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FACULTY OF MEDICINE

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LACTATION

ESSAY

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BY

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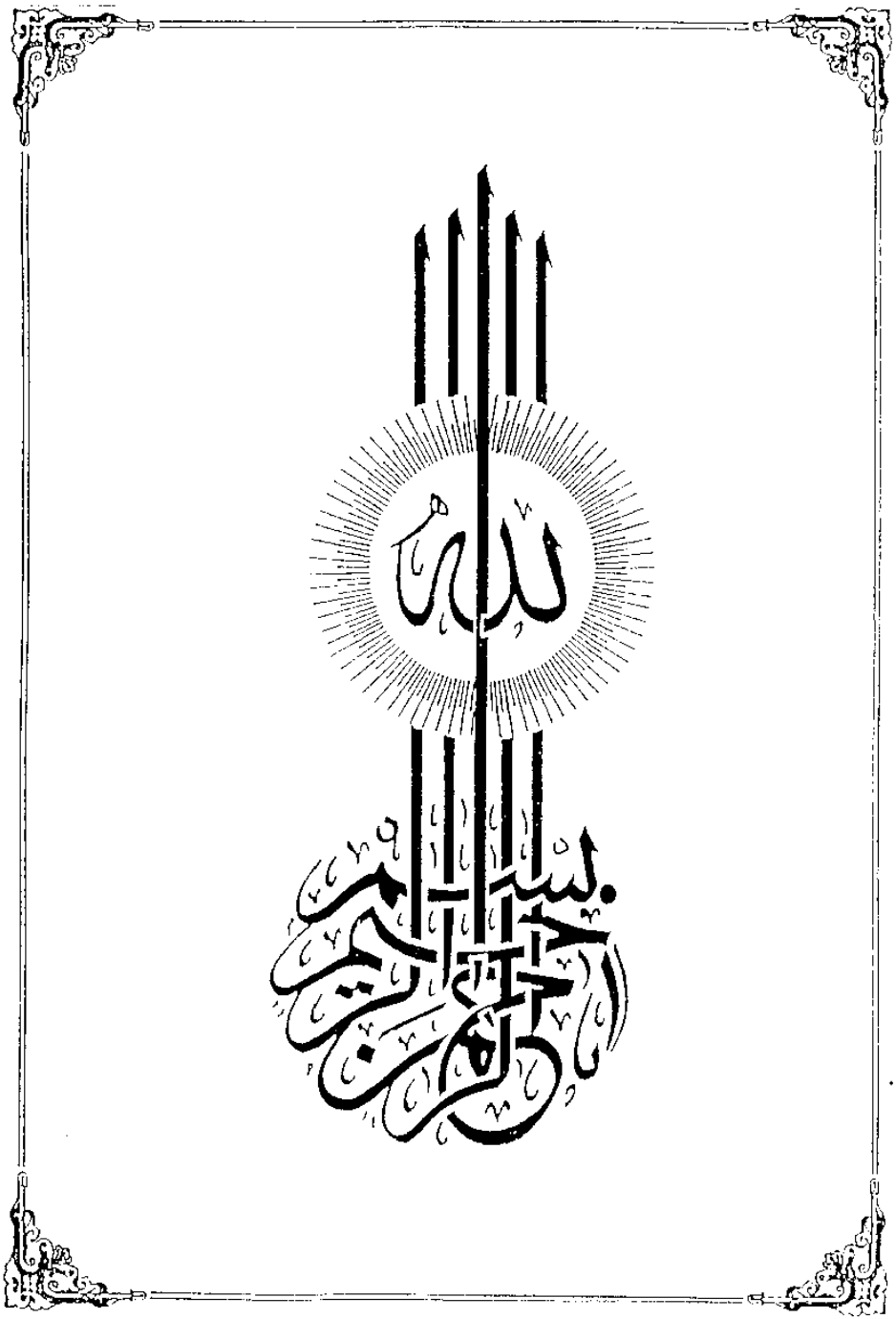


INTRODUCTION

Over the last 10 years there has been a dramatic increase in the incidence of breast feeding among women of the developed countries (Hartman et al., 1982). The studies of Hitchcock and Owles 1980 and Hitchcock et al., 1981 have shown that not only do a high proportion of women commence breast feeding but that these women have continued to breast fed for long periods of time.

The return of breast feeding has provided stimulus for research into biochemistry and physiology of human lactation and, as a result it has become apperant that the composition of human milk is uniquelly tailored to provide the essential nutritional and immunological elements required by the infant..

