ANATOMY of the mammary gland

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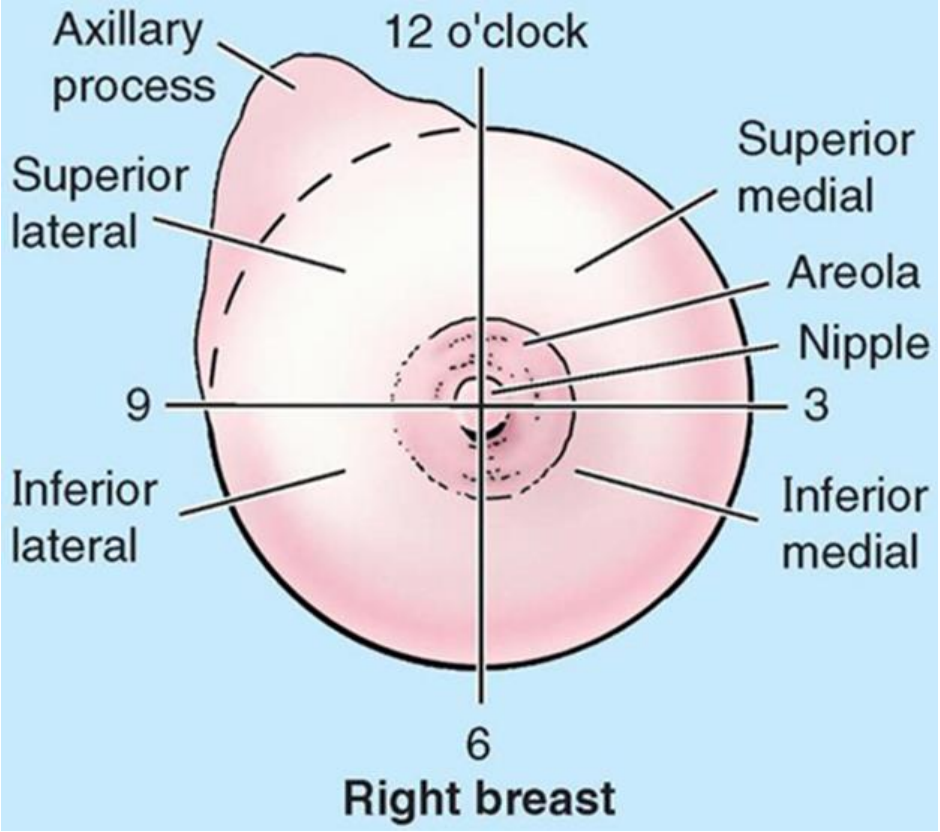
Position& shape

- **It is an exocrine gland that is concerned with milk production in lactating female. It is a modified sweat gland forming a secondary sexual feature of females and They are also present in a rudimentary form in males.**
- **Each breast is a rounded eminence lying within** the fatty layer of **the superficial fascia**
- **In the adult female, the base of the breast, i.e. its attached surface, extends vertically from the second to the sixth rib, and in the transverse plane from the sternal edge medially almost to the midaxillary line laterally.**
- **The superolateral quadrant is prolonged towards the axilla (the axillary tail).**

Size and contour:

They are variable, but the location and size of its base are fairly constant.



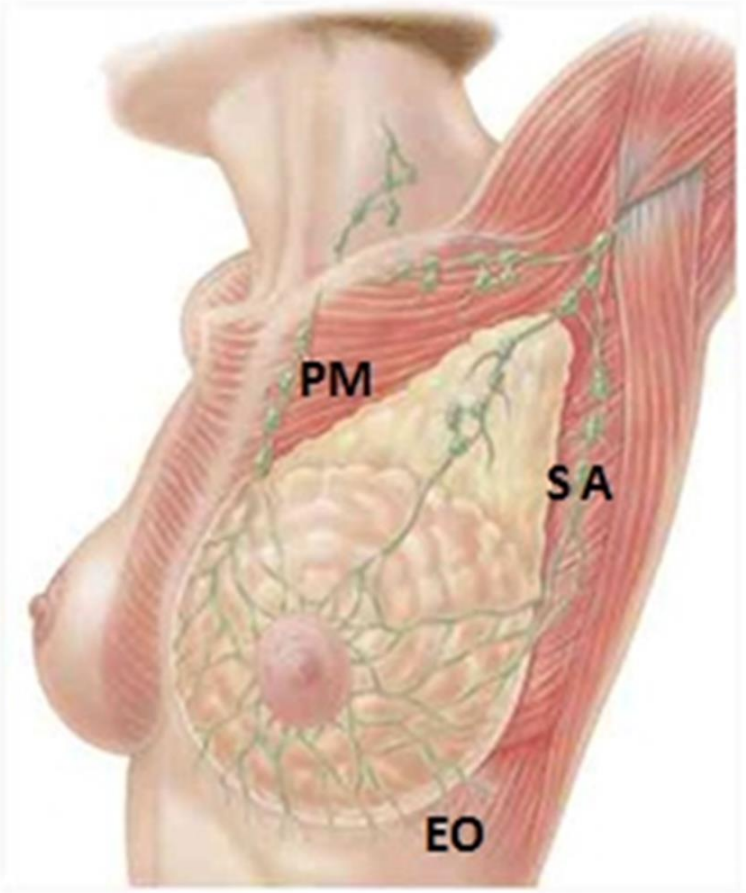
Base of the mammary gland

It rests upon the deep fascia covering pectoralis major (PM) and serratus anterior (SA), and external oblique (EO) muscles.

