

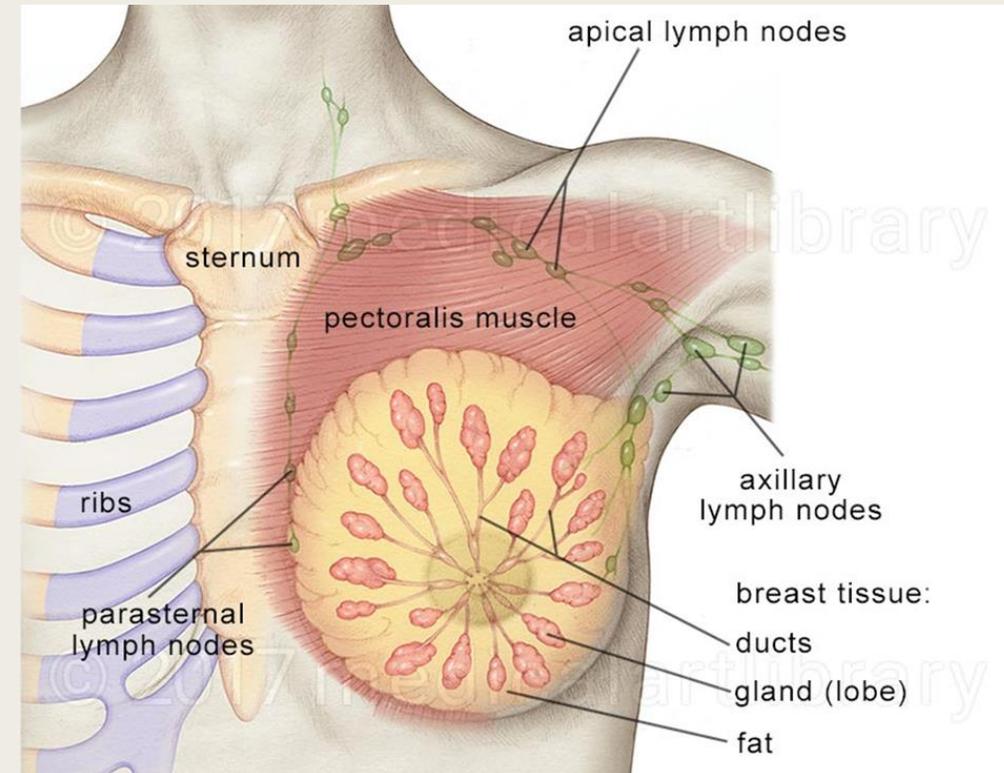
# BREAST AND AXILLA ANATOMY

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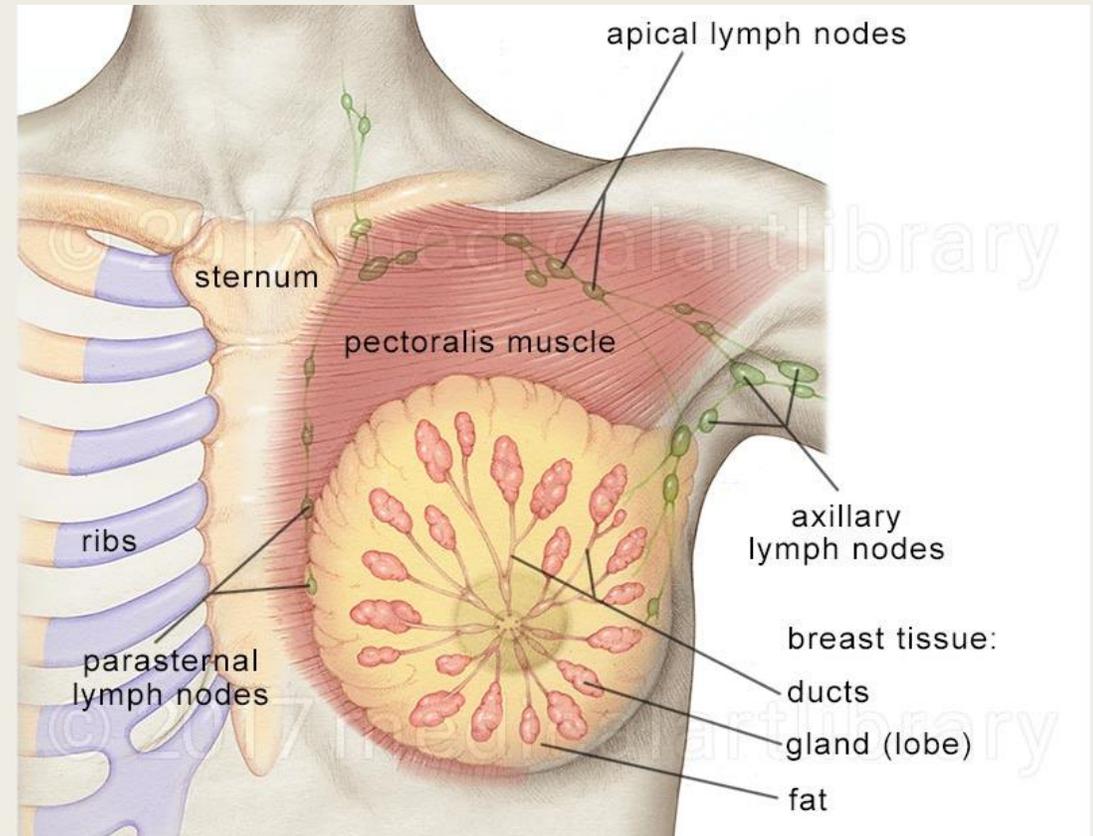
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# Breast topography

- The mound of the adult female breast extends from the 2<sup>nd</sup> rib above to the 6<sup>th</sup> rib below.
- Medially, it borders the lateral edge of the body of the sternum, and laterally it reaches the midaxillary line.
- At its superolateral extremity, the breast tissue projects as a tongue into the axilla along the lower border of the pectoralis major - the axillary tail of Spence.
- The main bulk of the breast tissue is usually localized to its upper outer quadrant. This quadrant is more often implicated in breast cancer and in most benign lesions of breast tissue

