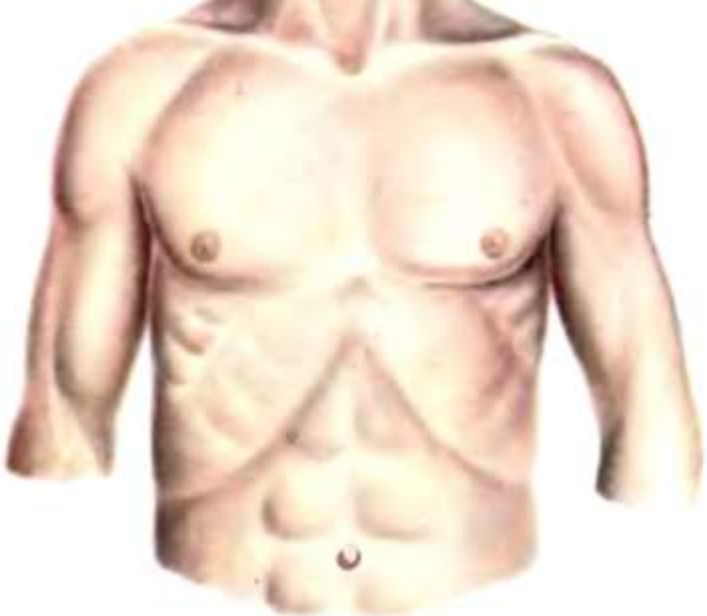
OPERATIVE SURGERY AND TOPOGRAPHICAL ANATOMY


Surgical anatomy of thorax, pectoral cavity
Topographical anatomy of mediastinal space

A high bound, dissociating a breast from a neck, goes at the front on the overhead edge of handle of breastbone, collar-bone and acromio-clavicular coarticulation from which she is sent back, to sprout of VII neck vertebra. From overhead extremity a breast is delimited by a line, going from a collar-bone on a deltoideo-thoracicus furrow, after through points, where a large pectoral muscle and m.latissimus dorsi go near a shoulder, and farther along the back edge of deltiod.

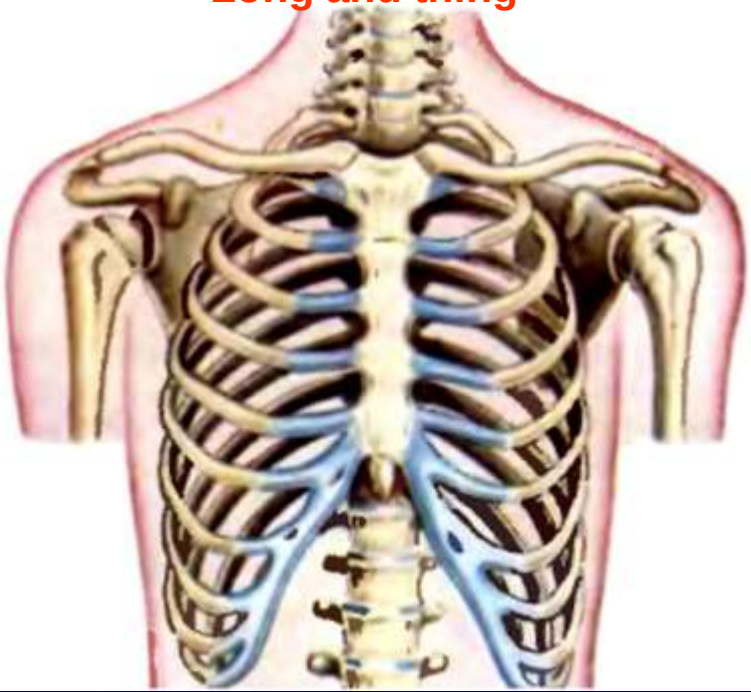
The low bound of breast is sent from a sciphoid sprout on the edge of costal arc to X of rib, through the ends of XI — XII ribs, on the bottom edge of XII rib to the sprout of XII pectoral vertebra.