The base extends from the 2nd to the 6th ribs and from lateral margin of the sternum to the midaxillary line .

Axillary tail: a small part of the gland extends up and laterally, pierces the deep fascia at the lower border of the pectoralis major to enter the axilla.

The nipple in the male and preadolescent females: lies opposite to 4th or 5th intercostal space



Structure of the breast

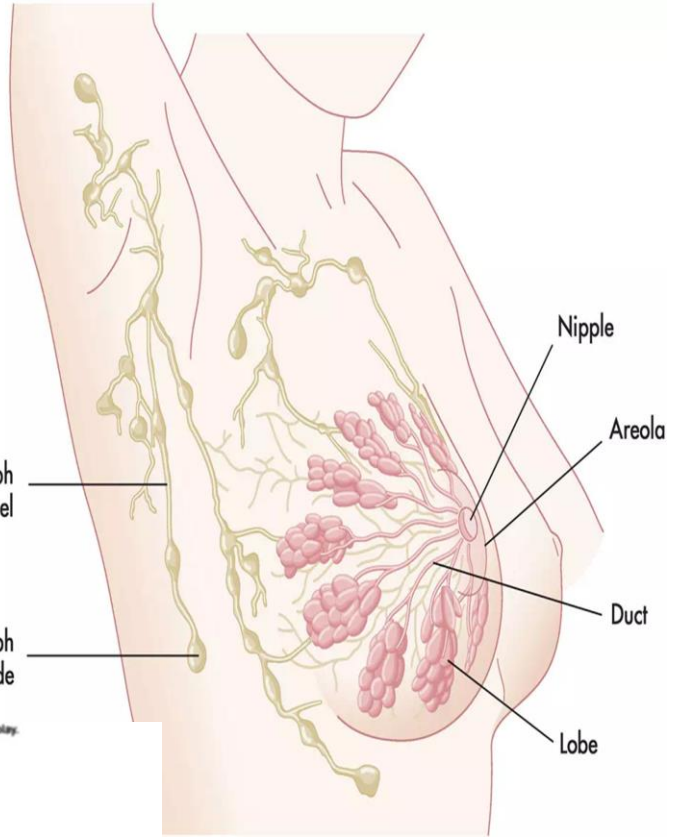
The apex of the cone is the nipple that is surrounded by a colored area of skin called areola.

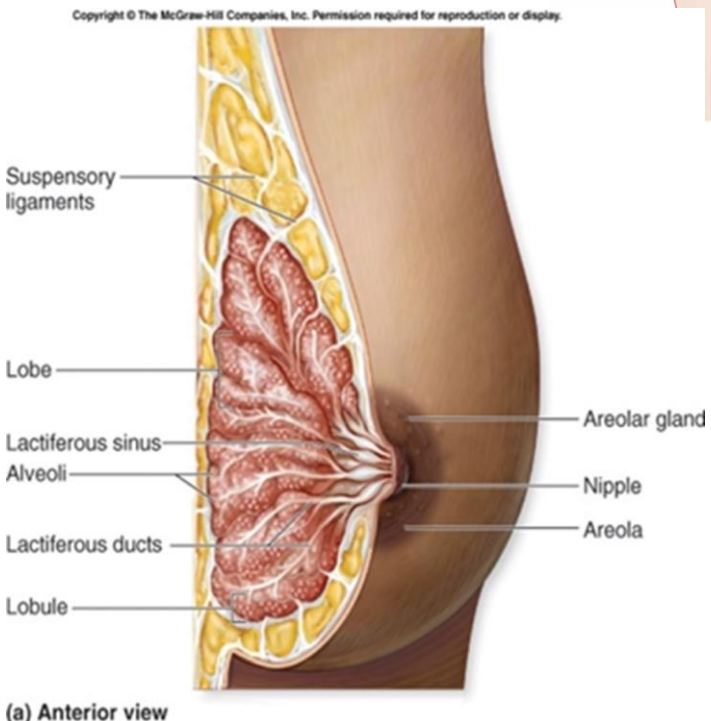
Each breast consists of 15-20 lobes by which radiate out from the nipple.

The main duct from each lobe (lactiferous duct) open separately into the summit of the nipple, and presents a dilation just proximal to its termination called **lactiferous sinus** .

The lobes are separated by fibrous septa extending from deep fascia over the muscles, outwards to the skin and act as **suspensory ligaments**.

