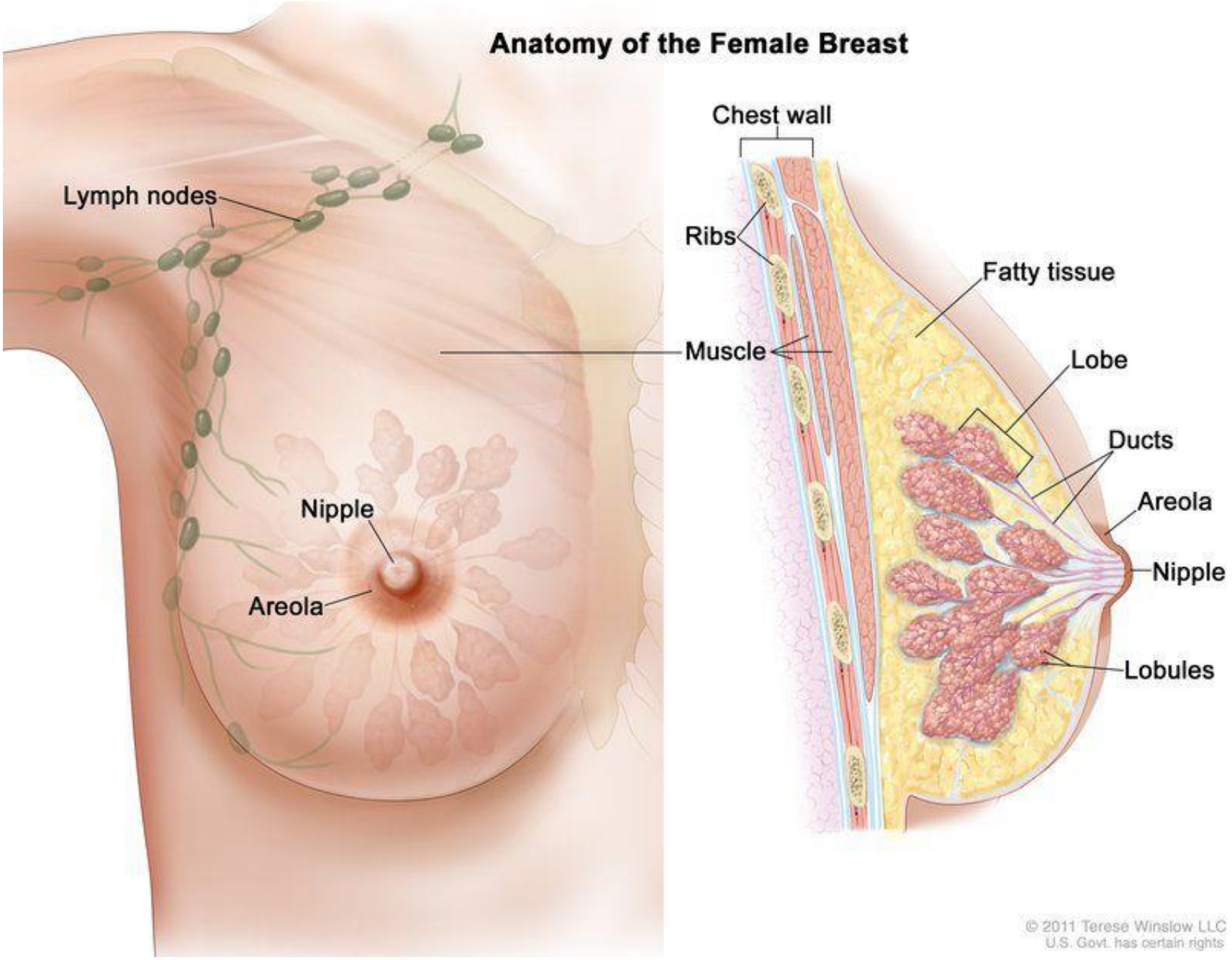
BREAST (Mammary Gland)

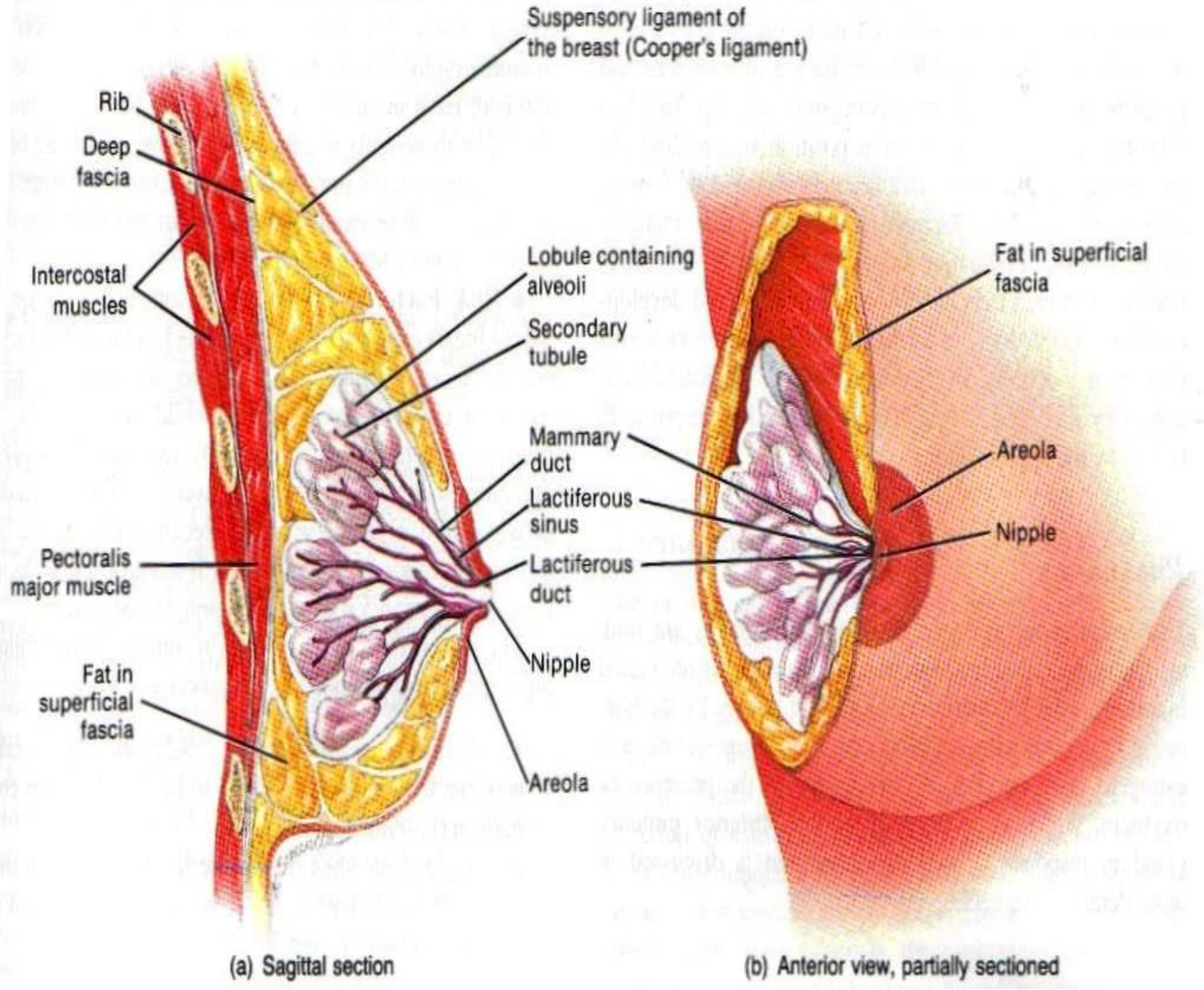
- Both men and women have breasts
- Normally they are well developed only in women .
- The mammary glands in the breasts are accessory to reproduction in women but are rudimentary and functionless in men
- The breasts are the most prominent superficial structures in the anterior thoracic wall, especially in women.