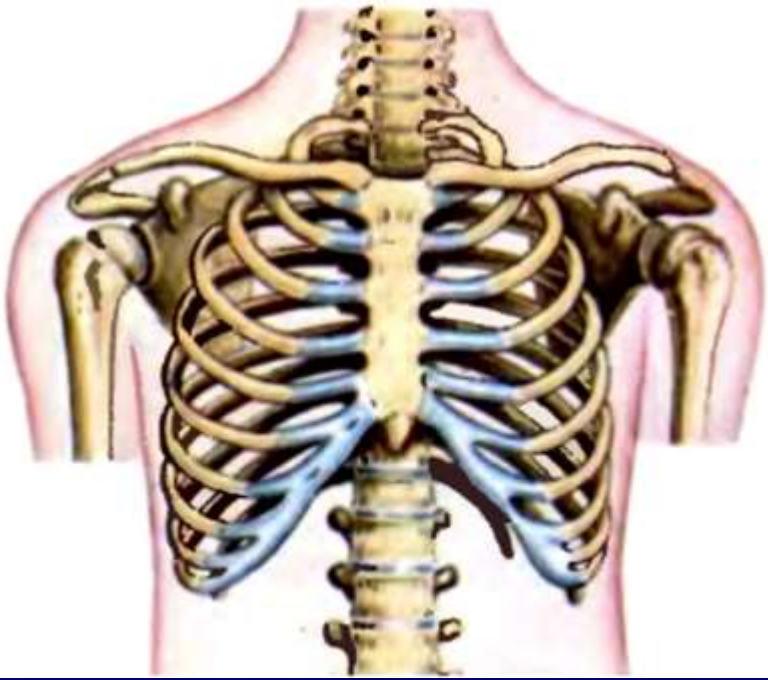


Dolichomorph Thorax –

Long and thing

Brachimorph Thorax –
short and wide

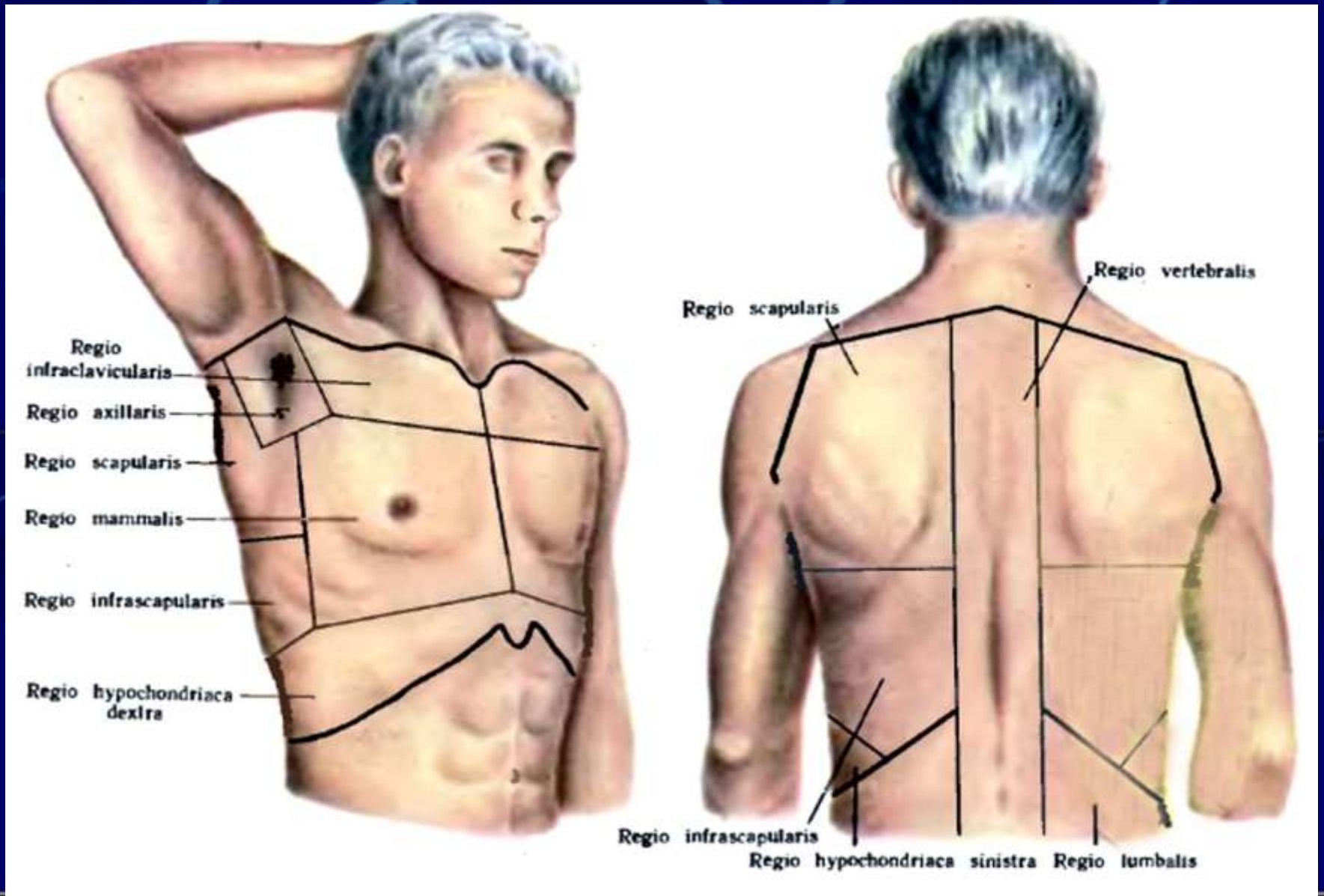


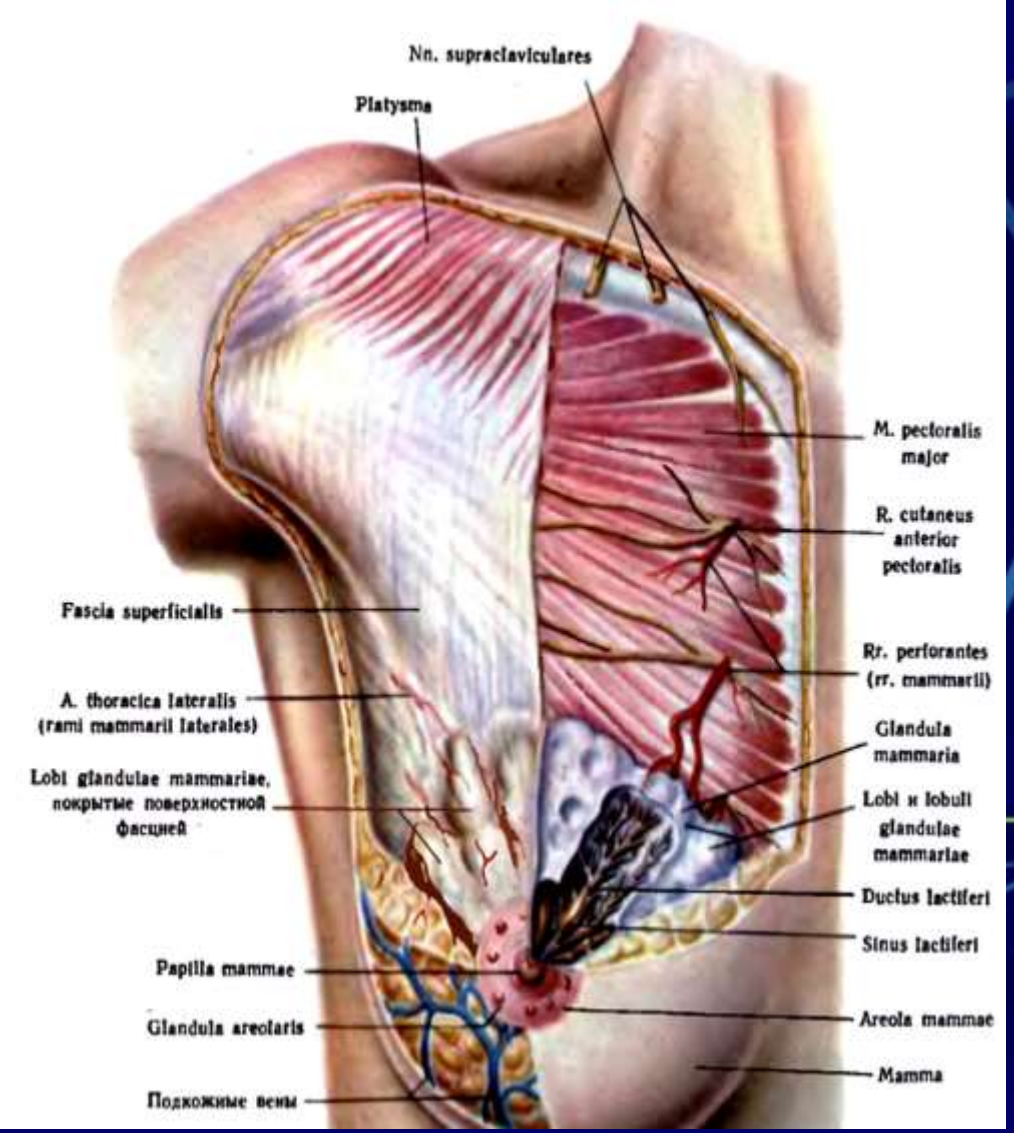


At the front such stone-pines it is been: linea medians anterior, going along the middle of sternum; linea sternalis, conducted but to the edge of sternum; linea parasternal, passing in the middle between breastbones noy and medioclavicular line; linea medioclavicularis, going through the middle of collar-bone; lineae axillares anterior, media and posterior, conducted on the lateral surface of breast from front and back walls and middle of armpit cavity.