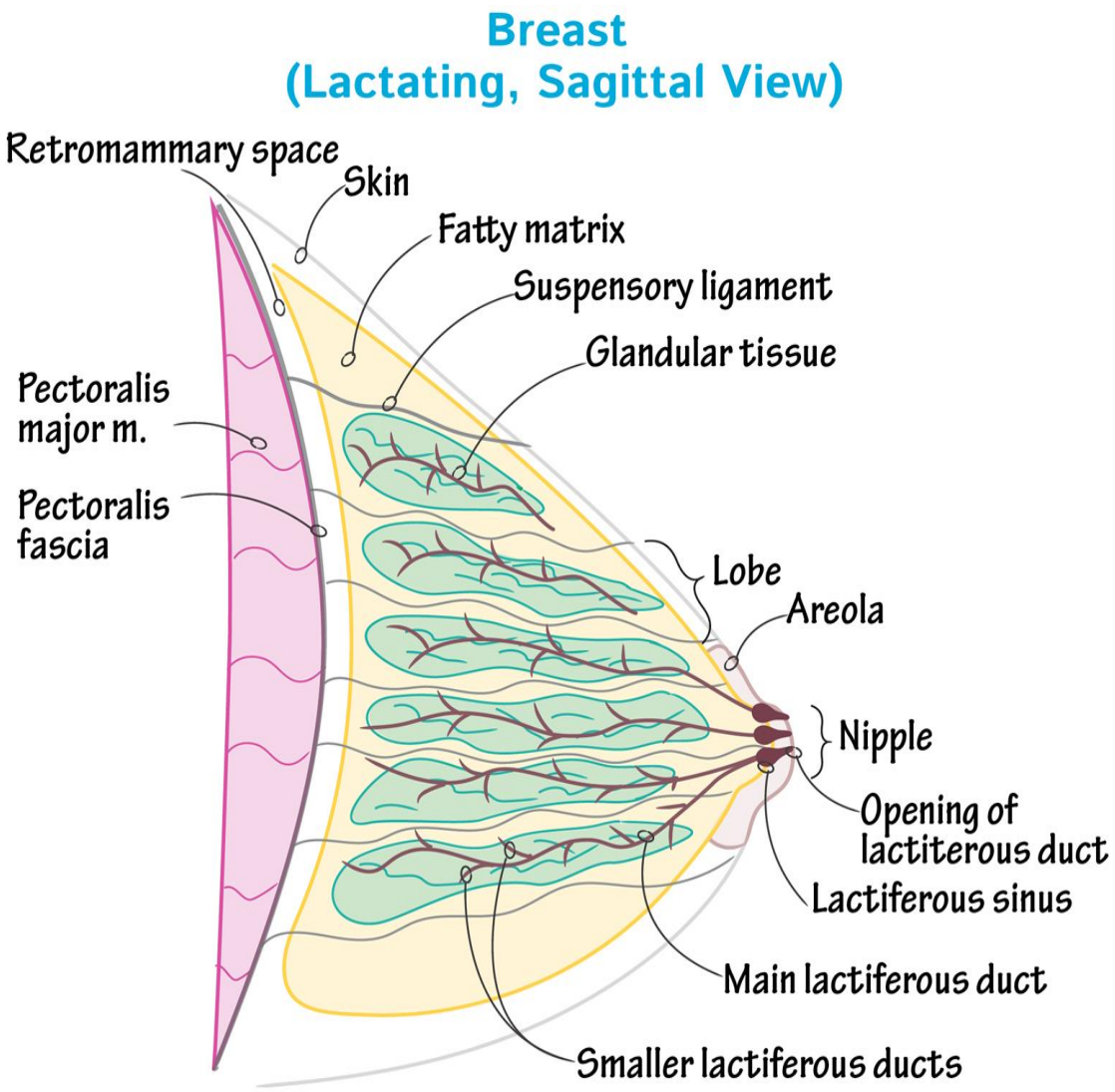
The breast is separated from the underlying muscles by loose areolar tissue, superficial to deep fascia, called retromammary space.





(a) Anterior view

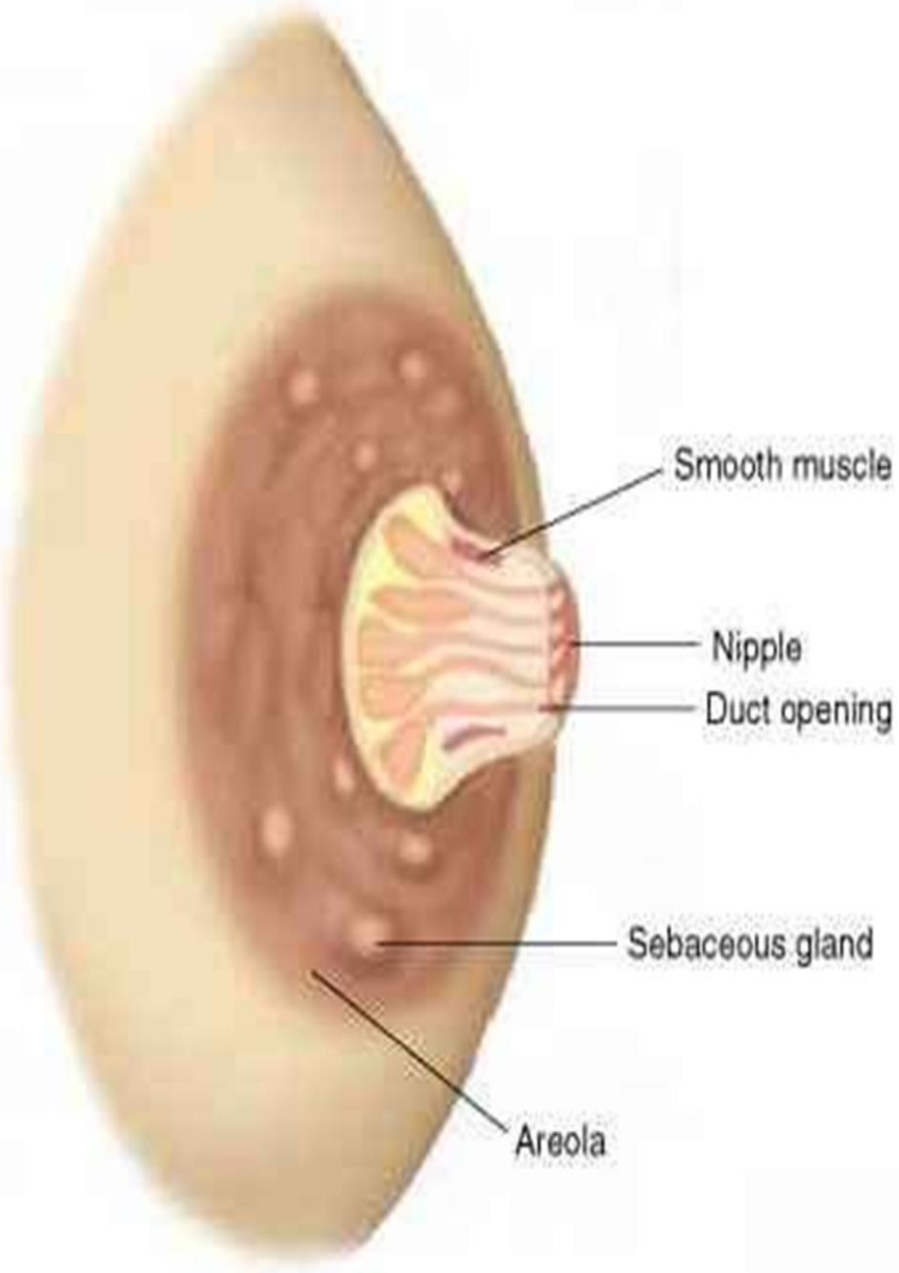
- The lobes are separated by fibrous septa extending from deep fascia over the muscles, outwards to the skin and act as **suspensory ligaments**.
- The breast is separated from the underlying muscles by loose areolar tissue, superficial to deep fascia, called **retromammary space.**