- **It extends transversely from the lateral border of the sternum to the midaxillary line and vertically from the 2nd to 6th ribs.**

- **The mammary glands are in the subcutaneous tissue overlying the pectoralis major and minor muscles.**

Anatomy of the Female Breast




Suspensory ligament of the breast (Cooper's ligament)
Rib
Deep fascia
Intercostal muscles
Lobule containing alveoli
Secondary tubule
Mammary duct
Lactiferous sinus
Lactiferous duct
Nipple
Areola
Pectoralis major muscle
Fat in superficial fascia
Fat in superficial fascia
Areola
Nipple
(a) Sagittal section
(b) Anterior view, partially sectioned

- **The amount of fat surrounding the glandular tissue determines the size of non-lactating breasts.**
- **At the greatest prominence of the breast is the nipple, surrounded by a circular pigmented area of skin, the areola (L. small area)**
- **A small part from its upper lateral quadrant (tail of Spence) pierces the deep fascia to lie in the axilla**

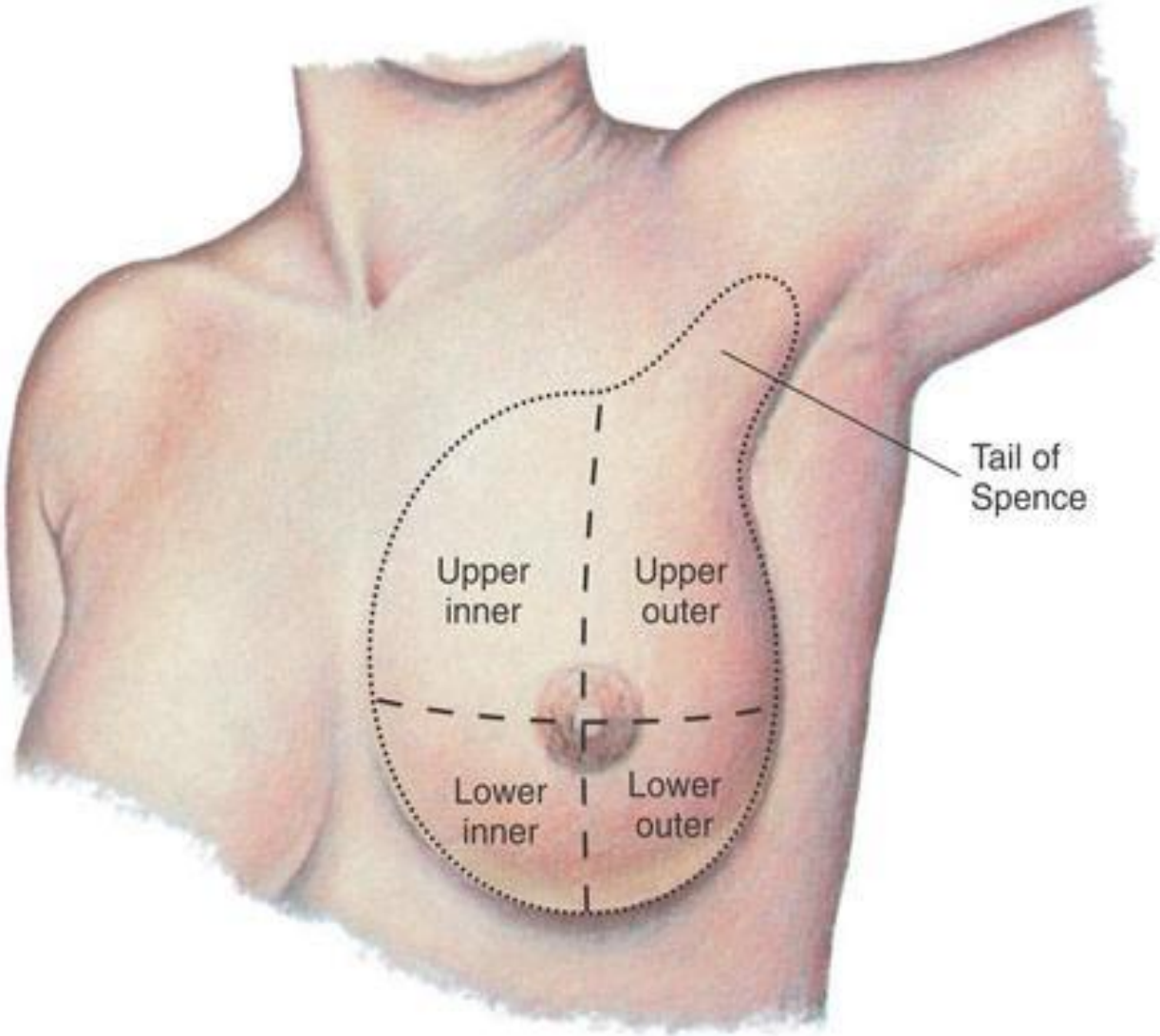
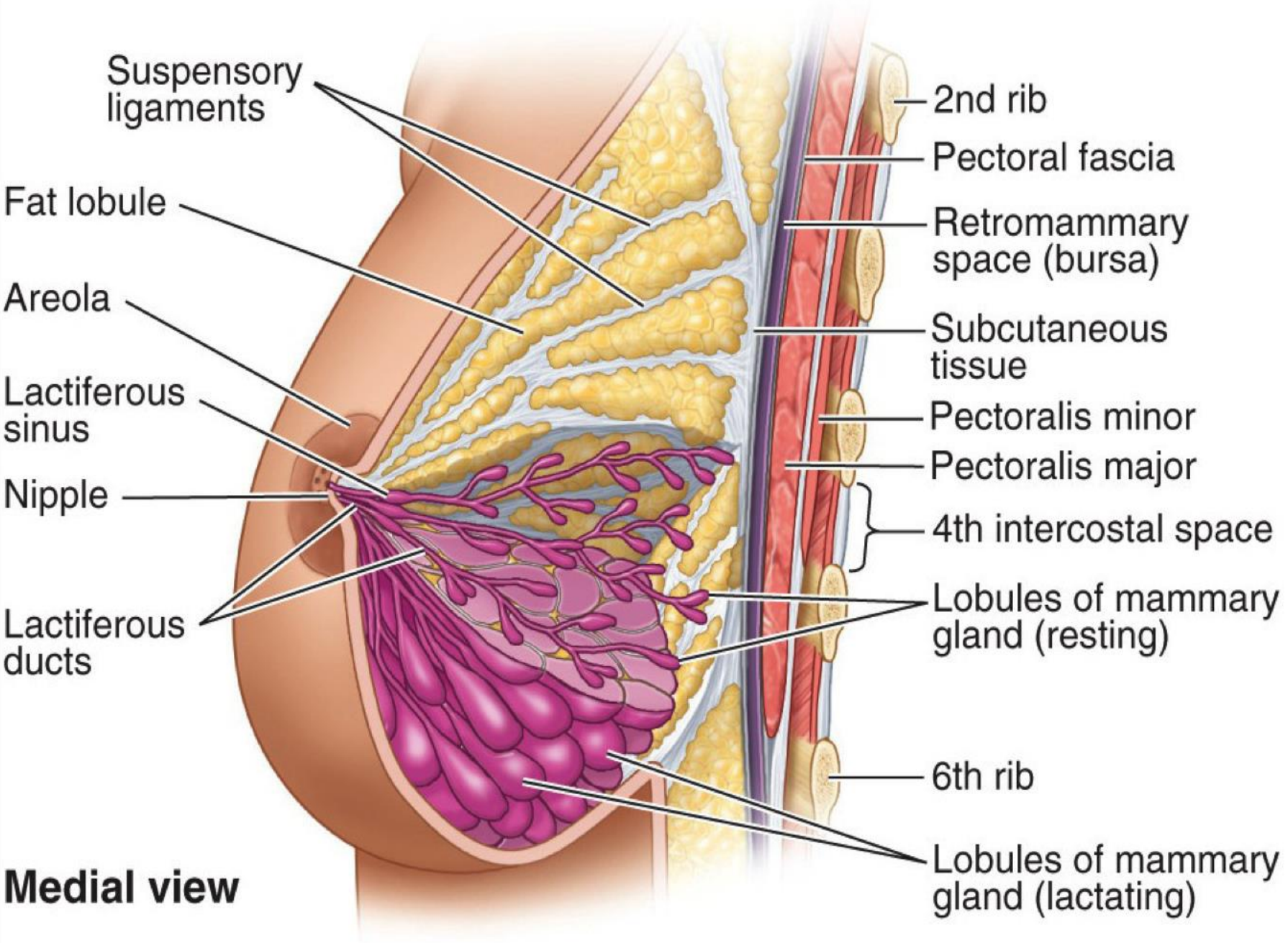


FIG. 30-58 Quadrants of left breast and axillary tail of Spence. (From Seidel HM et al: *Mosby's guide to physical examination*, ed 6, St Louis, 2006, Mosby.)