On a back conduct next lines: linea scapularis, passing through the bottom corner of shoulder-blade; linea paravertebralis, going in the middle between a vertebral and shoulder-blade line; linea vertebralis, going on the transversal sprouts of vertebrae; linea medians posterior, passing through the spinosus sprouts of vertebrae.

Parts of Thorax





Suckling pectoral gland - glandulla mammaria, mamma - examined with superficial layers, because on the origin appears from the apocrine type of sweat-glands.

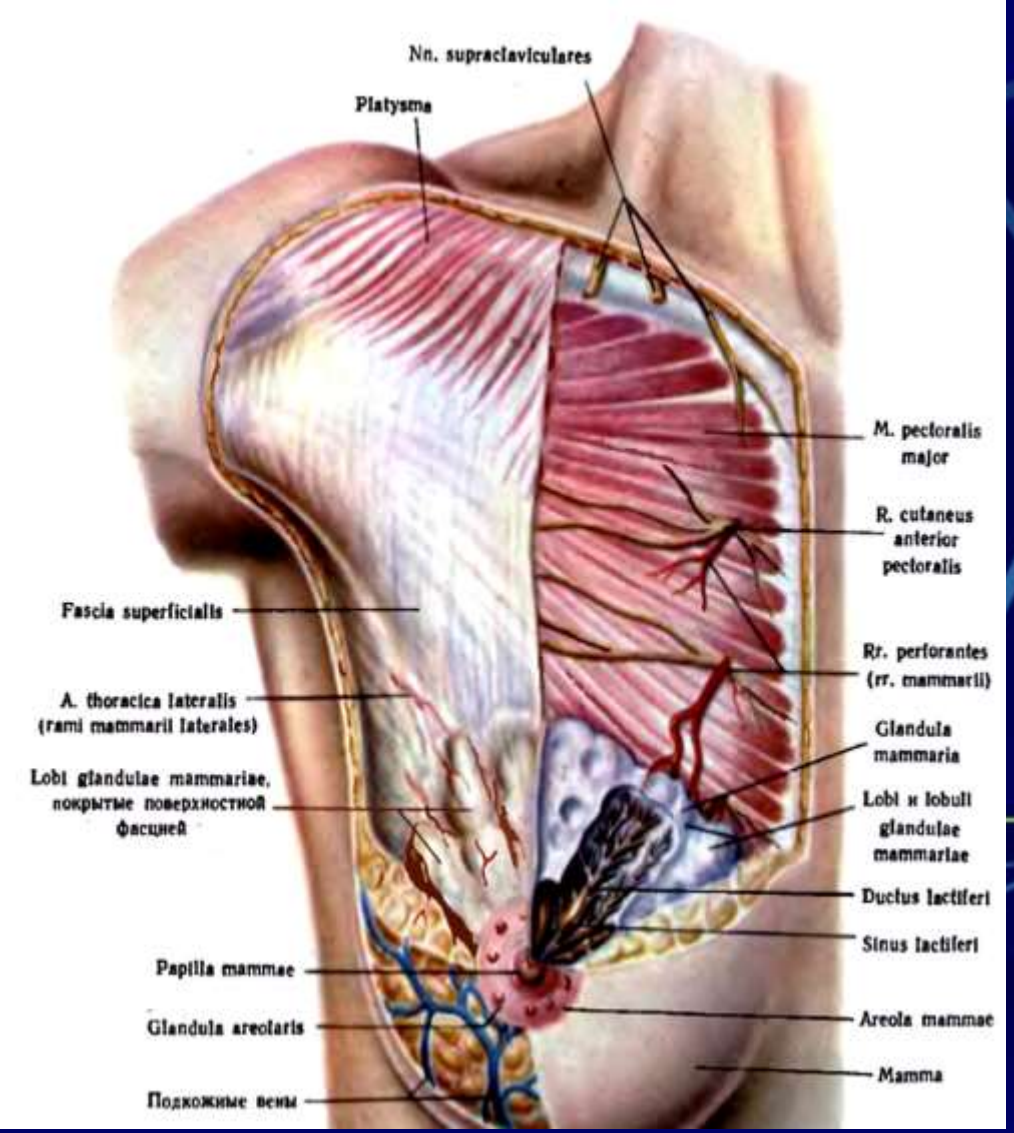
Forms, sizes, position and function of glands closely about with sexual development of gland, with the periods of pregnancy, and also reflect the individual features of structure.

