Reproductive System

Anatomy Team

430

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FEMALE BREAST

Shape

- **Of young females: It is conical in shape, it has no capsule.**

➢ **Nipple:**

It is a conical eminence that projects forwards from the anterior surface of the breast. Lies opposite **4th intercostal space. It carries 15-20 narrow openings of the lactiferous ducts.**

➢ **Areola :**

It is a dark pink brownish circular area of skin that surrounds the nipple. The subcutaneous tissues of nipple & areola are devoid of fat.

Position

It lies in superficial fascia of the front of chest

Parts: It is formed of

Base

- **Its base extends from 2nd to 6th ribs.**
- **It extends from the sternum to the maxillary line laterally.**

➢ **2/3 of its base lies on the pectoralis major muscle, while its inferolateral 1/3 lies on serratus anterior & external oblique muscles.**

Apex

Tail

Its superolateral part sends a process into the axilla called *axillary tail*

STRUCTURE OF MAMMARY GLAND

- It is non-encapsulated gland.
- It consists of lobes and lobules which are embedded in the subcutaneous fatty tissue of superficial fascia.
- It has fibrous strands (Suspensory ligaments of cooper) which connect the skin with deep fascia of pectoralis major.
- It is separated from the deep fascia covering the underlying muscles by a layer of loose areolar tissue which forms the **retromammary space**.
- It is formed of 15-20 lobes.
- **Each lobe** is formed of a number of lobules.
- The lobes and lobules are separated by interlobar and interlobular fibrous & fatty tissue, called **ligaments of Cooper.**
- It has from 15-20 lactiferous ducts which open by the same number of openings on the summit of the nipple.

ARTERIAL SUPPLY, VENOUS SUPPLY, LYMPHATIC DRAINAGE of the breast:

ARTERIAL SUPPLY	VENOUS SUPPLY	LYMPHATIC DRAINAGE
1. Perforating **branches of internal thoracic** (internal mammary) artery. 2. Mammary **branches of lateral thoracic** artery. 3. Mammary **branches of Intercostal** arteries.	Veins are corresponding to the arteries. Circular venous plexus are found at the base of nipple. Finally, veins of this plexus drain into **axillary & internal thoracic veins.**	○ **Subareolar lymphatic plexus :** • Lies beneath the areola. ○ **Deep lymphatic plexus :** • Lies on the deep fascia covering pectoralis major. ○ Both plexuses radiate in many directions and drain into different lymph nodes.

- **Central & lateral parts** of the gland (75%) drain into **pectoral group** of axillary lymph nodes.
- **Upper part** of the gland drains into **apical group** of axillary lymph nodes.
- **Medial part** drains into **internal thoracic (parasternal)** lymph nodes, forming a chain along the internal thoracic vessels.
- **Some lymphatics from the medial part** of the gland pass across the front of sternum to anastomose with that of opposite side.
- Lymphatics from the **inferomedial part** anastomose with lymphatics of rectus sheath & linea alba, and some vessels pass deeply to anastomose with sub- diaphragmatic lymphatics.

APPLIED ANATOMY

CANCER BREAST

- It is a common surgical condition.
- 60% of carcinomas of breast occur in the upper lateral quadrant.
- 75% of lymph from the breast drains into the axillary lymph nodes.
- In case of carcinoma of one breast, the other breast & opposite axillary lymph nodes are affected because of the anastomosing lymphatics between both breasts.
- In patients with localized cancer breast, a simple mastectomy, followed by radiotherapy to axillary lymph nodes is the treatment of choice.

- The lactiferous ducts are radially arranged from the nipple, so incision of the gland should be made in a radial direction to avoid cutting through the ducts.
- Infiltration of the *ligaments of Cooper* by breast cancer leads to its shortening giving **peau de'orange** appearance of the breast.

Mammary ridge

- **Mammary ridge extends from the axilla to the inguinal region.**
- **In human, the ridge disappears EXCEPT for a small part in the pectoral region.**
- **In animals, several mammary glands are formed along this ridge.**

Summary

- **Female breast:** It lies in superficial fascia of the front of chest. It is formed of base, apex and tail. Its base extends from 2nd to 6th ribs. It extends from the sternum to the maxillary line laterally. It has no capsule.

  2/3 of its base lies on the pectoralis major muscle, while its inferolateral 1/3 lies on serratus anterior & external oblique muscles.

  Its super lateral part sends a process into the axilla called *axillary tail*.

- **Nipple:** Lies opposite 4th intercostal space. It carries 15-20 narrow openings of the lactiferous ducts.
- **Areola:** It is a dark pink brownish circular area of skin that surrounds the nipple. The subcutaneous tissues of nipple & areola are devoid of fat.
- **MAMMARY GLAND:** It is non-encapsulated gland. It consists of lobes and lobules which are embedded in the subcutaneous fatty tissue of superficial fascia. It has fibrous strands (Suspensory ligaments of cooper) which connect the skin with deep fascia of pectoralis major. It is separated from the deep fascia covering the underlying muscles by a layer of loose areolar tissue which forms the retromammary space. The lobes and lobules are separated by interlobar and interlobular fibrous & fatty tissue, called ligaments of Cooper.

ARTERIAL SUPPLY	VENOUS SUPPLY	LYMPHATIC DRAINAGE
1. Perforating branches of internal thoracic (internal mammary) artery. 2. Mammary branches of lateral thoracic artery. 3. Mammary branches of Intercostal arteries	*Veins are corresponding to the arteries. *Circular venous plexus are found at the base of nipple. *Finally, veins of this plexus drain into axillary & internal thoracic veins.	*Subareolar lymphatic plexus : Lies beneath the areola. *Deep lymphatic plexus : Lies on the deep fascia covering pectoralis major. Both plexuses radiate in many directions and drain into different lymph nodes. Central & lateral parts of the gland (75%) drain into pectoral group of axillary lymph nodes. Upper part of the gland drains into apical group of axillary lymph nodes. Medial part drains into internal thoracic (parasternal) lymph nodes, forming a chain along the internal thoracic vessels. Some lymphatics from the medial part of the gland pass across the front of sternum to anastomose with that of opposite side. Lymphatics from the inferomedial part anastomose with lymphatics of rectus sheath & linea alba, and some vessels pass deeply to anastomose with sub- diaphragmatic lymphatics

APPLIED ANATOMY: 60% of carcinomas of breast occur in the upper lateral quadrant. 75% of lymph from the breast drains into the axillary lymph nodes. In case of carcinoma of one breast, the other breast & opposite axillary lymph nodes are affected because of the anastomosing lymphatics between both breasts. The lactiferous ducts are radially arranged from the nipple, so incision of the gland should be made in a radial direction to avoid cutting through the ducts. Infiltration of the *ligaments of Cooper* by breast cancer leads to its shortening giving **peau de'orange** appearance of the breast.

Mammary ridge: Mammary ridge extends from the axilla to the inguinal region. In human, the ridge disappears EXCEPT for a small part in the pectoral region.

Test your self

Which is correct regarding the mammary gland?

1. It extends from the 2nd to 8th ribs.
2. Its base lies on the pectoralis major muscle.
3. It has 4-8 lactiferous ducts.
4. Its most lymph drains into the parasternal lymph nodes.

The lymphatics from upper part of mammary gland drain into:

1. The parasternal lymph nodes.
2. Subdiaphragmatic lymph nodes.
3. Apical group of axillary lymph nodes.
4. Pectoral group of axillary lymph nodes.

The lactiferous ducts of mammary gland are:

1. Less than 10.
2. From 10-15.
3. **From 15-20.**
4. More than 20.