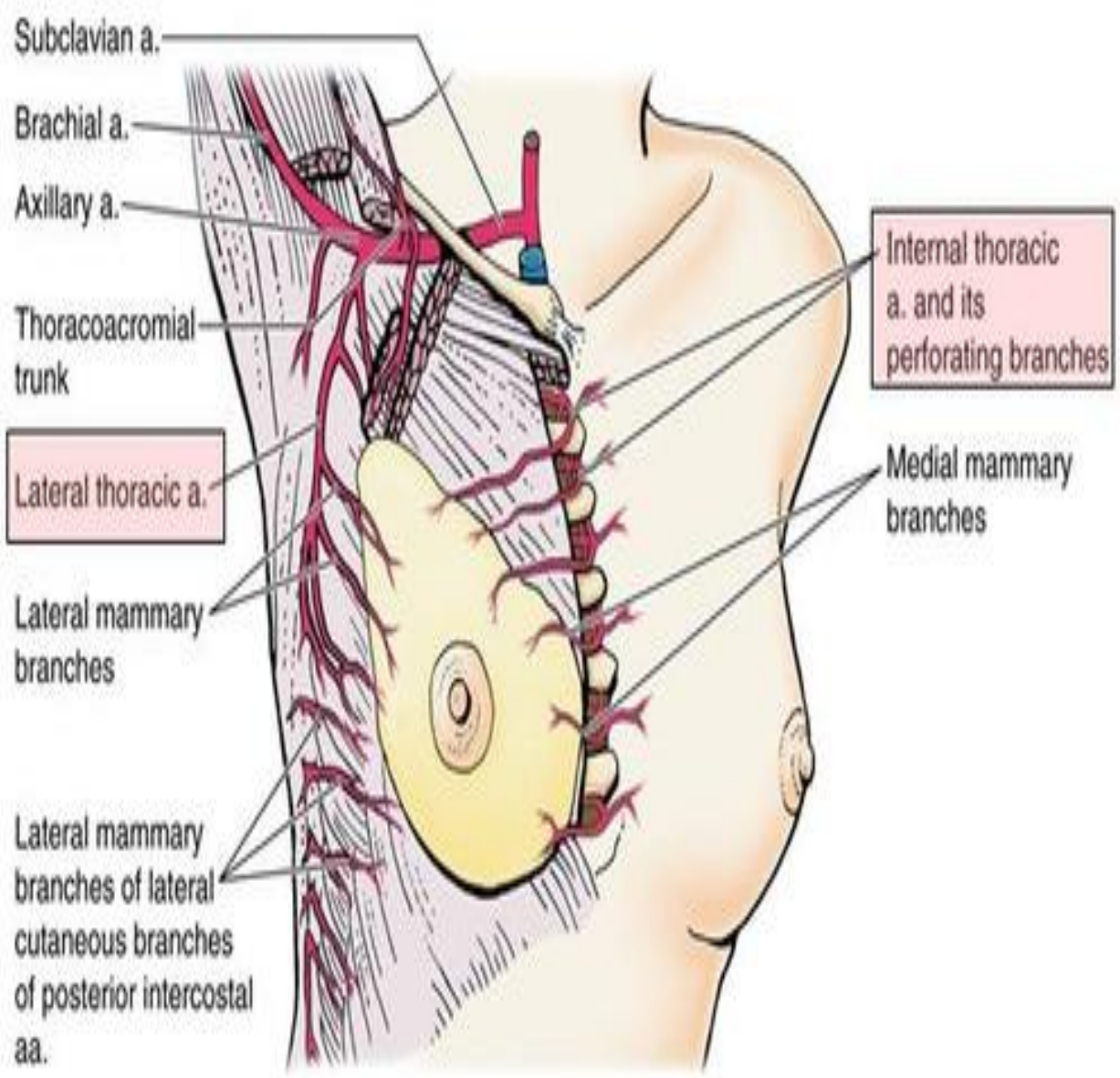
The skin covering the nipple and the areola contains numerous sweat and sebaceous glands that open directly onto the skin surface. The oily secretion of these specialized sebaceous glands acts as a protective lubricant and facilitates latching of the neonate during lactation; the glands are often visible in parous women, arranged circumferentially as small elevations, Montgomery's tubercles, around the areola close to the margin.