BREAST QUADRANTS

- **For the anatomical location and description of tumors and cysts, the surface of the breast is divided into four quadrants .**

- **A hard irregular mass was felt in the superior medial quadrant of the breast at the 2 o'clock position, approximately 2.5 cm from the margin of the areola.**



Skin

NIPPLE

- The nipples are conical or cylindrical prominences in the centers of the areolae.
- The nipples have no fat, hair, or sweat glands.
- The tips of the nipples are fissured with the lactiferous ducts opening into them.
- 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 suck.

AREOLA

- **The skin around it is pigmented and is called the areola.**
- **Areola contains modified sebaceous glands, whose oily secretion lubricate the nipple and areola.**

Parenchyma

- **The gland consists of 15–20 lobes, each lobe comprised of numerous acini, is drained by a lactiferous duct. 15–20 lactiferous ducts open on the nipple. Just before its opening there is a slight dilatation, called the lactiferous sinus.**
- **Each duct has a dilated portion, the lactiferous sinus, in which a small droplet of milk accumulates**

Stroma

- **Fibrous septa extend from the condensed fascia behind the gland to the dermis over the gland.**
- **These septa support the glandular tissue and also enclose the fatty tissue which gives rounded contour to the gland.**

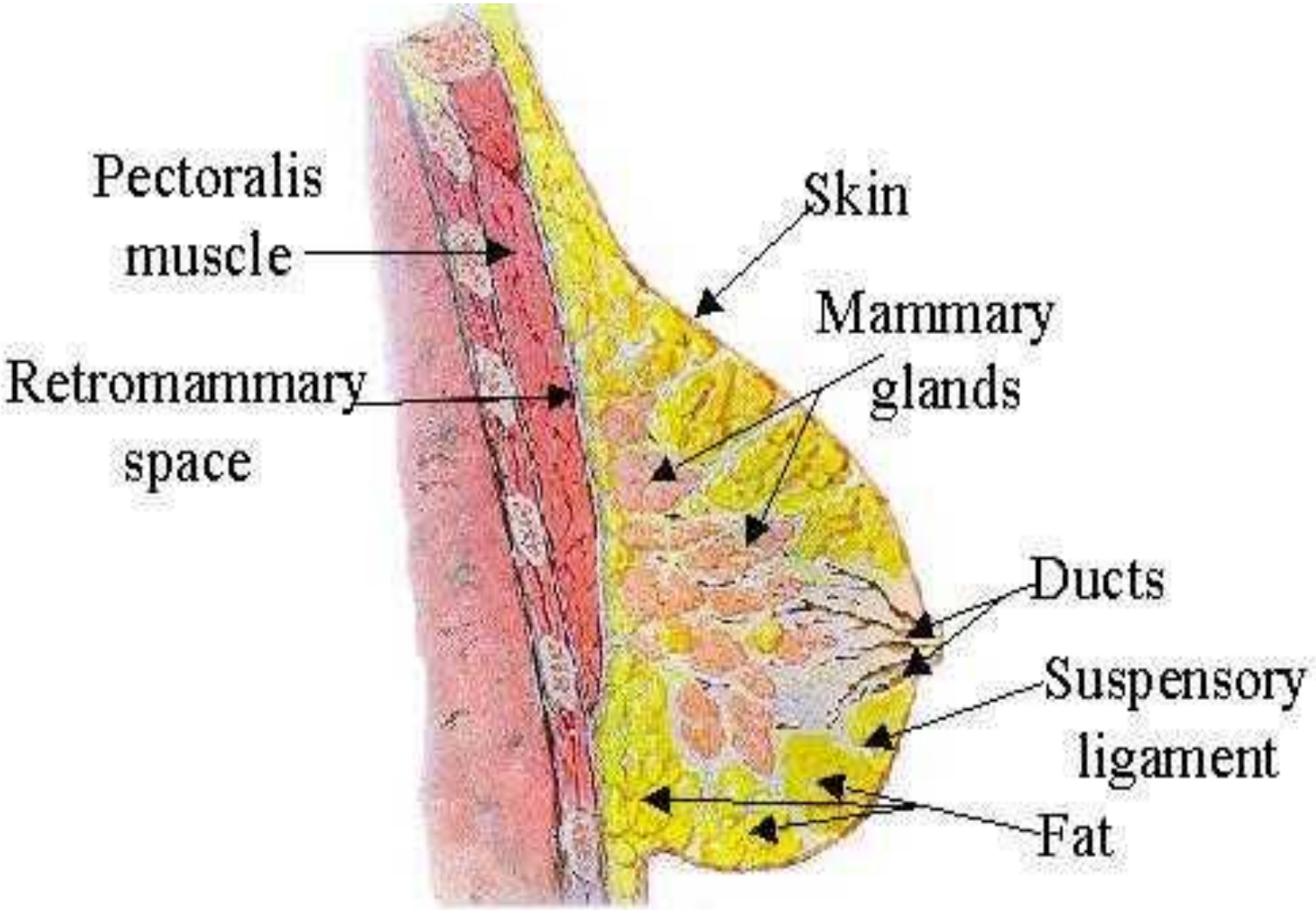


Figure 1. The female breast

Suspensory ligament

- The fascia gets condensed.
- Strands of Fascia connect the dermis of overlying gland to this condensed fascia deep to the gland (breast).
- These are called suspensory ligament of breast (ligament of Cooper)
- These maintain the protuberance of the gland.
- If these strands lose the elasticity, the gland becomes pendulous.
- If afflicted by certain cancer cells, these cause dimpling of the skin over the gland.

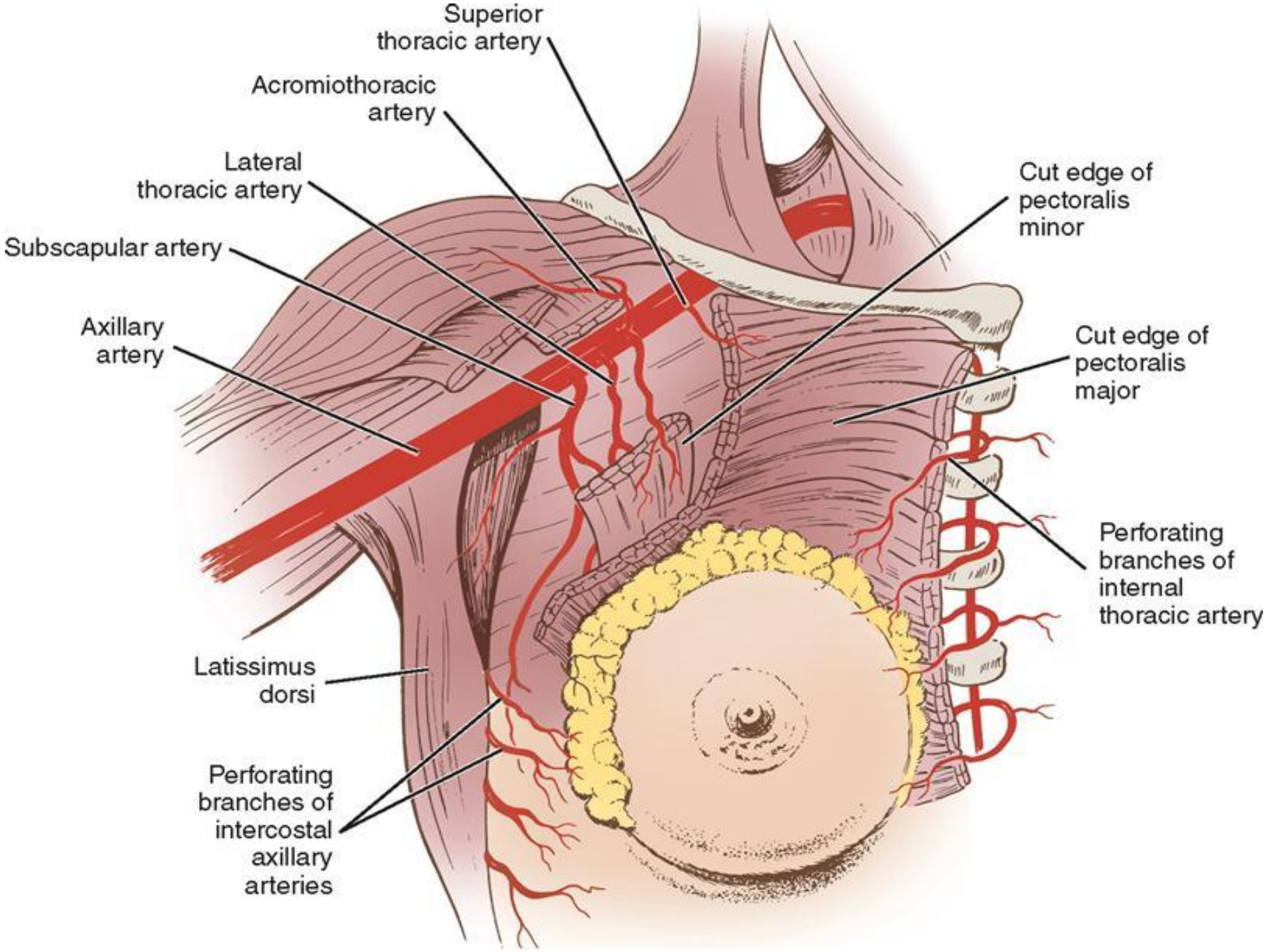
Retromammamary space

- **Between the breast and the pectoral fascia is a loose connective tissue plane or potential space the retromammary space .**

