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On the anatomy of the breast, by Sir Astley  
Paston Cooper, 1840

Rare Medical Books

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1840

## On the anatomy of the breast - Of the absorbent vessels

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## OF THE ABSORBENT VESSELS.

THESE vessels always exist in great numbers in the breast, and when the gland is in a state of lactation they are readily injected and demonstrated.

They are divided into a superficial and deep-seated order. The first are cutaneous, and are most connected with the nipple and the mucous glands of the skin; and the second arise from the interior of the glandular and secretory structure of the mamma.

The superficial arise from the nipple, as will be seen in my plate, and they pass principally upon the surface of the gland, behind the skin, on its axillary side.

In my injections I find them as follows:—

First, they pass upon, and then under, the superficial fascia, and between it and the aponeurosis of the pectoral muscle. They are next continued over the intercostal muscles, between the third and the fourth ribs, and they then ascend to opposite the third layer of intercostal muscles.

Here they enter the absorbent or cribriform opening, or sometimes there are two openings, in the fascia axillæ, as it

passes from the edge of the pectoralis major to that of the teres major and latissimus dorsi muscles, and which fascia shuts up and forms the floor of the axilla.

Having passed through this fascia into the axilla, they enter the first set of axillary absorbent glands, and form a considerable plexus of absorbent vessels between them.

They then rather descend to the third and fourth ribs to enter another set of absorbent glands, which are placed between the third and fourth ribs, and second and third intercostal spaces, and they then ascend to the second rib.

Here they form a large and elaborate plexus upon the axillary vein, from one to two inches below the clavicle, and reaching the first rib, they again enter absorbent glands.

From these glands, situated upon the first rib, an *absorbent trunk is formed*, of the size of a large crow quill, which is placed close to the inner side of the axillary vein, and between the first rib and the clavicle, (*see Plate*,) and this absorbent trunk terminates at the angle formed between the right jugular and right subclavian vein, where the absorbents of the right arm, and those of the right side of the neck, also end in the veins.

There is an opening formed for this vessel under the costo-clavicular ligament, with a distinct margin on each side.

The place of termination of the absorbents in the vein

is a little above and behind a line drawn from the middle of the clavicle, above the first rib.

On the left side, the absorbents of the breast form a similar absorbent trunk, which terminates at the angle of the left jugular and subclavian veins, at which angle the thoracic duct also ends.

Besides this course of the absorbents from the breast and through the axilla, there are other absorbent vessels which pass behind the axillary vein, artery, and axillary plexus of nerves, to join the absorbents of the arm. They also pass through several absorbent glands, and ascending before the axillary plexus of nerves, they mount behind the clavicle, and before the axillary blood-vessels, to terminate on each side at the angle of the jugular and subclavian veins.

Thus there are two courses of the absorbents from the breast through the axilla; one internal to the blood-vessels, and between them and the ribs; the other, which is more external, joins the absorbents of the arm, and passing behind the vessels and nerves of the arm, then crosses the nerves and the axillary artery, to enter the angle of the jugular and subclavian veins.

If, therefore, the absorbent glands in the axilla are obstructed by disease of the breast, other absorbent vessels carry their fluid into the absorbents from the arm, and when

their glands are obstructed, other absorbent or lymphatic vessels are found to pass behind the scapula from the axilla, to enter the cervical glands above and behind the clavicle.

The absorbents of the sternal side of the nipple principally take two courses.

The first accompanies the vein and the artery to the second intercostal space between the second and third cartilages of the ribs, and penetrating the intercostal muscles, they pass to the anterior mediastinum, where they accompany the internal mammary artery and vein, and enter some absorbent glands.

A set of absorbent vessels from the sternal side of the breast, placed lower down, enter the intercostal muscles, between the fourth and fifth cartilages of the ribs, and join the former in the anterior mediastinum.

After entering the anterior mediastinum, a part of those which pass from the right breast join some vessels from the convex surface of the liver, and are continued into the angle of the right jugular and subclavian veins, whilst those absorbents of the left breast, which enter the anterior mediastinum, pass to the angle of the left jugular and subclavian veins.

The *deep-seated absorbent* vessels, which can be best injected from the ducts and milk cellules whilst the breast is

in a state of lactation, arise from the mucous membrane of the lactiferous tubes and milk cells, and form a plexus of great beauty in the interior of the gland, as will be seen in the plate.

These numerous absorbents, as seen in the preparation, unite into two principal vessels, which pass into the axilla, and there enter the same absorbent glands as those which receive the superficial absorbents.

Those on the sternal side of the nipple pass into the anterior mediastinum, though some of them turn round above the nipple, and enter the axillary glands.

The deeper-seated absorbents many of them join the superficial upon the convex or cutaneous surface of the breast, and after passing through the glands in the axilla, terminate with them at the angle of the jugular and subclavian veins.

But the absorbents of the concave or costal surface of the breast take a different course. They penetrate the intercostal muscles behind the breast, and enter absorbent vessels which accompany the aortic intercostal arteries on the axillary side of the breast, but on the sternal side they join the internal mammary intercostals: the former pass into the thoracic duct in the posterior mediastinum; the latter enter those vessels in the anterior mediastinum which I have already described.

A most extraordinary opinion has been broached, that the absorbents carried the chyle to the breast,—an opinion at variance with the nature of the fluid, entirely inconsistent with every injection which I have made, as they all pass from, and not towards, the breast, and irreconcilable with the valvular structure of these vessels.

In malignant diseases, the absorbent glands being obstructed, the process of absorption can no longer proceed in its natural course ; but lateral communications at the origin of the absorbents in the cellular tissue, allow of absorption out of the common course of the vessels. I have a preparation which shows the plexus of vessels of communication at the roots of the absorbents, from which other vessels arise, taking a course into other glands ; and thus when the glands in one axilla are obstructed, those of the other axilla will become similarly affected by absorbents passing from the disease across the chest.

In disease, when the axillary, or clavicular side of the breast is affected, the absorbent glands in the axilla which are immediately connected with the mammae, are diseased ; and next the absorbents from the arm, and their glands ; and then the arm becomes greatly enlarged. The cervical and subclavian glands are involved in the disease, and the absorbent vessels behind the scapula are affected.

When the sternal side of the breast is diseased, two lines *may be traced of absorbent enlargement*; first, from the breast, sometimes to the first and second, at others to the second and third intercostal spaces; and secondly, to the fourth and fifth intercostal spaces between the cartilages of those ribs, and then the disease proceeds concealed behind the sternum, within the anterior mediastinum.

When the disease is seated in the posterior or costal surface of the breast, or when the axillary glands are much affected, the disease enters the chest through the intercostal muscles, and passes between the pleura and the ribs, often in its course affecting the pleura, and producing tubercles in it, and it excites inflammation of this membrane, so as to cause adhesion between the costal and pulmonary pleura, and these adhesions become also malignant.

I have seen the pleura to great extent thus diseased, towards both of the mediastina, with some adhesion of the lungs, and where they did not adhere, accumulations of water had taken place in the cavity of the chest.

Not only are the absorbent glands diseased in malignant complaints, (respecting which I shall not proceed any further at present,) but the absorbent vessels themselves become morbidly changed and obstructed, the tubercles are enlarged just under, and sometimes in the skin,



and they form hard and knotted swellings in the circumference of the nipple.

The absorbents are provided in great numbers in the breast, to model it under its various changes, in growth, lactation, and decay; to perfect the milk, and to absorb it, under extreme distension of the cells and milk tubes.

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