1840

On the anatomy of the breast - Structure of the breast in the human female

Sir Astley Paston Cooper , Bart.

STRUCTURE OF THE BREAST IN THE HUMAN FEMALE.

The breasts or mammary glands are placed upon the anterior and lateral parts of the chest, and are designed to secrete milk for the nourishment of the infant.

As I have already observed, they are composed of two sets of parts, the *external* and *internal*, the external comprising the nipple, or mammilla, areola, tubercles, and some glands. The internal is the secretory organ, made up of an assemblage of small secreting bodies, or glandules, from which proceed the excretory vessels, or lactiferous tubes, to the nipple. The glandules and ducts are united to each other, by means of a *fibrous* and inelastic membrane, which penetrates the surface of the gland, and sends fibres into all its interstices, and by uniting its small constituent glandulous bodies, forms it into what is called a conglomerate gland.

A cellular membrane, both reticulated and adipose, also enters into the composition of the gland; and in this membrane not only is abundance of fat deposited, but also the arteries, veins, absorbents, and nerves hold their course, and are distributed to the substance of the gland, and to its appendage the nipple.

The mammary gland may, therefore, be said to be composed of Glandules and Ducts, and of the common organization of arteries, veins, absorbents, and nerves, united by an inelastic fibrous structure, and by an elastic cellular tissue, to which is added a projection, or nipple, for the termination of its tubes, and for the adhesion of the child in sucking. The union of these parts constitutes the beautiful organ which gives the name to the class Mammalia.

The mammary region contains the two breasts; one placed upon each side of the thorax, and opposite to each other between the sternum and the axilla, being situated upon the lower part of the platysma myoides muscle, upon the fore part of the pectoralis major, upon the serratus major anticus, and obliquus externus abdominis, and they reach from the third to the seventh rib.

The form of the breasts is hemispherical upon the anterior surface, but flat, or rather concave posteriorly, so that they are thus adapted to the convex surface of the thorax. Their anterior surface has the nipple, or mamilla, projecting from it, to meet the lips of the infant. Their posterior surface, which is smoother, may, from its situation, be called costal. Their marginal aspects are superior, or clavicular, resting upon the origin of the platysma myoides and third rib, inferior or abdominal, placed upon the external oblique

muscle and seventh rib. The inner, or sternal aspect, rests upon the pectoralis major and its aponeurosis, and upon the cartilages of the ribs. The outer, or axillary margin, laps over the edge of the pectoralis major, and rests upon the fascia of the thorax, and upon the serratus major and obliquus externus abdominis muscles.

The arched form of the ribs gives to the breast a considerable projection, which facilitates the access of the child to the nipple; but the clavicular and sternal margins are flatter, at the part at which the projection would be attended with no advantage.

The breasts are slung upon the chest, supported by the fibrous tissue, and they are projected at the nipple *forwards* and *outwards*. I have, in my work on the Testis, pointed out the errors of those who paint or chisel from imagination, and not from observation of nature, in placing those bodies of equal height, although the left is usually much lower than the other; and the same remark may apply to the breasts, modellers, sculptors, and painters sometimes represent the nipples as being pointed forwards, and place them as their imagination leads them to conceive them to be, and not as they really are. It is modern artists who fall into this error, for the ancients modelled from the living subject, and gave accurate representations of nature.

This natural obliquity of the mamilla, or nipple, forwards and outwards, with a slight turn of the nipple upwards, is one of the most beautiful provisions in nature, both for the mother and the child. To the mother, because the child rests upon her arm and lap in the most convenient position for sucking, for if the nipple and breast had projected directly forwards, the child must have been supported before her by the mother's hands in a most inconvenient and fatiguing position, instead of its reclining upon her side and arm. But it is wisely provided by nature, that when the child reposes upon its mother's arm, it has its mouth directly applied to the nipple, which is turned outwards to receive it; whilst the lower part of the breast forms a cushion upon which the cheek of the infant tranquilly reposes. Thus it is we have always to admire the simplicity, the beauty, and the utility, of those deviations of form in the construction of the body which the imagination of man would lead him, à priori, to believe most symmetrical, natural, and convenient.