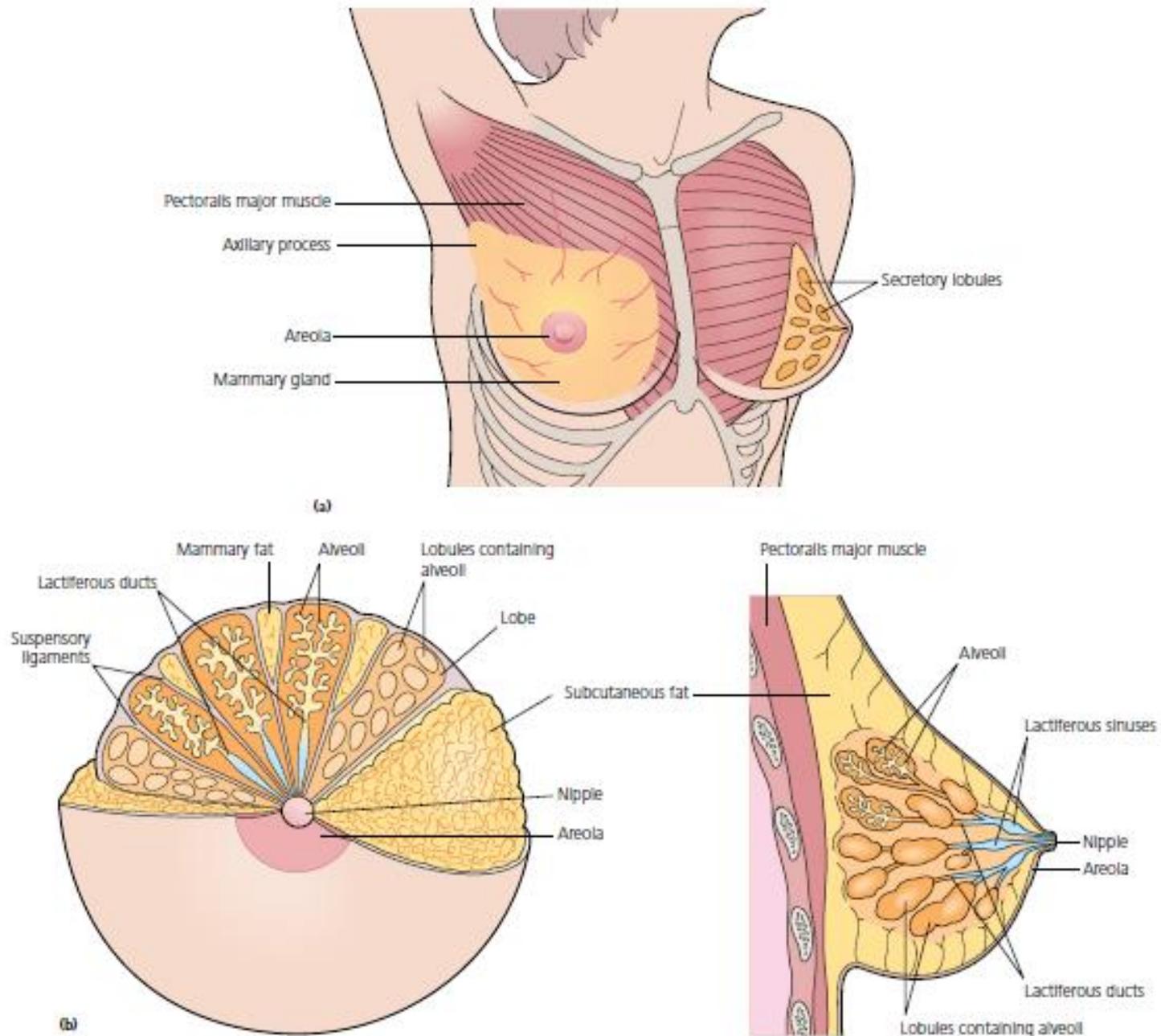


- *About two-thirds of the breast lies on the pectoralis major. Laterally, the breast overlaps on to the serratus anterior, and inferiorly it abuts on to the upper part of the rectus sheath*
- Breast shape and size depend upon genetic, racial and dietary factors, and the age, parity and menopausal status of the individual