Skeletotopic of iron for women is situated between III and VII ribs from below between linea parasternalis and linea axillaris anterior.

On a structure a mammary glands a compound alveolar gland.

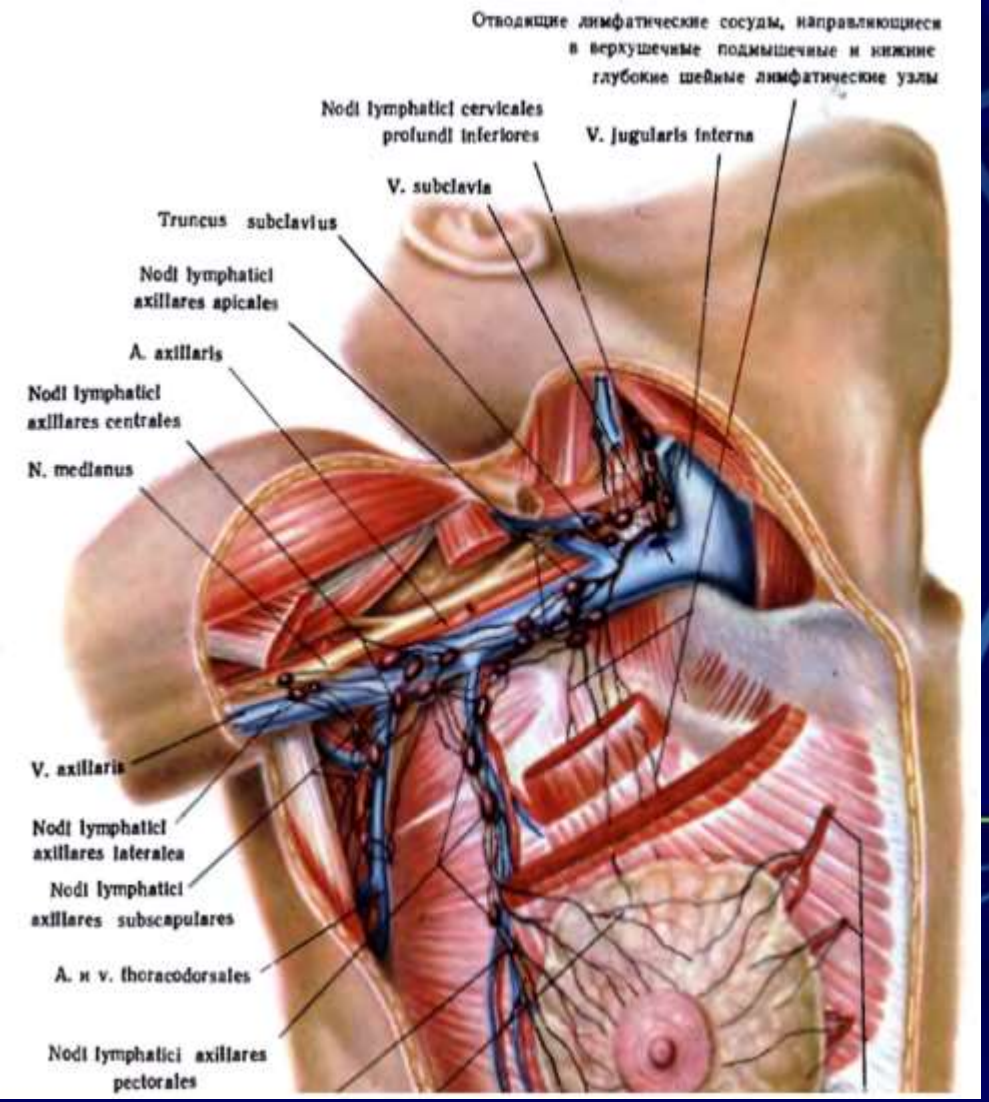
For women she consists of 15-20 lobules, surrounded, and divided by the offspurs of superficial fascia.

A mammary gland has a form of hemisphere, founding of which is situated on fascia lata thoracis and front toothed muscles.