- The nipples are composed mostly of circularly arranged **smooth muscle fibers** that compress the lactiferous ducts during lactation and erect the nipples in response to stimulation, as when a baby begins to suckle.

Occasionally, **the nipple may not evert during prenatal development**, in which case it remains permanently retracted and so causes difficulty in suckling.



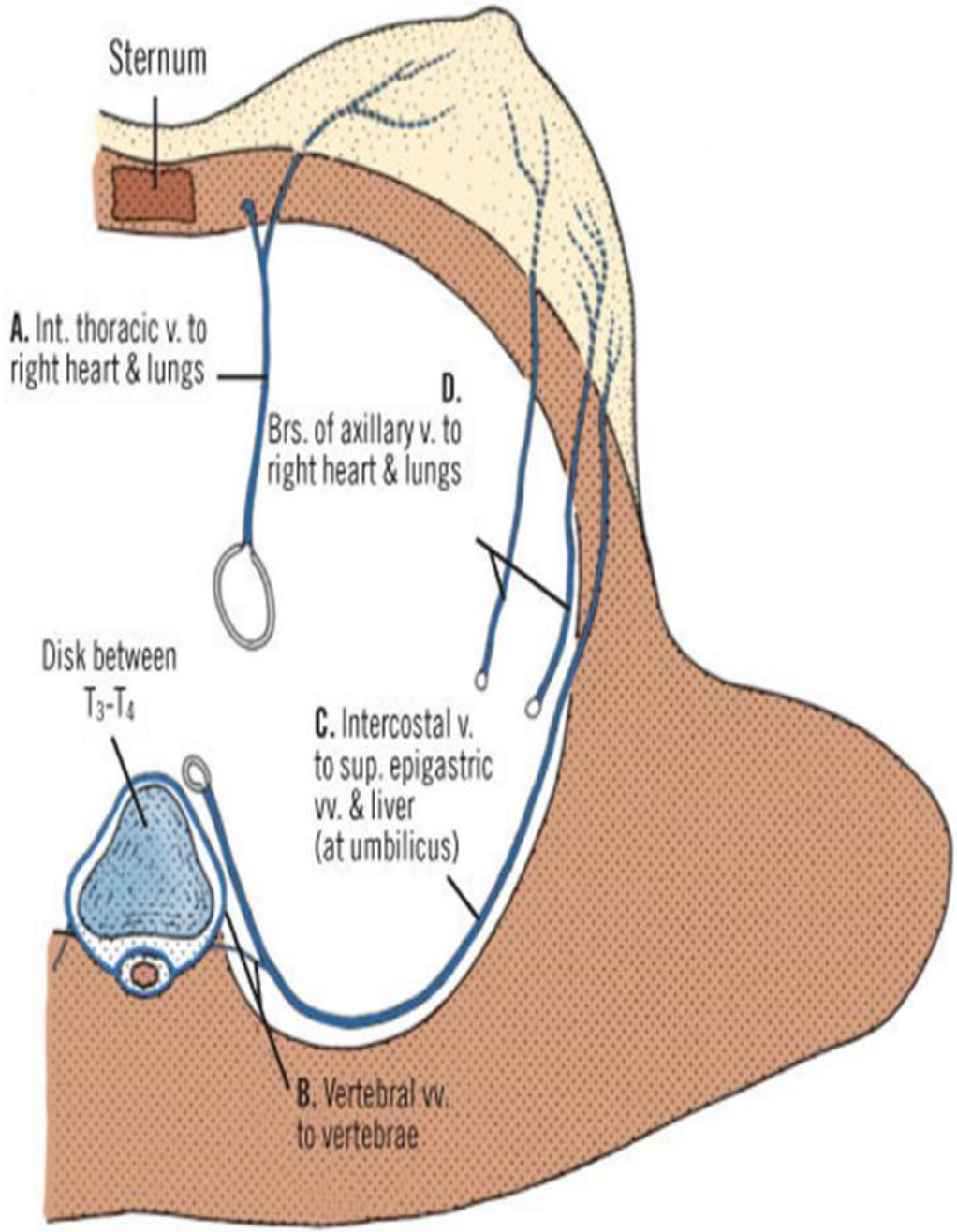
- **Arterial supply:**
- **1. Perforating branches of the internal thoracic artery and anterior intercostals arteries**
- **2. Branches from the lateral thoracic and thoraco-acromial branches of the axillary artery.**



- **Venous drainage:**

– **Through veins accompanying the supplying arteries.**

– **The venous blood of the breast drains into the axillary, internal thoracic, and the third to fifth intercostal veins**



Lymphatic drainage

A- Superficial lymphatics from the skin

to sub-areolar and circumareolar lymphatic plexus.