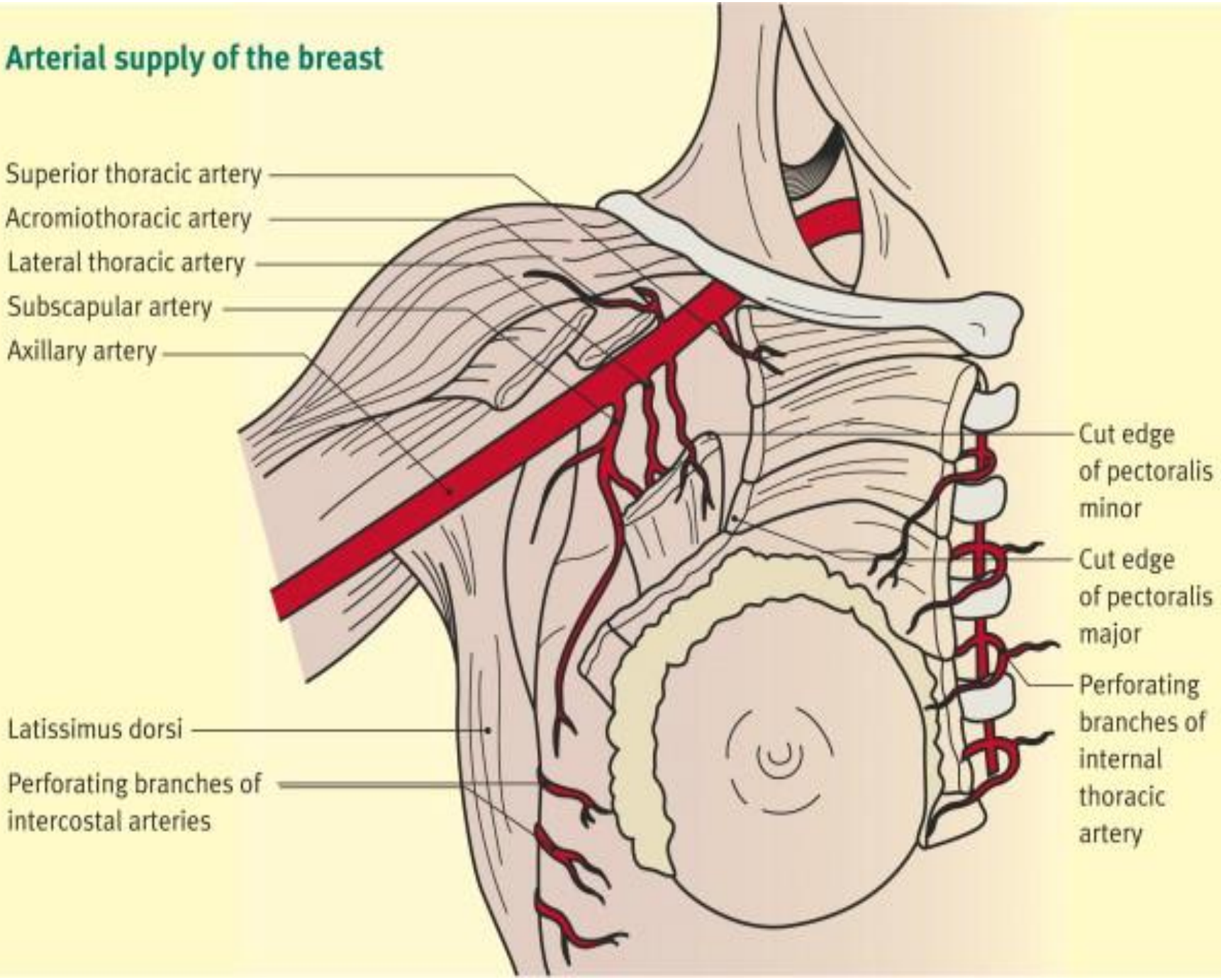
- **Due to this the breast is mobile on pectoralis major**

Arterial supply of the breast

- **Medial mammary branches of perforating branches and anterior intercostal branches of the internal thoracic artery, originating from the subclavian artery.**
- **Lateral thoracic and thoracoacromial arteries, branches of the axillary artery.**
- **Posterior intercostal arteries, branches of the thoracic aorta in the 2nd, 3rd, and 4th intercostal spaces.**


Superior thoracic artery
Acromiothoracic artery
Lateral thoracic artery
Subscapular artery
Axillary artery
Latissimus dorsi
Perforating branches of intercostal axillary arteries
Cut edge of pectoralis minor
Cut edge of pectoralis major
Perforating branches of internal thoracic artery

Arterial supply of the breast



Venous Drainage

- **The venous drainage of the breast is mainly to the axillary vein, but there is some drainage to the internal thoracic vein.**

Lymph Drainage

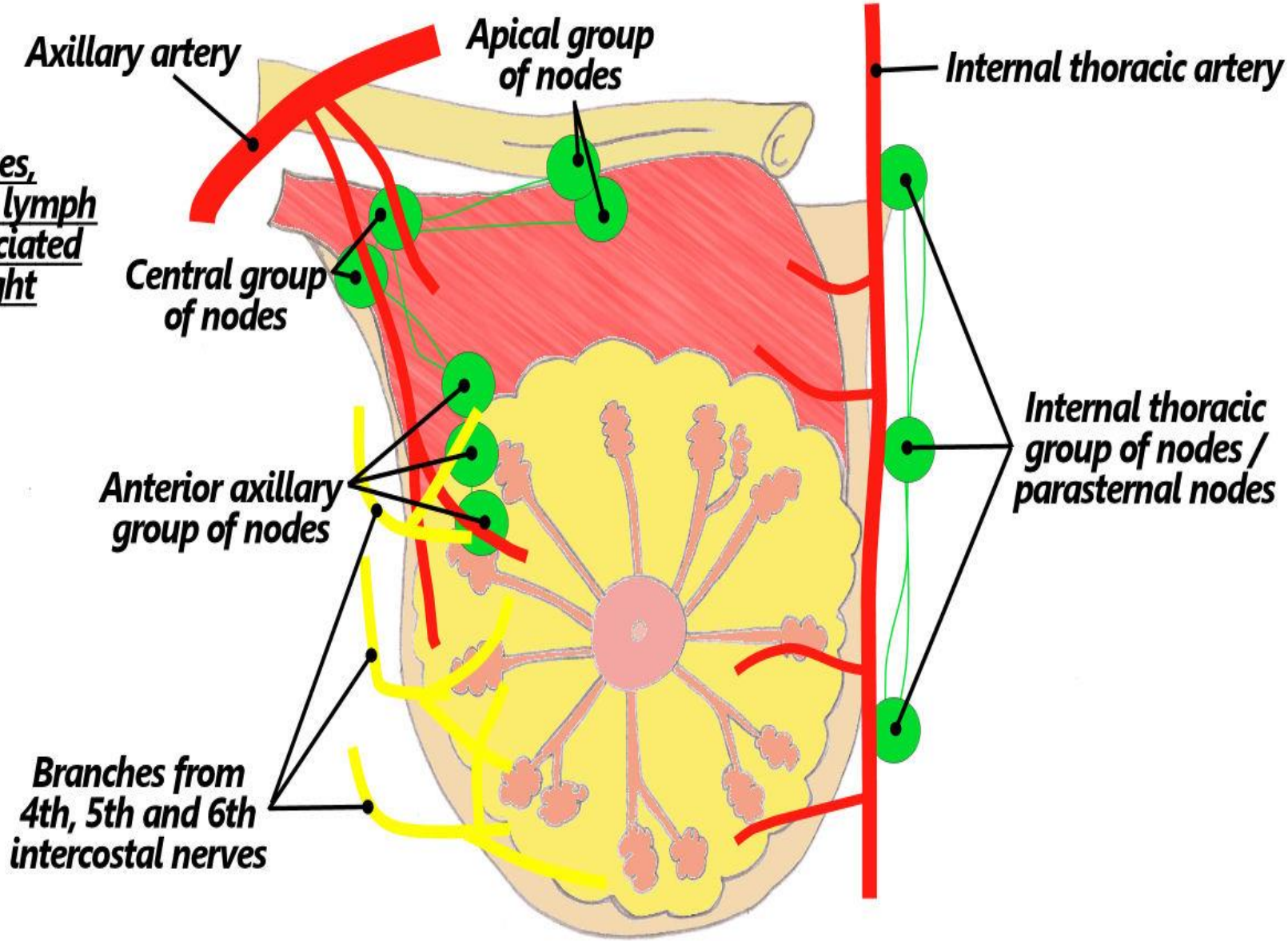
- **The lymphatic drainage of the breast is important because of its role in the metastasis of cancer cells.**
- **Lymph passes from the nipple, areola, and lobules of the gland to the subareolar lymphatic plexus From this plexus:**
- **Most lymph (> 75%), especially from the lateral breast quadrants, drains to the axillary lymph nodes,**