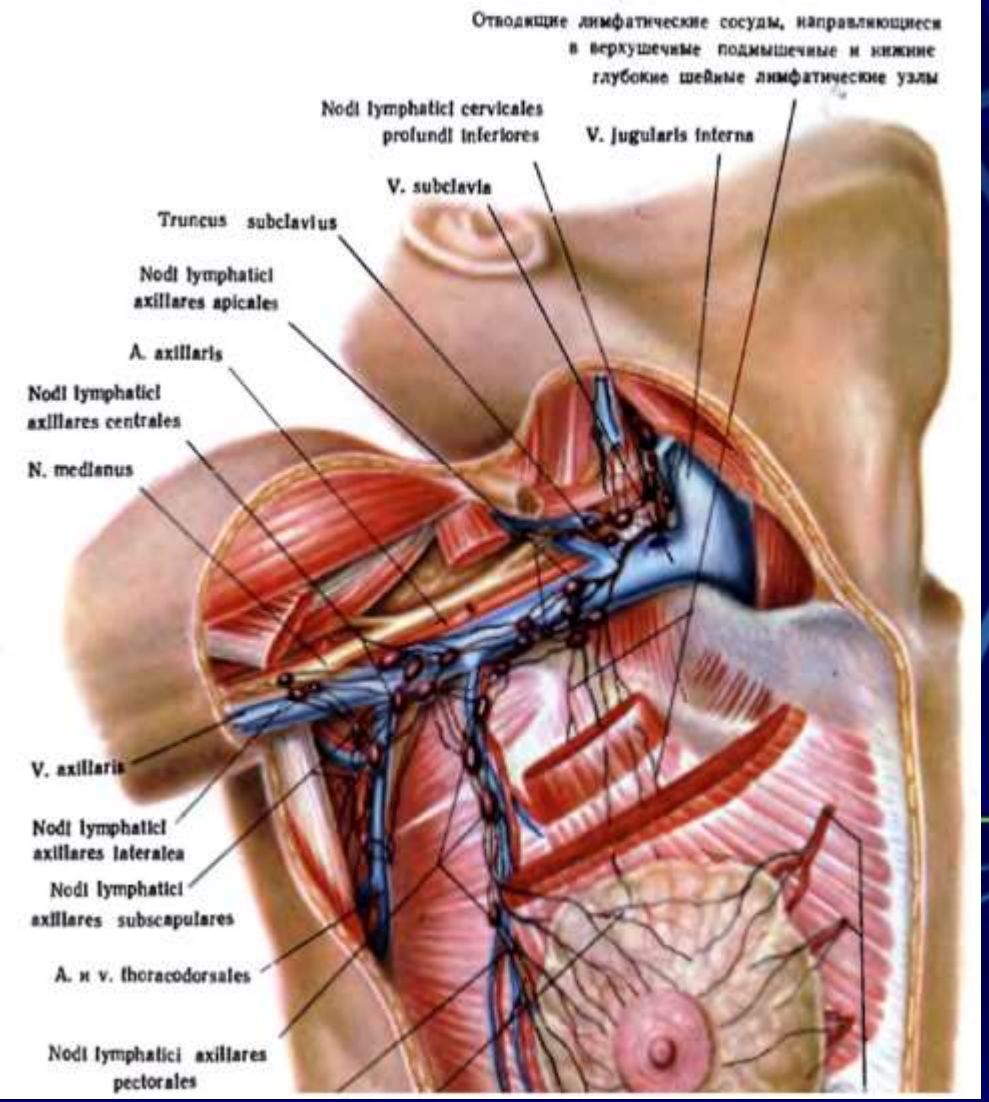
The capsule of suckling gland is formed by superficial fascua which takes part in fixing of gland to the collar-bone.

The lobules of gland are situated radially, round a nipple. Every lobule has the deferent galatophore (ductus lactiferus) a diameter 2-3 мм. galatophores radially meet to the nipple, at founding of which the channels, forming milk sines (sinus lactiferi). Milk sines externaly are again narrowed and opened on the apex of nipple by the point opening. The amount of opening on baby's dummy is ordinary less than, than number of galatophores, because some of them at founding of nipple unite inter se. The radial location of galatophores must be taken into account during realization of operative intervention on a mammary gland (cuts must be conducted on radiuses).



The blood supply of mammary gland comes true by branches a.thoracica interna, a.thoracica lateralis, a.thoracica suprema, II - VII aa.intercostalis. Venous outflow comes true on superficial and deep veins. While deep veins accompany of the same name arteries, superficial veins form a hypodermic network the separate branches of which disembogue in an armpit vein (v.axillaris). Innervation of suckling gland comes true by the latheral branches of II – VII intercostal nerves, by branches neck and humeral interlacements. Simpatetic nerves go as interlacements round blood vessels.

Lymphatic vessels. The ways of outflow of lymph from a woman mammary gland and site of distal lymphatic knots present large practical interest because of frequent defeat of organ malignant growths. A gland has the developed network of superficial and deep lymphatic vessels.