B- Deep lymphatics :

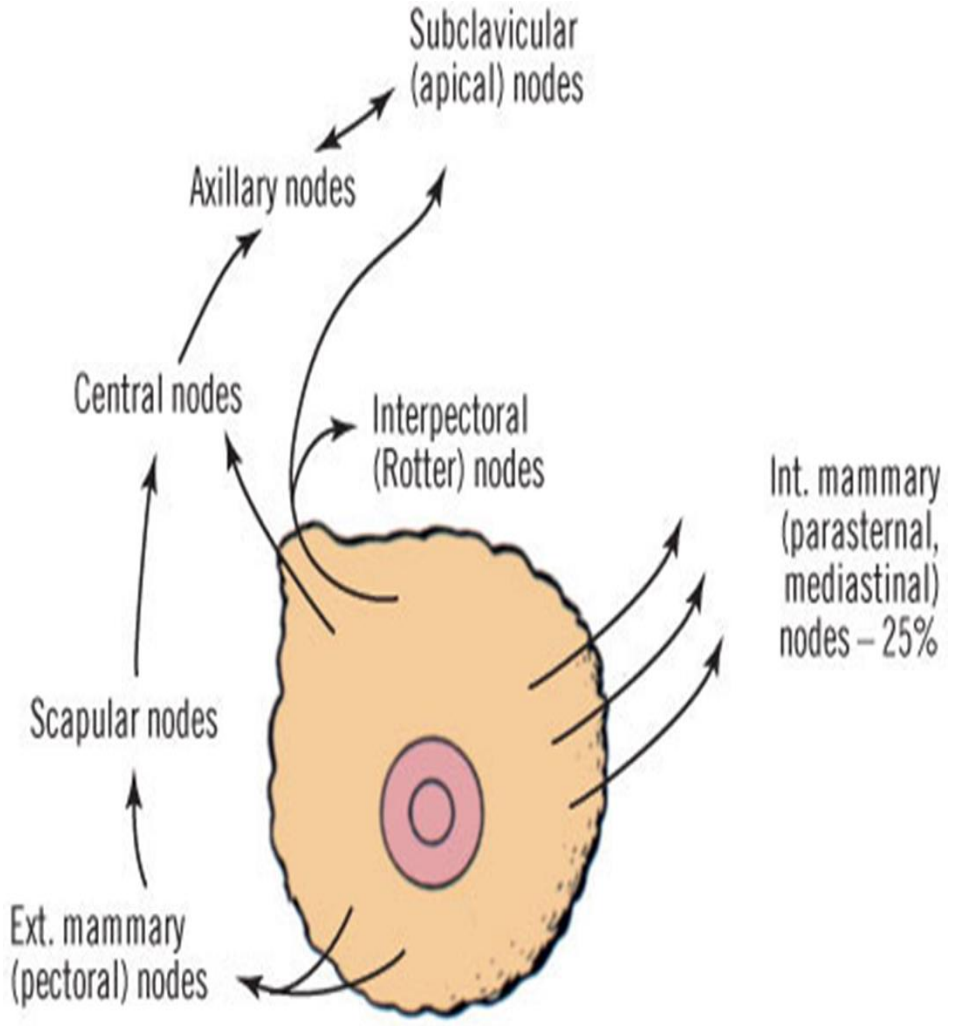
-Upper lateral & central parts of the breast: to apical and central group of axillary lymph nodes.