- **Most of the remaining lymph, particularly from the medial breast quadrants, drains to the parasternal lymph nodes or to the opposite breast, whereas lymph from the inferior quadrants may pass deeply to abdominal lymph nodes (subdiaphragmatic inferior phrenic lymph nodes).**
- **Lymph from the skin of the breast, except the nipple and areola, drains into the ipsilateral axillary, inferior deep cervical, and infraclavicular lymph nodes and also into the parasternal lymph nodes of both sides.**

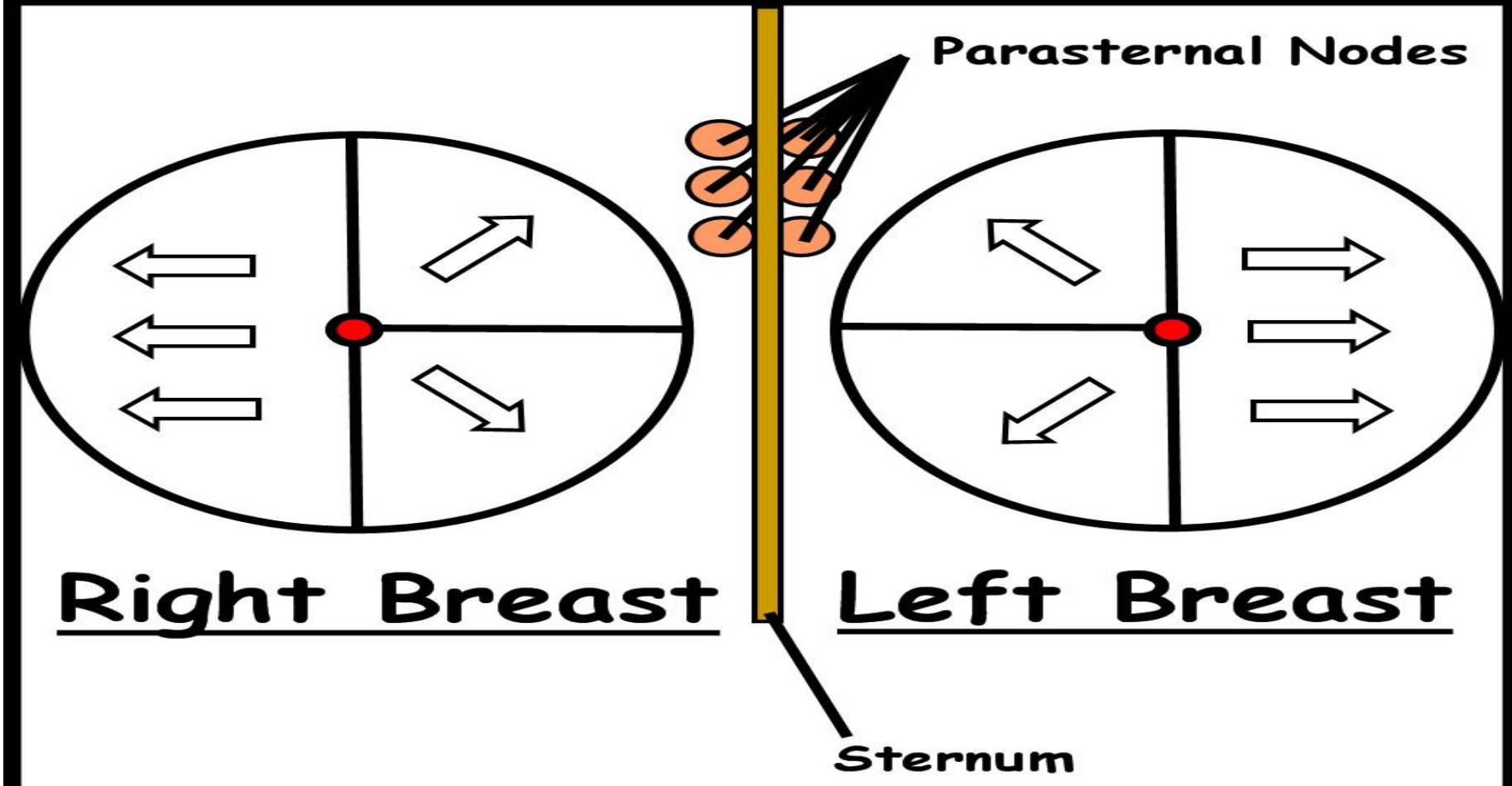
- **Lymph from the axillary nodes drains into clavicular (infraclavicular and supraclavicular) lymph nodes and from them into the subclavian lymphatic trunk.**

- **The termination of these lymphatic trunks varies right lymphatic duct on the right side or entering the termination at the thoracic duct on the left side.**

Main arteries, nerves and lymph nodes associated with the right breast



Breast Lymph Drainage



*Always start away from the areola and work your way in
*1-5 ounces of pressure
*Teach the female client to perform this themself

