the thorax and across the root of the axilla. It is this part which is pierced by the tail of the breast.

The fascia over the serratus anterior and is firmly attached to it. The nerve to the serratus anterior (long thoracic nerve of Bell) is closely applied to the fascia covering this muscle. Damage to this nerve results in inability stabilize the scapula to the thorax, a condition called "winging of the scapula".

The fascia lining the deep aspect of the pectoralis major is continuous with the fascia investing the pectoralis minor. This fascia continuous superiorly splitting to enclose the subclavious muscle. That part of the fascia between the pectoralis minor and the clavicle is known as clavipectoral fascia. It forms a dense layer protecting the underlying axillary vessels. Medially the same layer of fascia blends with the fascial covering of the muscles of the first and second intercostal spaces, and laterally, it is attached to the coracoid process. Below the pectoralis minor muscle a fascial band, known as the suspensory ligament of the axilla, continuous downward and fuses with the axillary fascia. The clavipectoral fascia is pierced by the thoracoacromial

artery, the cephalic vein the lateral pectoral nerve and some lymphatics (Weatherley, 1980).

The Ligaments of Cooper

The glandular portion and the fat of the mammary gland are arranged within a connective tissue supporting stroma that resemble a trabeculated sponge having thicker bands that serve as suspensory ligaments. These thickened connective tissue bands are well developed in the upper portion of the breast. It subdivide the fat and the glandular tissue and attach these structures firmly to the skin. These ligaments is attached in one end to the skin and the other end to the deep layer of superficial fascia on the deep surface of the breast, the retromammary space present between this layer and deep fascia on the pectoralis major, permits mobility of the breast (Rehman, 1978).

Cancer of breast involves these ligaments causes dimpling of the skin by involvement and contracture of the ligaments of cooper. These same bands will fix the skin to a malignancy so that the skin cannot be freely moved over it. In addition if the tumour grows along the bands towards the pectoral fascia, it will form a fixed mass in the breast. Loss of tone in these ligaments, such as following pregnancy and lactation, will result in ptosis of the breast (Weatherley, 1980).

Glandular Structure

The glands consists of from fifteen to twenty lobes, each lobe is an irregular, flattened pyramid of glandular tissue, the apex of which is directed towards the nipple and the base towards the periphery of the breast. Each lobe has a single collecting, or lactiferous, duct which open by a contracted orifice in a depression at the tip of the nipple. The ducts are parallel to one another in the nipple but diverge at its base. Beneath the areola, they dilate from a normal 1-2 mm diameter to size of 4-5 mm. The lactiferous sinus thus formed constitutes a reservoir for the content of the duct system (Russell, 1983).

These collecting ducts drain the segmental ducts, which branch into a series of subsegmental ducts. From these arise the terminal ducts, each of which supplies a single lobule, forming the terminal duct lobular unit. The extralobular ducts are surrounded by elastic tissue and "ordinary" connective tissue. The lobules contain no elastic tissue but a specialized loose vascular stromal tissue which differs from that of the rest of the breast (Huges & Mansel, 1982).

These details of stroma are helpful in elucidating the origin of various pathological processes, differentiating between those arise from lobules. It is important to realize that different portions of the duct system are associated with different diseases, thus the larger ducts are the site of benign papilloma and duct ectasia, and the terminal duct

lobular units are the site of origin of fibroadenoma, cyst formation and sclerosing adenosis. There is increasing evidence that the great majority of cancers of the breast arise from the terminal ducts, especially its intralobular portion (Hughes & Mansel, 1982).

The Arterial Supply

The blood supply of the mammary gland is abundant. The main vessels enter the breast from its superomedial or superolateral border, few vessels are found inferiorly (Russell, 1983).

1. The lateral thoracic artery; or lateral mammary artery, arise from the second part of the axillary artery, (or from thoracoacromial or subscapular arteries) (Georgiade, 1976). It passes deep to the axillary vein, then inferomedially within the subcutaneous tissue of the lateral side of the branches of the internal mammary and intercostal arteries. It may be the only source of blood to the nipple, thus operative procedures designed to sacrifice breast tissue laterally may result in nipple necrosis (Georgiade, 1976).
2. Anterior medial mammary arteries; are the anterior perforating branches of the internal mammary artery pass forward through the medial end of the intercostal spaces accompanying the anterior cutaneous branches of the intercostal nerve. They pass through the first to fourth

and divide into a cutaneous and mammary branch. They join the plexus of arteries which ramifies throughout the breast.

3. Posterior medial mammary arteries; they are branches of the internal mammary artery. They traverse the intercostal spaces perforating the pectoralis major muscle and have a tortuous course on the anterior surface of the pectoralis major running in the retromammary space. They traverse the space perforating the breast on the posterior aspect and anastomose with other branches within the breast (Weatherley, 1980).
4. The pectoral branch of the thoracoacromial artery, runs in the space between the pectoralis major and minor muscles. It traverses the pectoralis major muscle, accompanied by veins and lymphatics, and enter the deep surface of the breast.
5. Mammary branches of the posterior intercostal arteries, which are derived from the aorta arise variably from the fourth and fifth posterior intercostal space before passing to the breast substance (Weatherley, 1980).

Venous Drainage

The venous return of the breast has both a superficial and deep system. The superficial veins of the breast can be located just posterior to the superficial layer of the superficial fascia.