The outflow of lymph from this network takes place in different directions: from lateral and upperlateral parts of gland a lymph is sent in 2 -3 lymphatic vessels, which pass on a large pectoral muscle (more frequent on a bottom edge her) and fall in the lymphatic knots of armpit cavity (nodi limphatici axillares), which are located around v.axillaris. On motion these lymphatic vessels on the third indent of front toothed muscle (m.serratus anterior) often there is a lymphatic knot of Sorgius, which usually, before other struck by metastases.

Connecting the lymphatic vessels of lowermedial quadrant gland's with the lymphatic vessels of front abdominal wall and organs of overhead floor of abdominal region.

TOPOGRAPHY OF MIDDLE LAYERS OF PECTORAL WALL

After *fascia superficialis*, own fascia of breast (fascia pectoralis), which forms the fascial cases of subject to muscles, follows.

In a antero-superiores area *fascia pectoralis forms a case large thoracal and front toothed muscles, in area of breastbone passes to membrana sterni anterior, lateraly proceeds in fascia deltoidea and fascia axillaris. Deep own fascia is named fascia claviculopectoralis.* She forms a vagina for a small pectoral muscle (m.pectoralis minor) and suspending copula of armpit (lig.suspensorium axillae). In this area lateral part of which presents the front wall of armpit cavity and part of axillar area, distinguish three triangles, which the vascular-nervous bunch of armpit cavity is situated within the limits of :

trigonum clavipectorale - is situated between a collar-bone and overhead edge of small pectoral muscle;

trigonum pectorale - corresponds to the borders of small pectoral muscle;

trigonum subpectorale - lies from the bottom edge of small pectoral muscle to the bottom edge of large pectoral muscle.

TOPOGRAPHY of DEEP LAYERS, ENTERING In the complement of WALLS ACTUALLY THORAX

The skeleton of thorax consists of 12 pair of ribs with their cartilages, pectoral vertebrae and breastbone. Intercostal intervals are executed by intercostal muscles, vessels, nerves.

Overhead seven pair of ribs unite directly with a breastbone, carrying the name *of veritable ribs (costae verae); VIII - X of rib, uniting the cartilaginous parts, and with the cartilage of VII of rib form a costal arc (arcus costarum) and carry the names of false (costae spuriae). XI - XII of rib with a breastbone does not unite and named hesitating ribs - (costae fluctuantes).*

A breastbone (sternum) consists of *handle (manubriwn sterni), body (corpus sterni) and processus xiphoideus.*

A thorax (compages thoracis) has two opening - overhead - *apertura thoracis superior and* lower - *apertura thoracis inferior.*

Overhead aperture of thorax of devided by a bone ring in the complement of which enter : behind is a body of I pectoral vertebra, from sides - I rib, at the front is an undercut of handle of breastbone. Through the overhead aperture of thorax *the dome of pleura* comes forward in a supraclavicular area *and pass a brachiocephalicus barrel on a neck, both subclavias and left general cfrotis artery, internal pectoral arteries and subclavial veins, pectoral channel, right lymphoduct, vaguss and their branches, are recurrent nerves, diaphragmatic nerves, sympatic barrels, trachea, gullet.*

A diaphragm (diafragma) is wide and relatively thin muscle, having the appearance of dome the bulge of which turned up toward a pectoral cavity.

From the side of pectoral cavity she is covered *by a* parietal *pleura, from the side of abdominal region - by a parietal peritoneum. The right dome of diaphragm, reach level IV of rib, costs higher than left, which arrives at V rib.*

In muscular part diaphragms distinguish bunches, beginning from the xiphoid sprout of breastbone (pars sternalis), from VIII – XII ribs (pars costalis) and from four overhead lumbar vertebrae (pars lumbalis). Meeting in radial direction, the muscular fibres of diaphragm pass to her *tendon part (centrum tendineum), in the right half of which there is opening, allowing a postcava and branches of right diaphragmatic nerve.*

Topography of organs of pectoral cavity

A pectoral cavity is limited to at the front the breastbone, from lateral parties by ribs with intercostal muscles, behind - by a rachis, from below - by a diaphragm and covered from within intrathoracic fascia.

A pectoral cavity includes pair *pleura cavities, pericardial cavity, with their content (lungs and heart), and also mediastinum. Under a mediastinum (mediastinum) understand space, executed by the complex of organs and limited :* from sides by a mediastenal pleura, at the front and behind intrathoracic fascia; after this fascia at a breastbone is the front situated, behind rachis, from below diaphragm. By a frontal plane, conducted through the roots of easy on a back surface bronchial tubes, a mediastinum is conditionally divided by **front and back**.

The pleura deepening is sines.