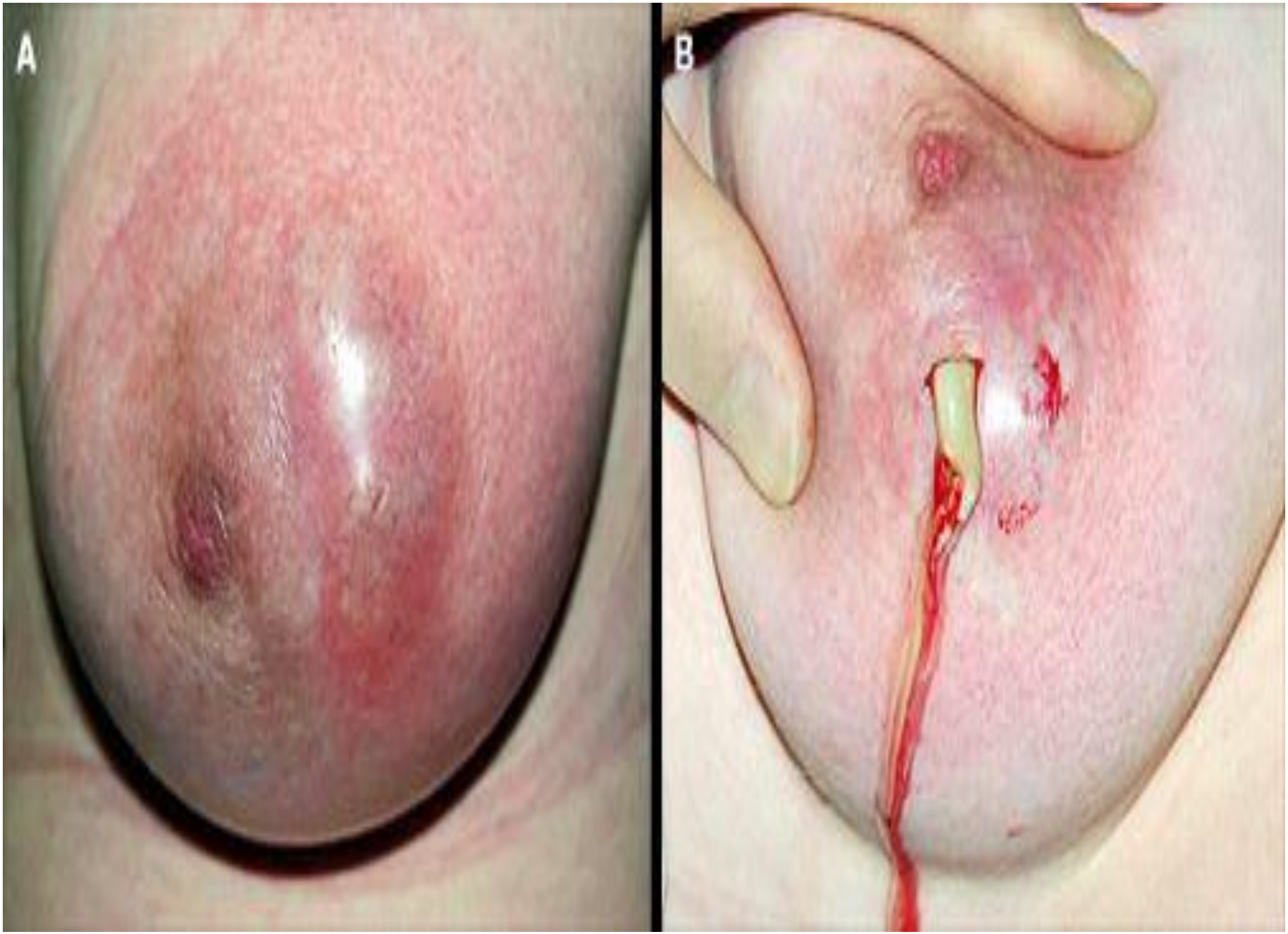
Ryan Jay Hoyme

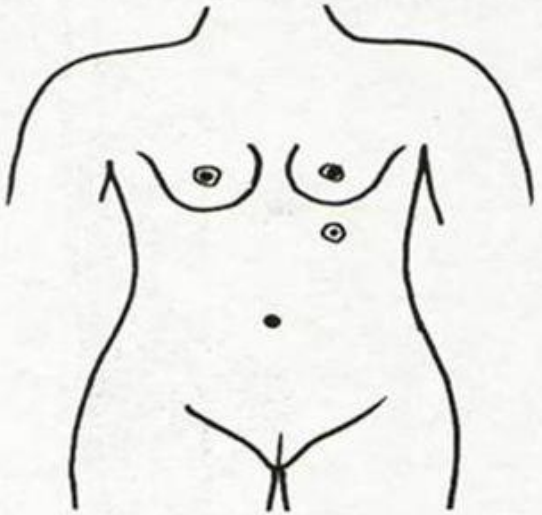
Nerves of the Breast

- **The nerves of the breast derive from anterior and lateral cutaneous branches of the 4 to 6 intercostal nerves**

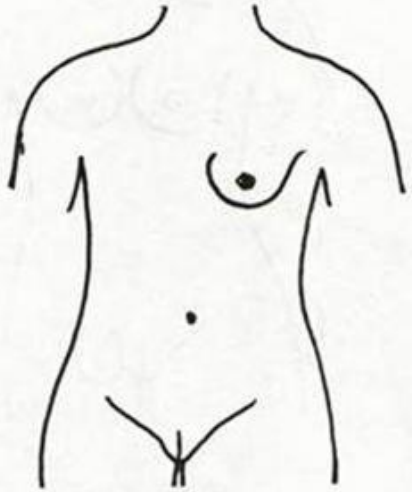
Clinical anatomy

- **Breast Abscess-** In breast abscess, the incision is to be given radially to avoid injury to the lactiferous ducts.
- **Polymastia**- Extra breast may appear with or without nipples or areola.
- **Polythelia**- Additional nipple occurring in human
- **Amastia** - Absence or underdevelopment of the mammary gland
- **Gynecomastia-** Slight temporary enlargement of the breasts is a normal occurrence (frequency = 70%) in males at puberty. Breast hypertrophy in males after puberty called gynecomastia

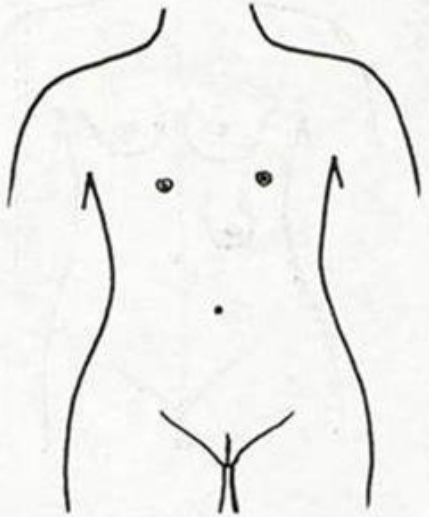

A
B



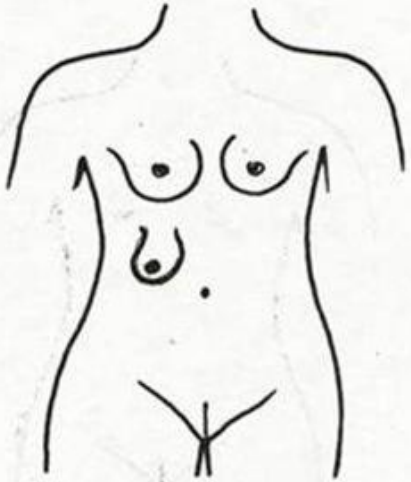
Polythelia



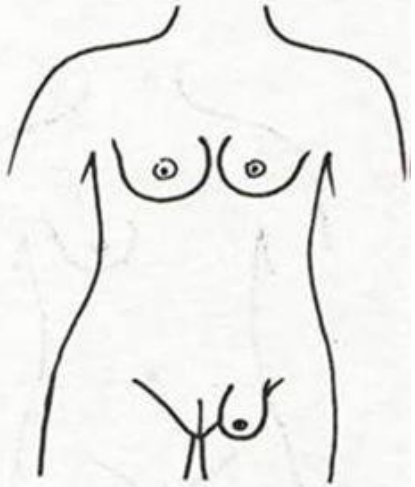
Unilateral amastia



Bilateral amastia



Polymastia



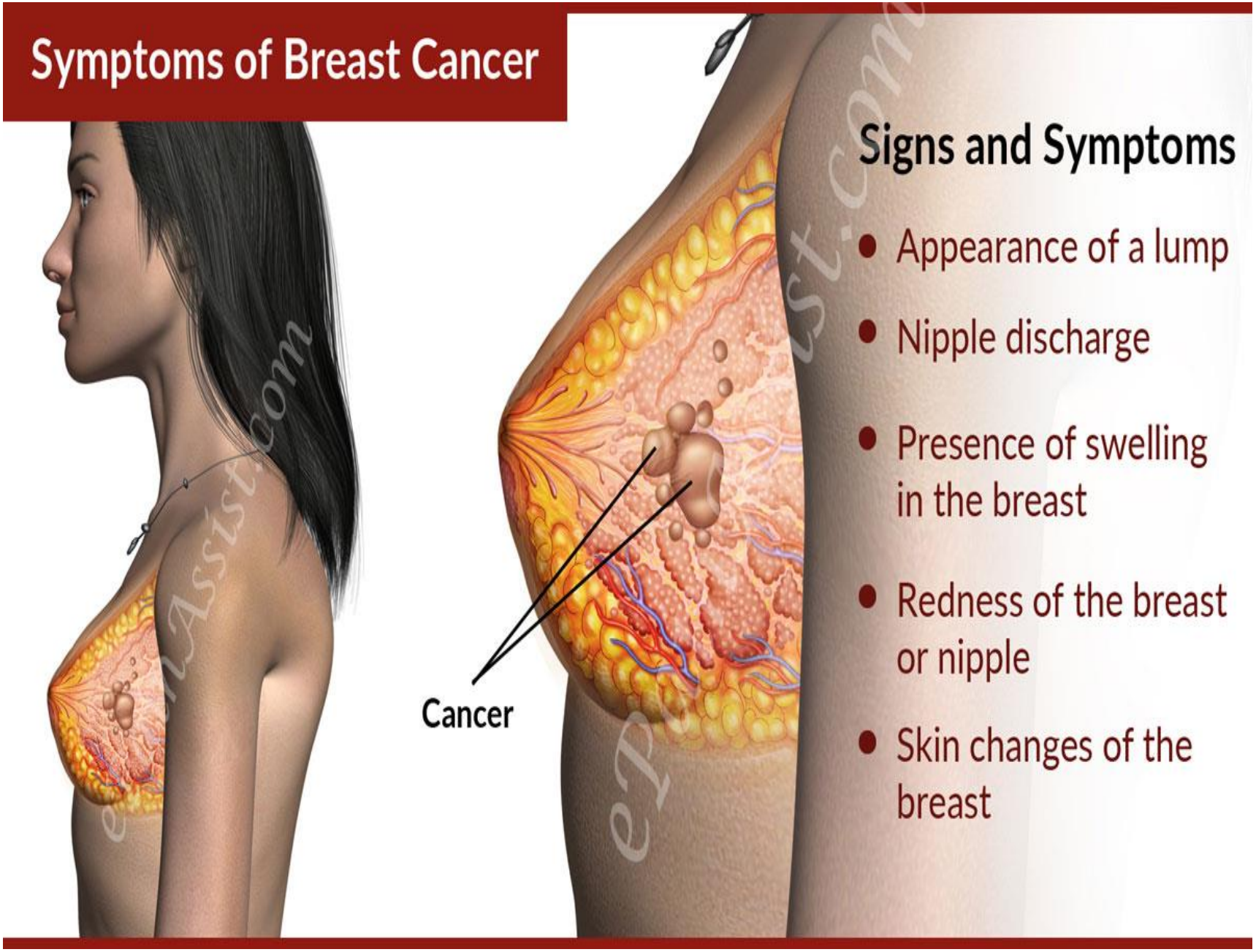
Polymastia

Cancer of breast

- **Appearance of the skin. Prominent or skin between dimpled pores give it an orange-peel appearance (peau d'orange sign)**