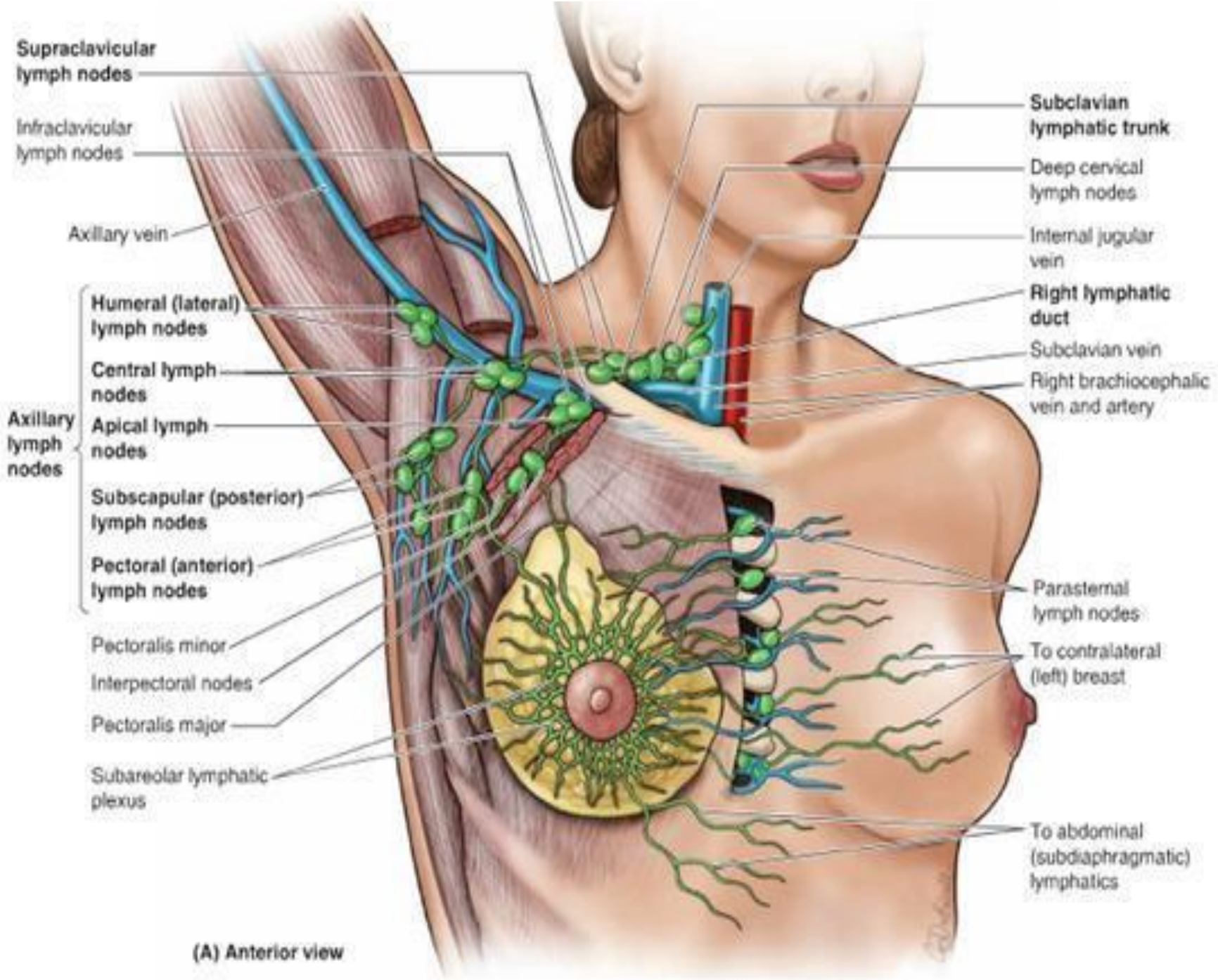
-Lower lateral: to pectoral group of axillary lymph nodes.

-Upper medial: to parasternal (internal mammary) lymph nodes.

-Lower medial: to anterior abdominal wall LNs (rectus sheath and sub-peritoneal plexus).

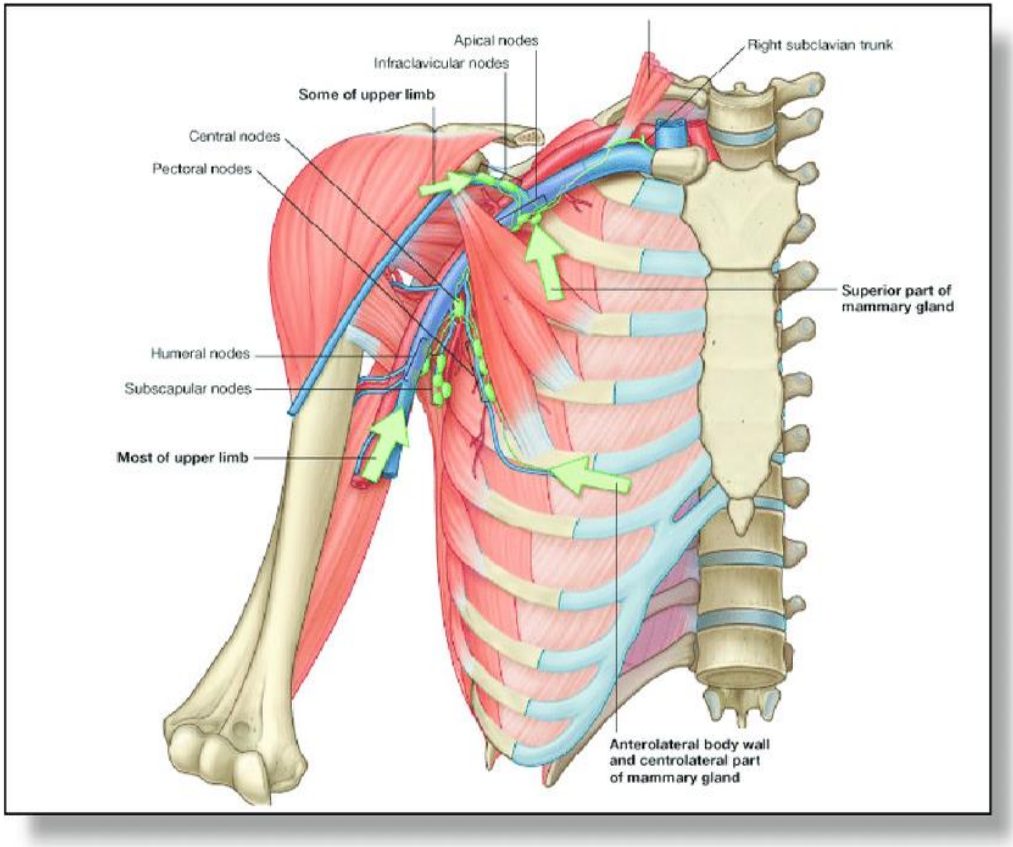
-Tail of the breast: to the posterior (subscapular) group of axillary lymph nodes.