Many mothers often express a great deal of concern and anxiety for their ability to supply sufficient milk of the correct quality for the adequate nurishment of their infants. Much of this stems from the fact that there is still a large gap in our knowledge of the various factors that may influence the composition and volume of milk produced during the lactation cycle. This review

is trying to cover the subject of lactation from the anatomicol, physiological, pathological and pharmacological conditions which could have a substantial alteration in milk composition.

CONTENTS

I. Anatomy of female breast

ANATOMY
OF FEMALE BREAST

Female Breast :

The breast is a modified sebaceous gland, which lies within the superficial fascia on the venteral surface of the thorax.

The female breast froms a hemispherical eminence which extends vertically from the second rib to the six or seventh intercostal cartilage, and from the lateral side of the sternum to the midaxillary line.
The superiolateral part of the breast is prolonged upwards and laterally towards the axilla froming the "axillary-tail" of Spence. This tail may pass through an opening in the axillary fascia called the "foramen of Langer ". Prior to the puberty, the gland remains in infantile stage of development, at puberty the breasts attain their characteristic conical or hemispherical shape. During pregnancy and lactation, the breast increases two to three times in size. Following cessation of lactation, the breast return to normal size and tends to be pendulous. The breasts vary considerably in size and shape as compared with general body size, the underlying causes for such variations are not well understood (Romanes, 1981).

The nipple :

The nipple and areola are the most prominant feature of the breast, the nipple is a cylinderical or conical eminence that projects from the anterior surface of the breast. In nulliparas it lies in relation to fourth rib or fourth intercostal space, variations in position of the nipple are affected by the age of the woman and activity of the gland. The nipple is pigmented and measures approximately 10 - 12 mm. Minute openings of the lactiferous ducts may be seen on its surface. Occasionally the nipple may be retracted beneath the breast and projects only on stimulation.
It contains numerous unstripped muscle fibres most of which are arranged circularly and their contraction cause erection of the nipple. Other fibres are arranged longitudinally and their contraction may retract the nipple (Romanes, 1981).

The areola :

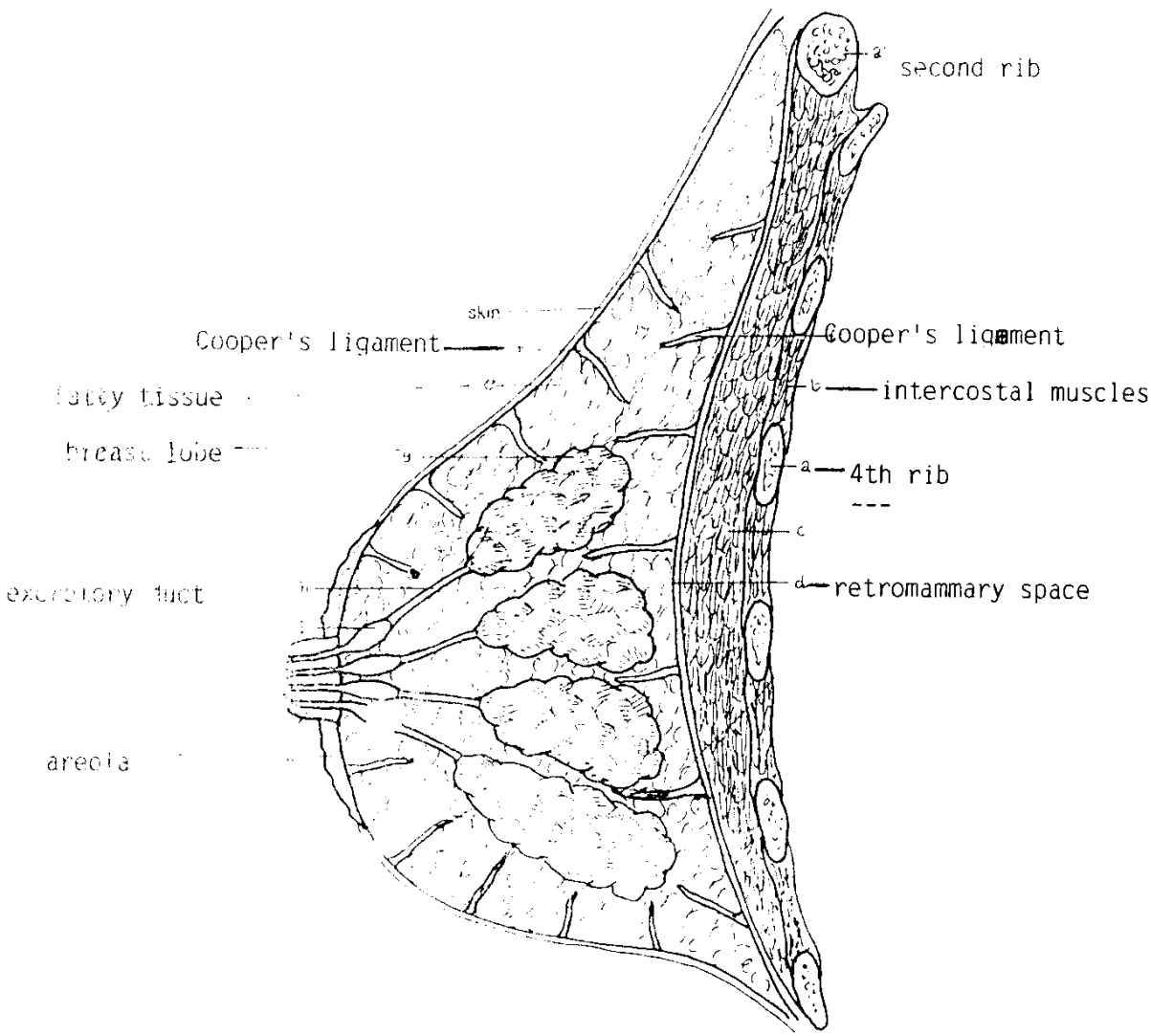
The areola is a pigmented circular area surrounding the nipple , ranging from 15 - 60 mm in diameter. It is rose pink in colour in nulliparas female. During the second month of pregnancy it becomes larger and darker in colour and as pregnancy advances it darkens even more.