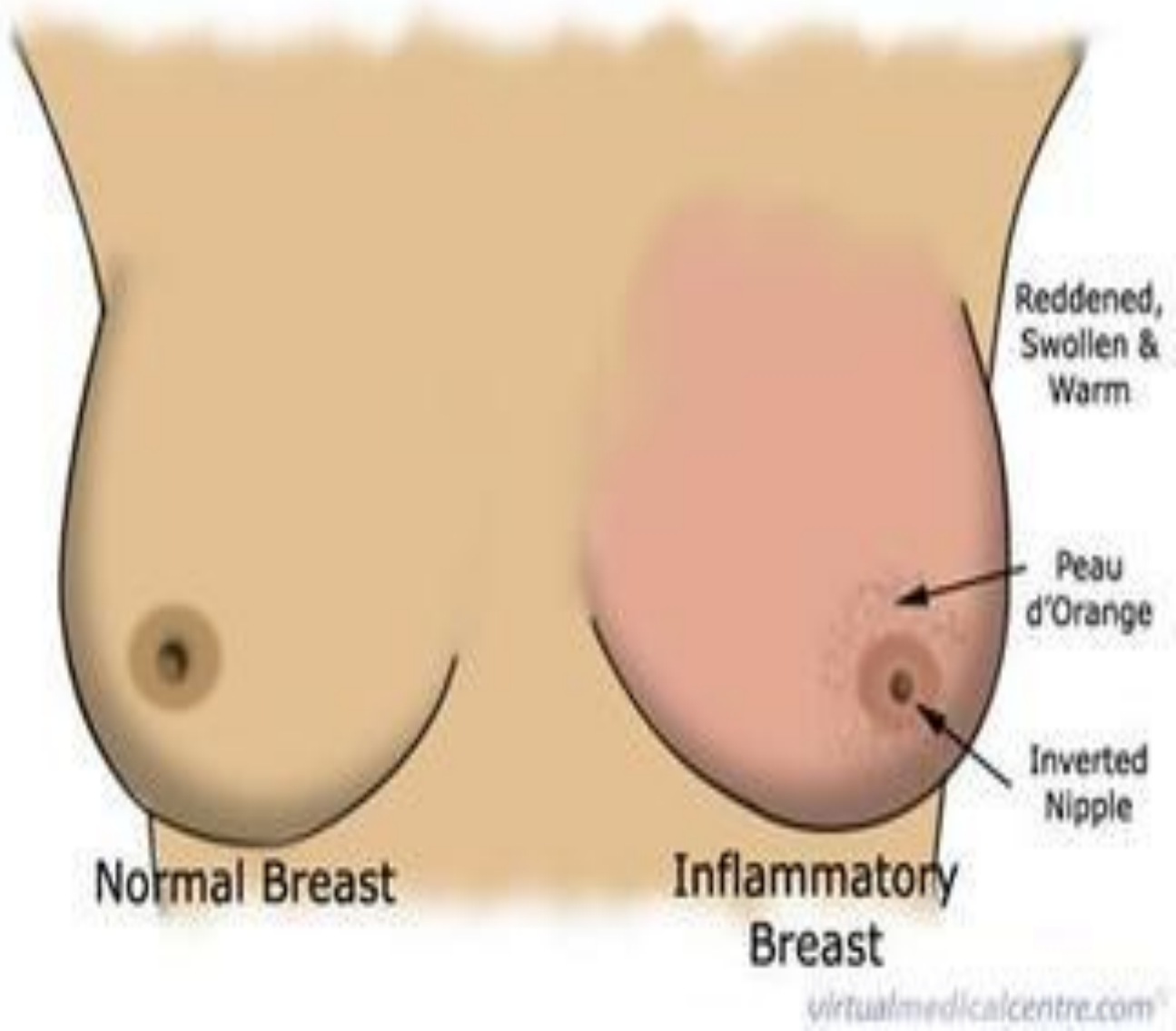
- **Breast cancer typically spreads by means of lymphatic vessels (lymphogenic metastasis), which carry cancer cells from the breast to the lymph nodes, chiefly those in the axilla.**

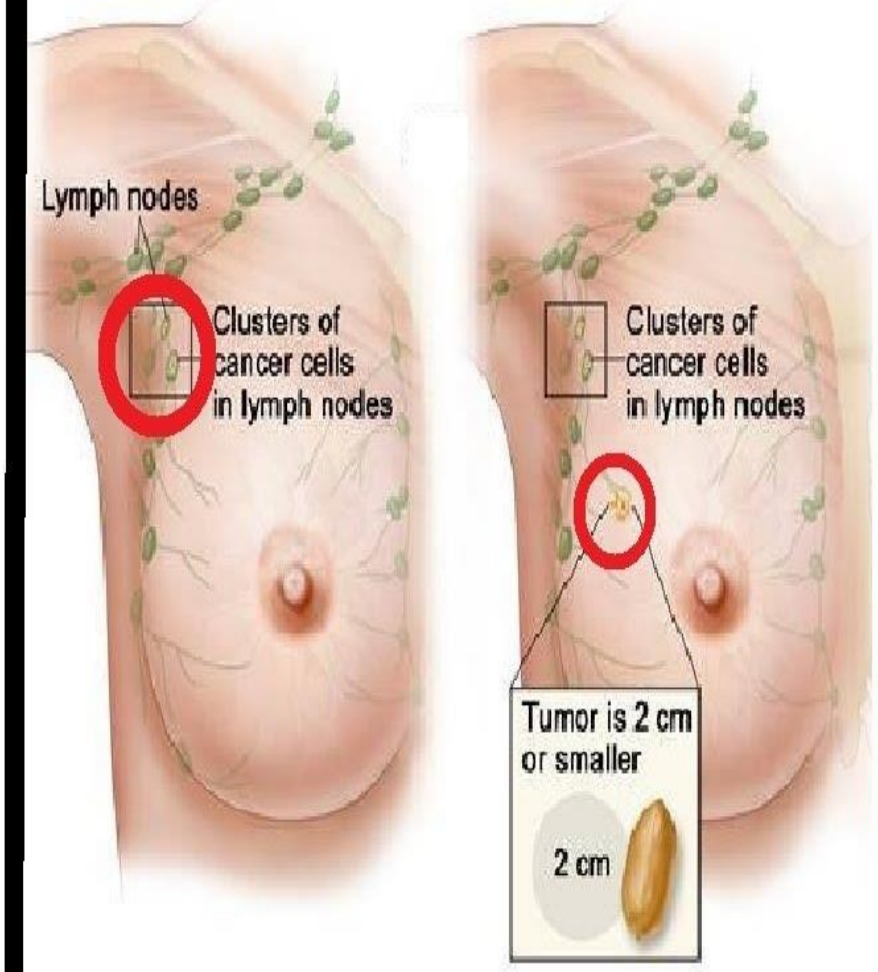
Symptoms of Breast Cancer



Signs and Symptoms

- Appearance of a lump
- Nipple discharge
- Presence of swelling in the breast
- Redness of the breast or nipple
- Skin changes of the breast


Reddened, Swollen & Warm
Peau d'Orange
Inverted Nipple
Normal Breast
Inflammatory Breast
virtualmedicalcentre.com