It is proper, however, to observe that frequent lactation, by relaxing the breast, changes the position of the nipple from without, inwards, as the axillary part of the breast descends; but still the child is able to suck in its usual position, because the relaxation of the bosom permits the breast still to be drawn outwards.

It was the opinion of Buffon, that in the natural position of the breasts they formed an equilateral triangle with the upper part of the sternum; but this does not appear to be correct. He says, "Au reste pour que les mamelles des femmes soient bien placées, il faut qu'il y ait autant d'espace de l'un des mamelons, à l'autre qu'il y en à depuis le mamelon jusqu'au milieu de la fossette des clavicules, en sorte que ces trois points fassent un triangle équilatéral."—*Histoire Naturelle.*

The measurement of the Venus de Medicis is, from one nipple to the other, $7\frac{5}{8}$ inches; from the pit between the clavicles to each nipple is $6\frac{1}{2}$ inches; so that the base of the triangle is longer than its sides, and the nipples are more distant from each other than from the neck.

The margins of the breast do not form a regular disk, but the secreting structure often projects into the surrounding fibrous and adipose tissue, so as to produce radii from the nipple of very unequal lengths, and a circular sweep of the knife cuts off many of its projections, spoils the breast for dissection, and in surgical operations leaves much of the disease unremoved.

The breasts are generally two in number; and this number is not given, as has been supposed, to support twins, but as a provision against disease or accident, by which

one of them might be rendered useless, or be entirely destroyed.

One breast is fully equal to the nourishment of the child of a healthy woman, as is often proved by inflammatory attacks, destroying the secretory power of one breast, yet the mother is still able to nourish the child with the other.

Twins are rare, but the existence of two breasts is almost universal; I say almost, because exceptions do occasionally occur, of several being found; and not only in the pectoral and axillary region, but some authors relate that in other parts of the body they have been occasionally seen.

However, as I wish principally to describe in this work, that which I have had an opportunity of witnessing myself, I shall give the history of a case of four breasts in the same female, which, through the kindness of Dr. Robert Lee, of Golden-square, Lecturer on Midwifery at St. George's Hospital, I had an opportunity of seeing with him, and the following is his account of the case.

"Mrs. ——, aged thirty-five, was delivered prematurely of a still-born child on the 21st of July, 1835. Soon after the mammæ became excessively painful and distended, and she had a severe attack of fever, with delirium. Although the symptoms became daily more aggravated, a week elapsed before she would permit the condition of the breasts to be

ascertained. On inquiry into the cause of this unwillingness to allow the necessary examination of the mammæ to be made, I was informed by her sister-in-law that she had two mammæ and two nipples upon each side, and that this peculiarity, which she was anxious to conceal, had been observed ten years before, when her first confinement took place. After long entreaty I obtained leave to inspect the breasts, and was surprised to find there were two upon each side, as had been represented. The two on the same side were separated by a deep oblique depression. The inferior or pectoral mammæ, as they were afterwards termed by Sir Astley Cooper, were fully developed, and in the natural situation; and their nipples, areolæ, and glands, presented nothing unusual in their appearance.

"Near the anterior margin of the axilla, a little higher up on each side, was situated another mamma, about one-sixth the size of the others. The nipples of these were small and flat, but when gently pressed, a milky fluid, which had all the characters of the milk, secreted by the other breasts, flowed copiously and readily from several ducts, which opened at their extremities. When milk was drawn from the lower breasts, a small quantity usually escaped from the nipples of the superior breasts, and when the draught came into the former, the latter invariably became hard and distended.

" Mrs. —— had previously borne several living children, and five years before this period had twins, when she had a severe attack of uterine inflammation, and suffered much from painful distension of the two upper breasts. In consequence of the flatness of their nipples, she has never been able to suckle any of her children with these. The vagina, orifice of the uterus, and all the other organs, besides the mammæ, in this female, are well formed.