The colour diminishes in intensity after lactation ceases, but the areola never returns to its original colour. The areola contains numerous sebaceous glands which become much enlarged during pregnancy and lactation to form "tubercles" beneath the skin called "Montgomry's follicles". The fatty secretion of the glands provides a protective lubricant for the skin of the areola and nipple during lactation. There is no fat immediately beneath the skin of the areola and nipple (Hamilton 1976).

Structural anatomy of the Breast :

The mammary gland proper consists of 15 - 20 pyramidal shaped lobes with their apices towards the nipple and bases forming the periphary of the gland. Each lobe has an excretory duct which opens individually on the surface of the nipple. The excretory ducts pass dorsally through the substance of the nipple, they diverge at the base of the nipple towards the periphary of the gland. Beneath the areola, the ducts increase in diameter forming the lactiferous sinuses. Beyond this dilatation the ducts begin to branch forming the lobules and eventually acini.

A single lobe would consist of all the lobules and acini that empty into a single excretory duct.



(Figure 1)

Structural anatomy of the Breast

The secretory glandular tissue forms the lobes and lobules in the parenchyma of the breast. This parenchyma is totally surrounded by fatty tissue. This adipose tissue gives the breast its smooth contour, and lies between the glandular tissue and the skin (Williams 1980).

Retromammary Space :

This space lies between the dorsal surface of the gland and the fascia covering pectoralis major and serratus anterior muscles, it is occupied by loose areolar tissue and small amount of fat. This retromammary space may be foci for retromammary abscess (Williams, 1980).

Cooper's ligaments :

These are fibrous bands that interconnect the glandular tissue superficially to the skin, and on the deep aspect of the gland they pass through the retromammary bursae to attach to the fascia of the muscle. Parenchymal tissue extends from the mammary gland proper along these fibrous septa to retromammary space, even this glandular tissue may penetrate between muscle fibres of the pectoralis major muscle. Thus these bands are of clinical significance in that they cause dimpling of

the skin or a fixation of the tumour to the pectoralis fascia when invaded by cancer cells (Williams, 1980).

Arterial Supply :

The arterial supply to the breast is very abundant and comes primarily from two sources :

a. branches from the internal thoracic (internal mammary) artery which are large and constant.

b. intercostal arteries which are considerably more variable to the extent that their contributions at times may be essentially non existent.

The arterial supply enters the gland either from the deep aspect or from the superiomedial and superiolateral borders. Vessels that enter the upper borders are larger, run in transverse direction near the surface, and send anastomosing branches deeper into the surface of the gland.

Major arterial vessels are not found along the inferior border of the breast. Thus it is possible to make incisions inferior to the nipple without compromising the blood supply (Hamilton, 1976).