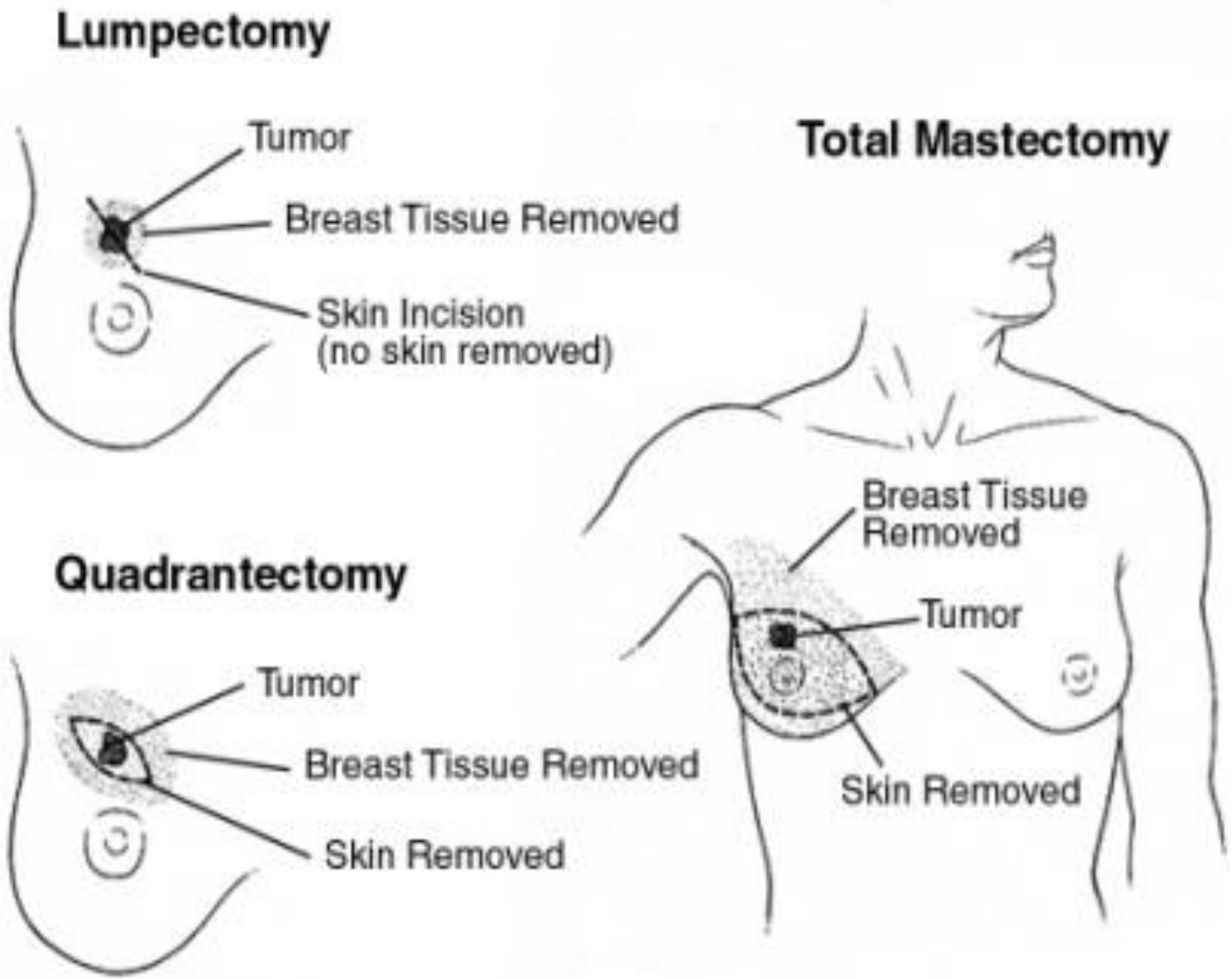
Early Signs of Breast Cancer

- **The cells lodge in the nodes, producing nests of tumor cells (metastases).**

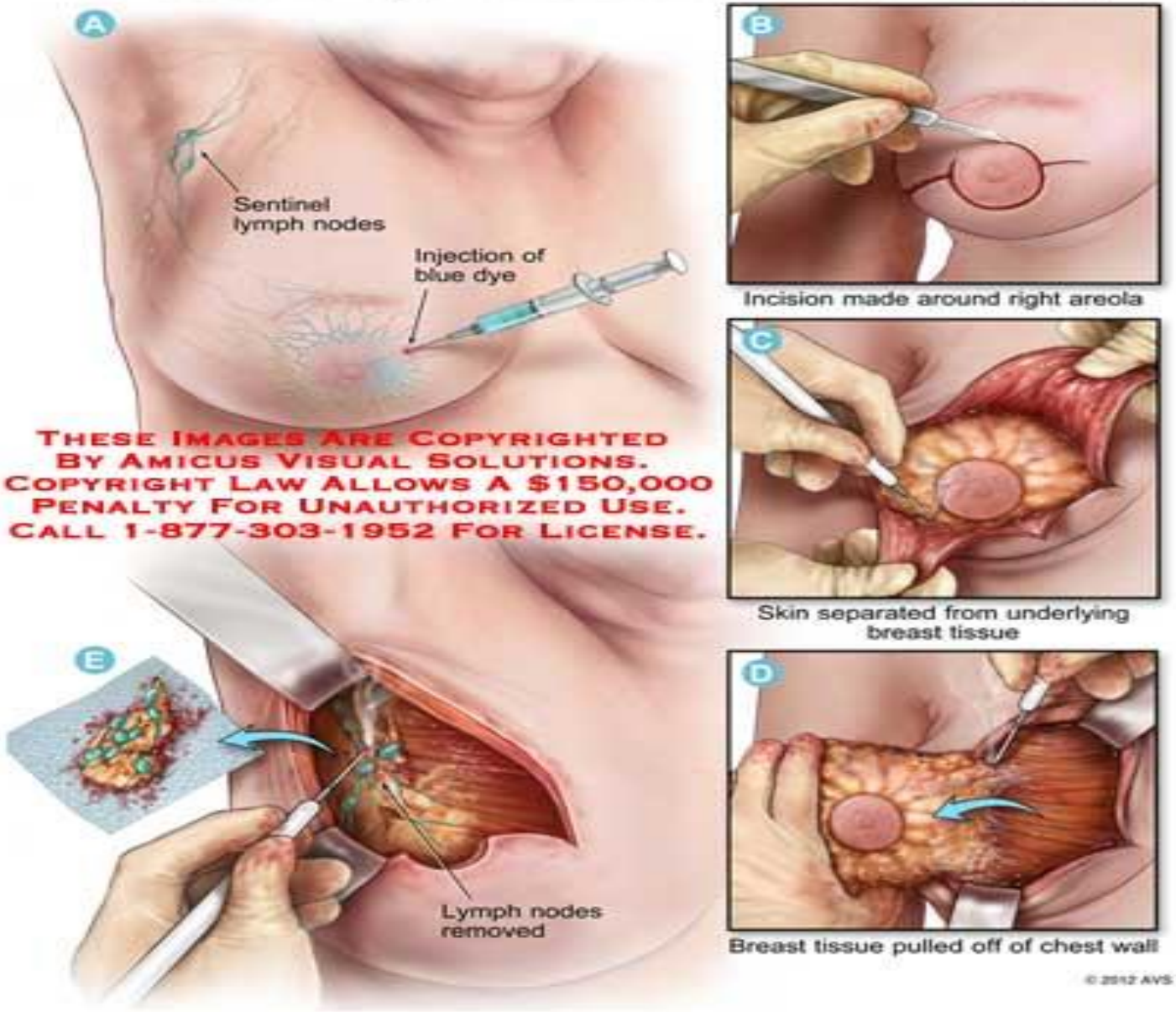
- **Most of lymphatic drainage of the breast is to the axillary lymph nodes, they are the most common site of metastasis from a breast cancer.**

Mastectomy

- **Mastectomy (breast excision) is not as common as it once was as a treatment for breast cancer. In simple mastectomy, the breast is removed down to the retro mammary space.**
- **Radical mastectomy, a more extensive surgical procedure, involves removal of the breast, pectoral muscles, fat, fascia, and as many lymph nodes as possible in the axilla and pectoral region**


Lumpectomy
Tumor
Breast Tissue Removed
Skin Incision
(no skin removed)
Total Mastectomy
Breast Tissue
Removed
Tumor
Skin Removed
Quadrantectomy
Tumor
Breast Tissue Removed
Skin Removed

[redacted]' 12/8/03 Modified Radical Mastectomy and Sentinel Node Biopsy




Thank You