Distinguish the next deepening (pockets), sines:

A recessus costodiaphragmaticus is a pair, most deep, is in the place of transition of costal pleura in diaphragmatic. Most deep (subzero) place him is on a middle armpit line. It occupies an extent from 7 for 10 ribs, has a depth to 6-8 cm.

recessus costomediastinalis - pair (distinguish front and back), well comes to light at the front - in the place of transition of costal pleura in madiastinal. The left sine is expressed better than right.

A recessus phrenicomediastinalis is the least developed.

LUNGS (PNEUMONES)

are situated in a pectoral cavity surrounded by the isolated pleura sacks. Every lung has a wrong cone-shaped form with *founding (basis pulmonis) and rounded apex (apex pulmonis) which will stand on end on a 2-3 cm higher than collar-bone.*

A right lung anymore than left, it is some shorter and wider at the same time. In every lung distinguish <u>three surfaces:</u> *external or costal (facies costalis); diaphragmatic (facies diafragmatica); madial (facies medialis). Last 2 surfaces concave. The front and back borders of lungs coincide with the borders of transitional folds of pleura.*

Blood supply of Lungs

Blood in lungs is brought *by right and left pulmonary arteries (a.pulmonalis dextra et sinistra), arising out of pulmonary barrel (tr.pulmonalis), walking away from the right ventricle of heart. Pulmonary vessels carry out a respiratory function.*

Bronchial branches (rr.bronchioles} being the branches of pectoral aorta, carry out a trophic function in lungs.

Pulmonary veins in an amount four fall in the left auricle and carry arterial blood, by submitting the eventual departments of small circle of circulation of blood. *Venous blood outflow from lungs on bronchial veins (vv.bronchioles) which fall in v.v.azygos et hemiazygos. Between the branches of pulmonary arteries and pulmonary veins there are arterio-venular anastomoses, built on the type of locking arteries. Vessels, related to the system of small and large circle of circulation of blood, are closely constrained inter se.*

Innervation of lung.

The vegetative nerves of lungs arise out of *sympatic barrel and from vagus (parasympatic innervation). Sympatic nerves come from two bottom neck and five overhead thoracal. From vaguss will depart to the lungs branches at the place of crossing by them root of lung. Nervous explorers, sent in the gate of lungs, accompany bronchial tubes and form pulmonary interlacement which is conditionally divided by front and back (plexus pulmonalis anterior et posterior).*

HEART (COR)

A heart presents a hollow muscular organ, wrong peg-shaped.

In him distinguish *founding, sent up and a bit back, apex, turned foreward, downward and to the left. The longitudinal axis of heart is directed obliquely: from top to bottom, from right to left, behind in advance.*

A heart is surrounded *by a pericardium which is the reserved serosal sack. Distinguish external is a sheet of serosal pericardium (lamina parietalis) and internal, covering the surface of heart or epicardium (lamina visceralis pericardii s.epicardium). In those places, where an epicardium passes to the plate of pericardium, bosoms appear.* Most large it is been: transversal bosom, slanting and antero-inferiores.

The blood supply of pericardium is abundant and comes true due to *an internal pectoral artery and branches of pectoral aorta.*

Innervation comes true due to vaguss, intercostal nerves.

Auricles are perceiving blood chambers, ventricles throw out blood from a heart in an artery. Right and left auricle dissociated from each other by a intercor partition which an oval fossula is in. At the nonclosure of intercor partition there is a crack in her. A vice - unclosed oval window which arterial and venous blood of chambers of auricles is mixed up at is formed in such cases.

Right and left ventricles are dissociated from each other by a well-developed interventricle partition. In the last distinguish muscular part and small overhead area of partition, where fibrotic fabric, covered both-side by an endocardium, is only.

PECTORAL PART OF GULLET

There is a 23-25 cm at general length of gullet, a 7-8 cm gets on *neck part*, on thoracal a 16-18 cm and on abdominal 1-3 cm. Distance from overhead chisels to beginning of gullet is evened for adults 15-16 cm. *Pectoral part of gullet is usually divided by* three departments: *overhead - to the arc of aorta, middle - according to position of arc of aorta and bifurcation of trachea (actually these two departments lie in an overhead mediastinum) and lower is more long department of gullet - from bifurcation of trachea to the level 11 pectoral vertebra (for children is a to 10 pectoral vertebra).*

During a gullet distinguish three narrowing and two expansions, from them in a pectoral cavity are situated : narrowing in place of adjoining of him to the aorta (at the level of bifurcation of trachea) and in the segment of organ, celled in a diaphragm. One of expansions is higher than arc of aorta is corresponds to length of back department of trachea, other - between the indicated two narrowing of pectoral part of gullet.