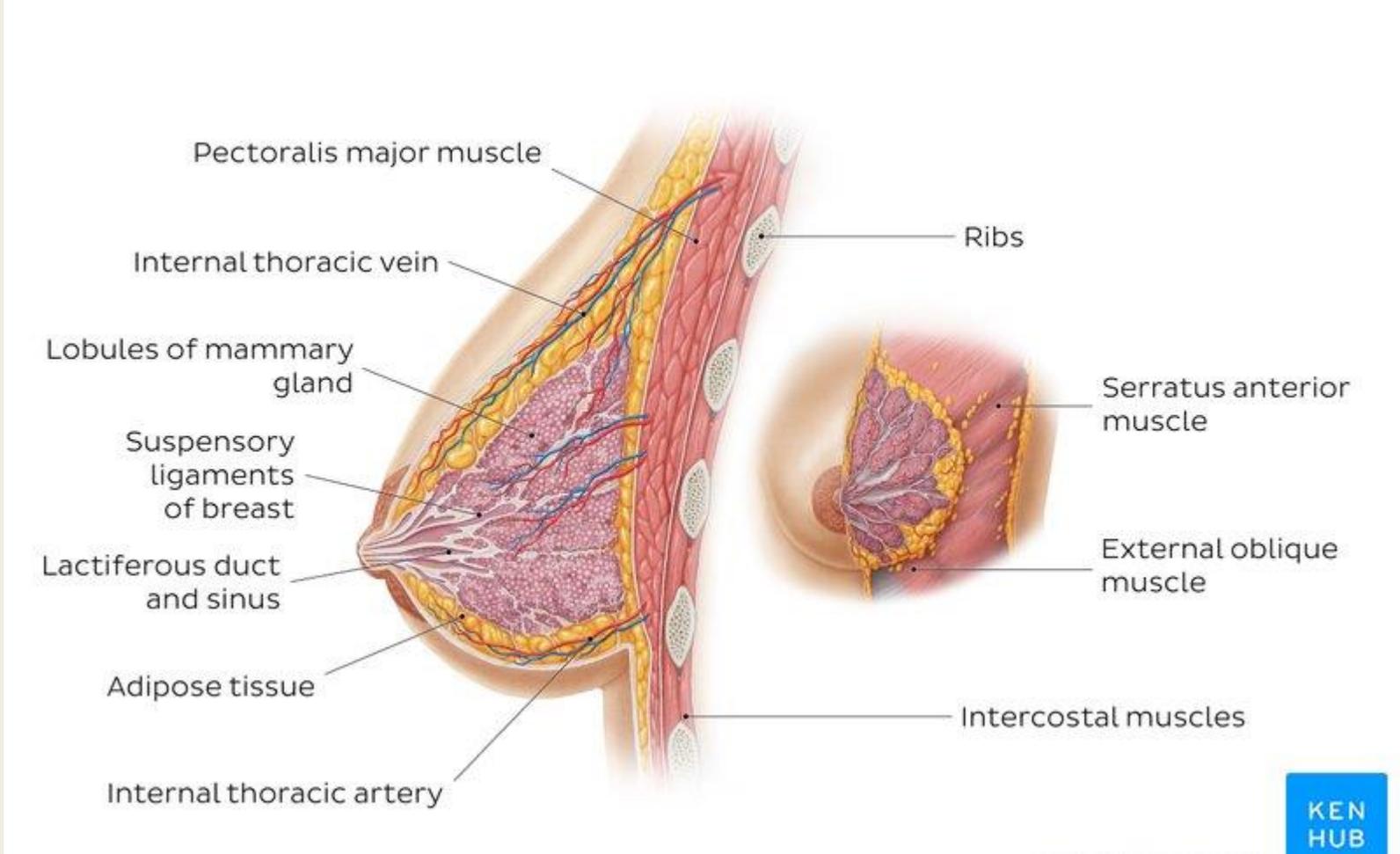


# Breast topography

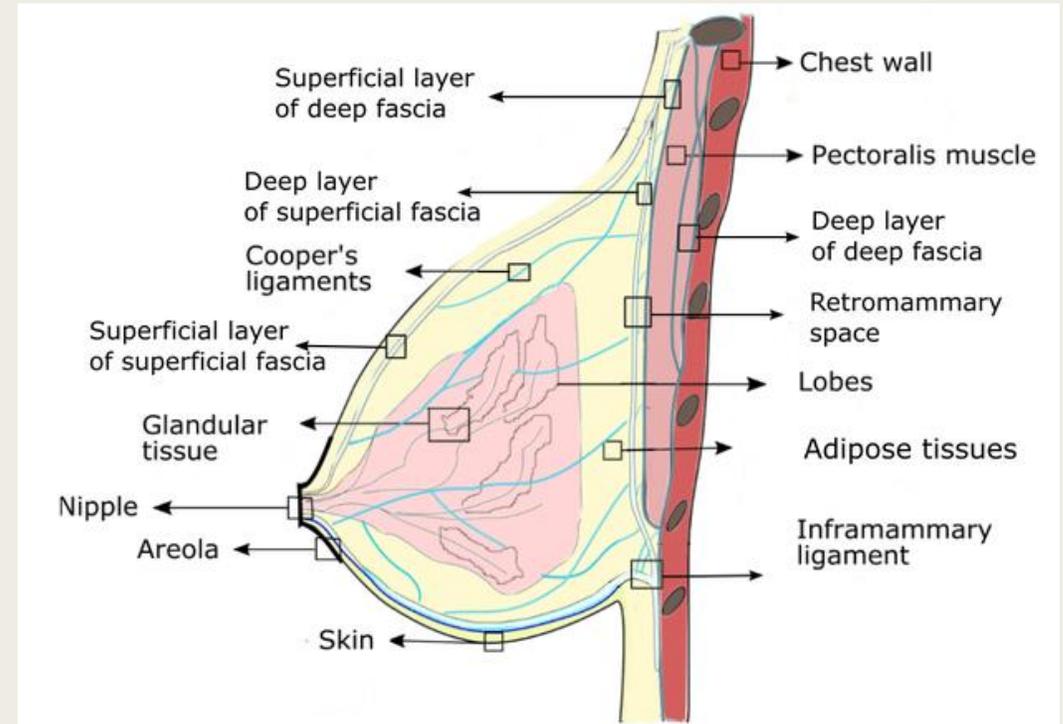
- The nipple is usually situated at the level of the 4<sup>th</sup>-5<sup>th</sup> intercostal space in nulliparous women, but its position is inconstant in relation to the intercostal space when the breasts are pendulous.
- The 15-20 lactiferous ducts open on to the nipple.
- The nipple itself is surrounded by the areola, which contains large sebaceous glands that are often visible to the naked eye – the glands of Montgomery.
- Montgomery's glands, which open at the periphery of the areola as Morgagni tubercles that provide lubrication during lactation
- Both the nipple and the areola consist of keratinizing stratified squamous epithelium with a dense basal melanin deposition