" I mentioned this case to Sir Astley Cooper at the time it first came under my observation, but he did not see it with me until the 28th of February, 1836, several months after the secretion of milk had entirely ceased. When he saw the mammæ, he said there could be no doubt that there were two on each side, an *axillary* and a *pectoral* breast, and that nature had separated them completely from each other. He considered it proper that some record should be given of this case, which he thought to be without a parallel in this country.

" Mrs. —— again became pregnant, and was safely delivered on the 19th of July, 1837, of a living child, which she now suckles with the pectoral breasts, and the axillary breasts again present the same appearances as those which have now been described.

" The preceding case furnishes one of the best examples

of quadruple mammæ in the human subject which has yet occurred.

" Robert Lee."

The breasts greatly vary in their extent, but they usually reach from the third to the seventh rib; however, lactation, especially if frequent, the time of life, and the relaxation of warm climates, occasion great changes in their situation and extent, and I have seen them reach to the ninth and tenth rib.

Frequent lactation, even in our own climate, leaves the breasts relaxed and pendulous, and alters both their form and their direction; it is, therefore, right that they should have a sling under them, a cushion, or stays to support them, to prevent their undergoing a change, which may by care, be, in a great degree, obviated. But it is the influence of warm climates which relaxes them most, and hence the women of the East and West Indies, who have had several children, have their breasts hanging to the upper part of the abdomen, suspended by a thin portion of skin from the part at which they originally grew. This relaxation allows them to suckle over the shoulder; the child being suspended from the back, elevates the breast to the clavicle, or if the breast be carried into the axilla, the child can suck under the arm, if the latter be raised.

In Africa the breasts are most remarkably changed in the Hottentot women; and a gentleman who had long resided at the Cape of Good Hope, gave me the following account.

"The Hottentot women are miserable-looking, relaxed, shrivelled, debilitated, and shrunken creatures. Their breasts hang by a fold of skin very loosely upon the abdomen, as a stone does in a sling. The child is sometimes placed upon the back of its mother, who raises her breast to her shoulder, over which the infant can suck. The large nates of the women form a convenient shelf for the child to rest upon. The Hottentot women are in the habit of binding down their breasts with a circular bandage of bark, ornamented by beads, which keep the bandage in its place by their weight." He had the kindness to give me one of these belts, which I have still in my possession.

But this great relaxation of the breasts is not peculiar to the females of warm climates, but is also seen in the coldest regions which man can inhabit. The Esquimaux women, who live in cabins excessively heated through a long winter, are, I am informed, subject to similar changes as those of hot climates, their breasts becoming very pendulous, from the artificially heated atmosphere in which they live.

This change in the position of the breasts from climate and other causes, would be much greater, if the breast had

only a connexion with the chest by cellular tissue, but the fibrous structure does not so readily yield to relaxing causes.

The breasts vary greatly in thickness at different parts. The axillary margin is very dense and compact, and the same may be observed of the abdominal margin, but the sternal and clavicular portions are much thinner than the others, and, consequently, project less.

In this way the lower part of the breast forms the cushion, upon which the cheek of the child reposes as it sucks its mother's bosom; and as to the causes by which this greater thickness and projection are produced, I shall particularly point them out in speaking of the gland, but I may here observe, that upon this structure depends the projection of the nipple, the ready access which the child has to it, and thus two important objects are accomplished.

The sensation imparted to the hand in feeling the breast, at different periods of life, very considerably varies. At the age of puberty, and for many years afterwards, the breast is dense, compact, smooth, and equal; but so soon as they become employed in lactation, they begin to separate into small bodies with indentations around them, and this arises from the stretch and relaxation of the uniting cellular and fibrous membrane. Even in single or childless women the breasts, towards the cessation of the sexual secretion, become

often exceedingly lobulated. In age the lobulated feeling ceases from the absorption of the glandular structure. The return of the menstrual secretion also makes a great difference in the feel of the breasts, as they then become full, tense, and painful, and an ecchymosis sometimes appears. It is of importance to know these changes, as they lead to a clearer diagnosis in disease.

Pressure or injury on the breasts produces a sensation of nausea, and if carried far it excites vomiting, which almost constantly occurs in important operations upon the breast, especially if food has been taken but a short time before.