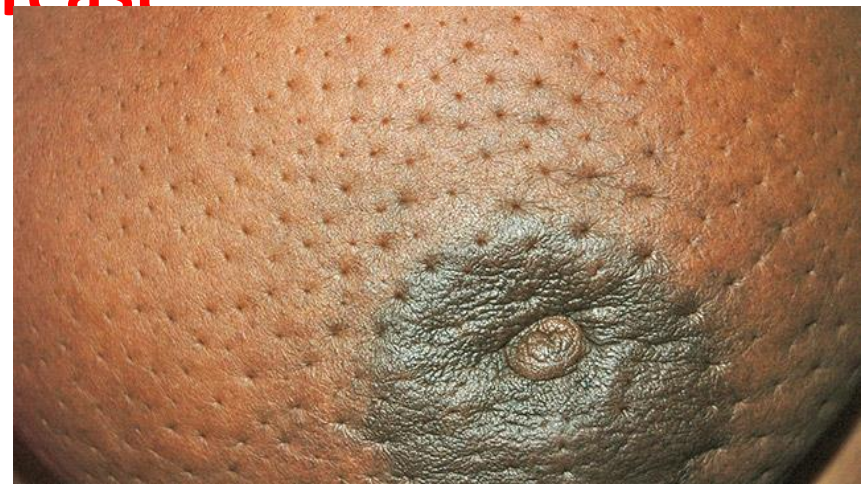

Supraclavicular lymph nodes
Infraclavicular lymph nodes
Axillary vein
Axillary lymph nodes
Humeral (lateral) lymph nodes
Central lymph nodes
Apical lymph nodes
Subscapular (posterior) lymph nodes
Pectoral (anterior) lymph nodes
Pectoralis minor
Interpectoral nodes
Pectoralis major
Subareolar lymphatic plexus
Subclavian lymphatic trunk
Deep cervical lymph nodes
Internal jugular vein
Right lymphatic duct
Subclavian vein
Right brachiocephalic vein and artery
Parasternal lymph nodes
To contralateral (left) breast
To abdominal (subdiaphragmatic) lymphatics
(A) Anterior view

Surgically, the nodes are described in relation to pectoralis minor. Those lying below pectoralis minor are the low nodes **(level 1),** those behind the muscle are the middle group **(level 2),** while the nodes between the upper border of pectoralis minor and the lower border of the clavicle are the upper or apical nodes **(level 3).**

There may be one or two other nodes between pectoralis minor and major; this interpectoral group of nodes are also known as **Rotter's nodes.**

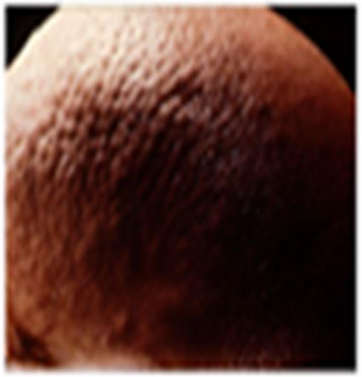


Anatomical analysis of the physical signs of cancer of the breast



. 1. Invasion of the deep fascia (fibrosis of retro-mammary space, leads to fixation of the breast (advanced cases).

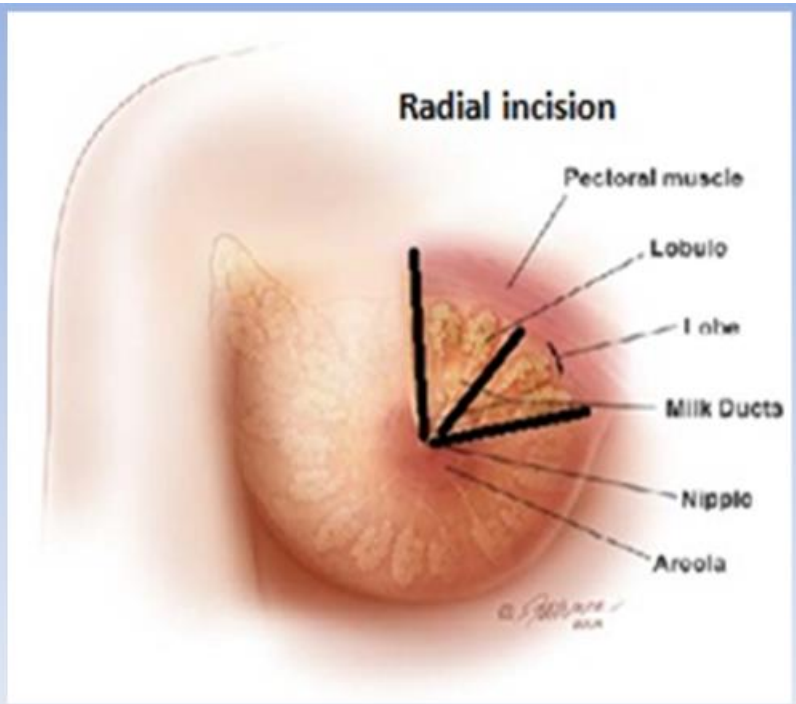
2. Invasion of the suspensory ligaments, leads to shortening of the ligaments -----dimpling of overlying skin.



3. If tumor tissue blocks the deep lymphatics, lymph from the skin cannot be drained away, and the skin becomes pitted and oedematous, resemble texture of the skin of orange (peau d' orange) .

4. Invasion of the lactiferous ducts, leads to shortening of the ducts ----- retracted (inverted) nipple.

II. In case of breast abscess, incision must be done in a radial direction ,to minimize ducts damage




Thank you!