**Figure 37.2** (a) Vascular and lymphatic anatomy of the breast region. (b) Section of the breast: (left) Inner structure of the mammary gland; (right) section of the breast showing milk flow

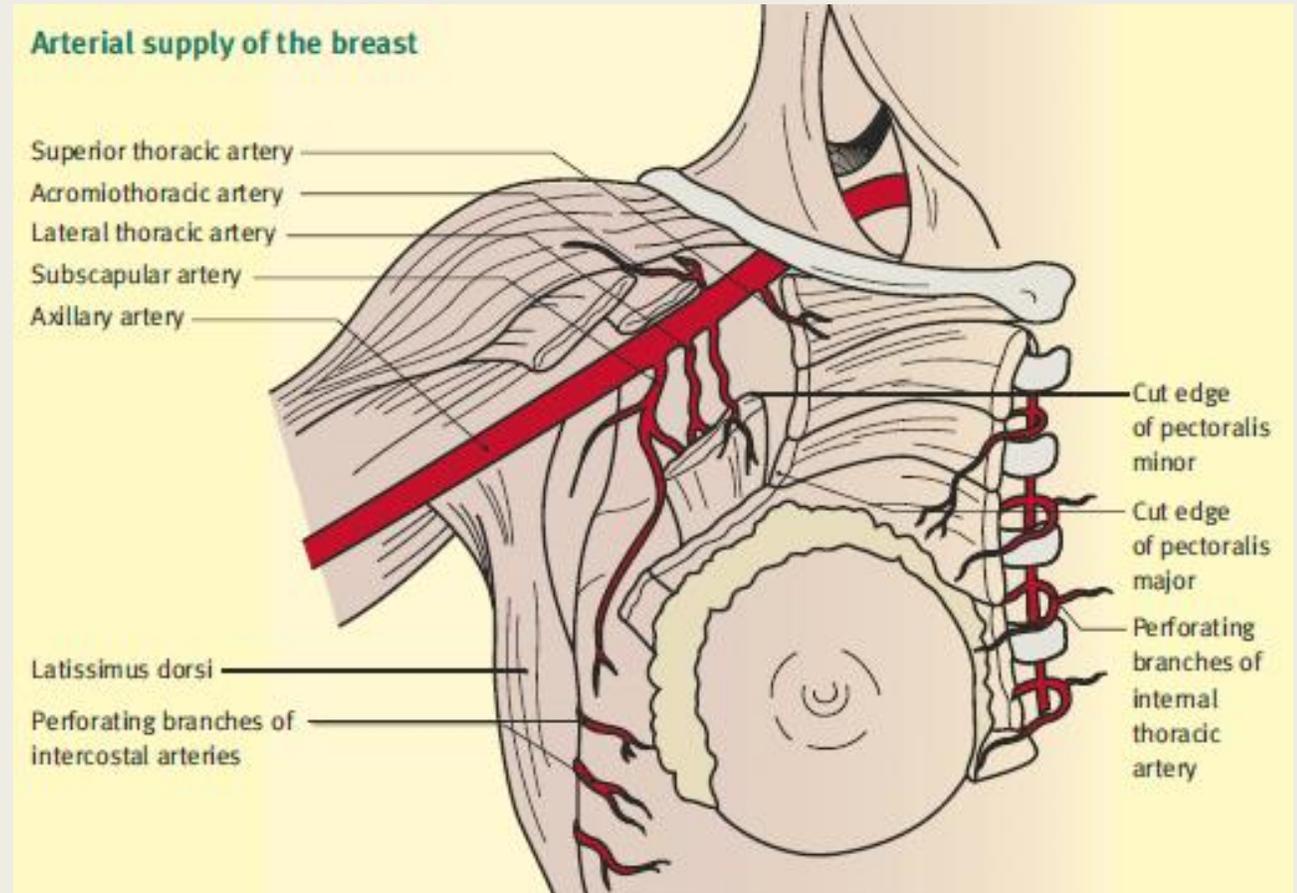


- The fascial relationships of the breast are of practical importance.
- As an ectodermal derivative, the gland lies in a pocket of **superficial fascia**. The superficial layer lies immediately beneath the dermis, a relatively avascular.
- Fibrous processes of this layer of fascia extend to the skin and to the nipple and are more developed over the upper part of the breast, where they form the **suspensory ligament of Cooper**.
- The **deep layer of the superficial fascia** is thicker than the subcutaneous component and covers the deep aspect of the breastplate
- Beneath this sheath is a layer of filmy areolar tissue that allows the breast to move freely on the underlying fascial covering of the pectoralis major and the serratus anterior (**retromammary space**)



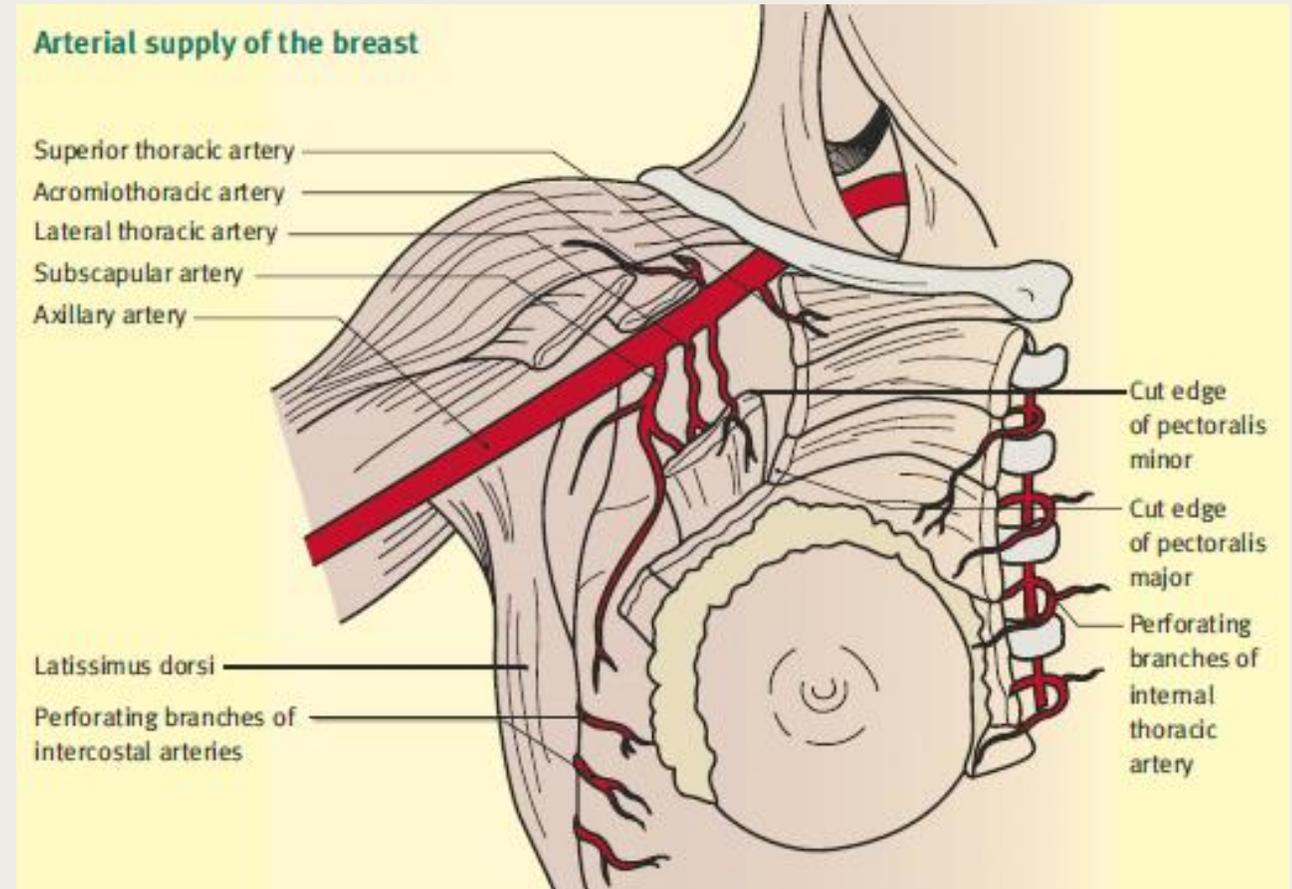
# Blood supply

- The blood supply of the breast is a rich anastomotic network derived from the **axillary, internal thoracic** (or internal mammary in the old nomenclature) and **intercostal arteries**.
- The largest vessels arise from the **internal thoracic artery**, the perforating branches of which pierce the chest wall adjacent to the sternal edge in the first to fourth intercostal spaces (i.e. 2<sup>nd</sup> is the largest)
- The vessel in the second space is usually the largest of these.



# Blood supply

- The four branches from the axillary artery are the:
  - superior thoracic
  - pectoral branch of the acromiothoracic
  - lateral thoracic
  - subscapular
- They are accompanied by the corresponding veins.



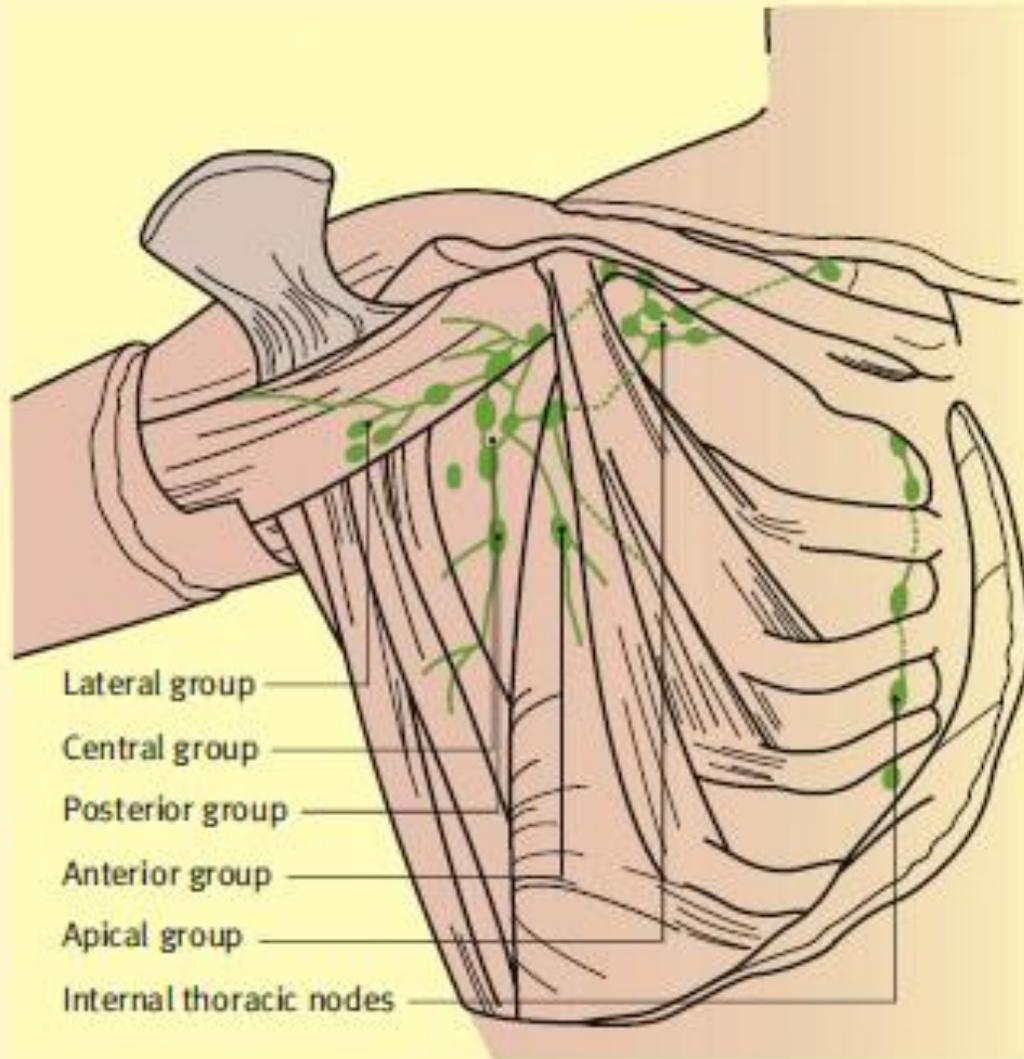
# Innervation of the Breast

- The innervation of the breast is principally by somatic sensory nerves and autonomic nerves accompanying the blood vessels.
- The somatic sensory nerve supply is via the supraclavicular nerves (C3, C4) superiorly and laterally from the lateral branches of the thoracic intercostal nerves.
- The medial aspects of the breast receive supply from the anterior branches of the thoracic intercostal nerves, which penetrate the pectoralis major to reach the breast skin. These lateral and medial cutaneous branches come from the second through to the sixth intercostal nerves.
- The major supply of the upper outer quadrant of the breast is via the intercostobrachial nerve (C8, T1).

# Lymphatic drainage

- The axillary lymph nodes vary in number from 20 to 30 and are divided into five not wholly distinctive anatomical groups.
- Clinicians and pathologists often define metastatic axillary node spread simply into 3 levels
- Efferents from the apical nodes unite into the subclavian trunk. On the left side, this trunk usually drains directly into the thoracic duct. On the right side, the subclavian trunk may empty directly into the jugulosubclavian junction or into a common right lymphatic duct.
- About 75% of all lymphatic drainage of the breast passes to the axillary nodes. The remainder principally drains to the internal thoracic nodes.
- Any part of the breast may drain to either group, though there is a greater tendency for tumors situated in the medial part of the breast to disseminate to the internal thoracic nodes than for tumors in the lateral part of the breast to do so.

## Arrangement of the principal axillary lymph nodes



### Lateral group

- four to six nodes
- posterior and medial to the axillary vein

### Anterior (pectoral) group

- usually four to five nodes
- along the inferior border of pectoralis minor adjacent to the lateral thoracic vessels

### Posterior (subscapular) group

- six to seven nodes
- lie along the subscapular vessels

### Central group

- three or four large nodes
- in the axillary fat pad
- receive efferent lymphatics from the first three groups of nodes
- drain into apical nodes

### Apical group

- six to twelve nodes
- posterior to and above the pectoralis minor along the medial aspect of the axillary vein
- receive efferents from the other lymph node groups, lymphatics running along the cephalic vein, and some direct drainage from the upper periphery of the breast

# Questions?