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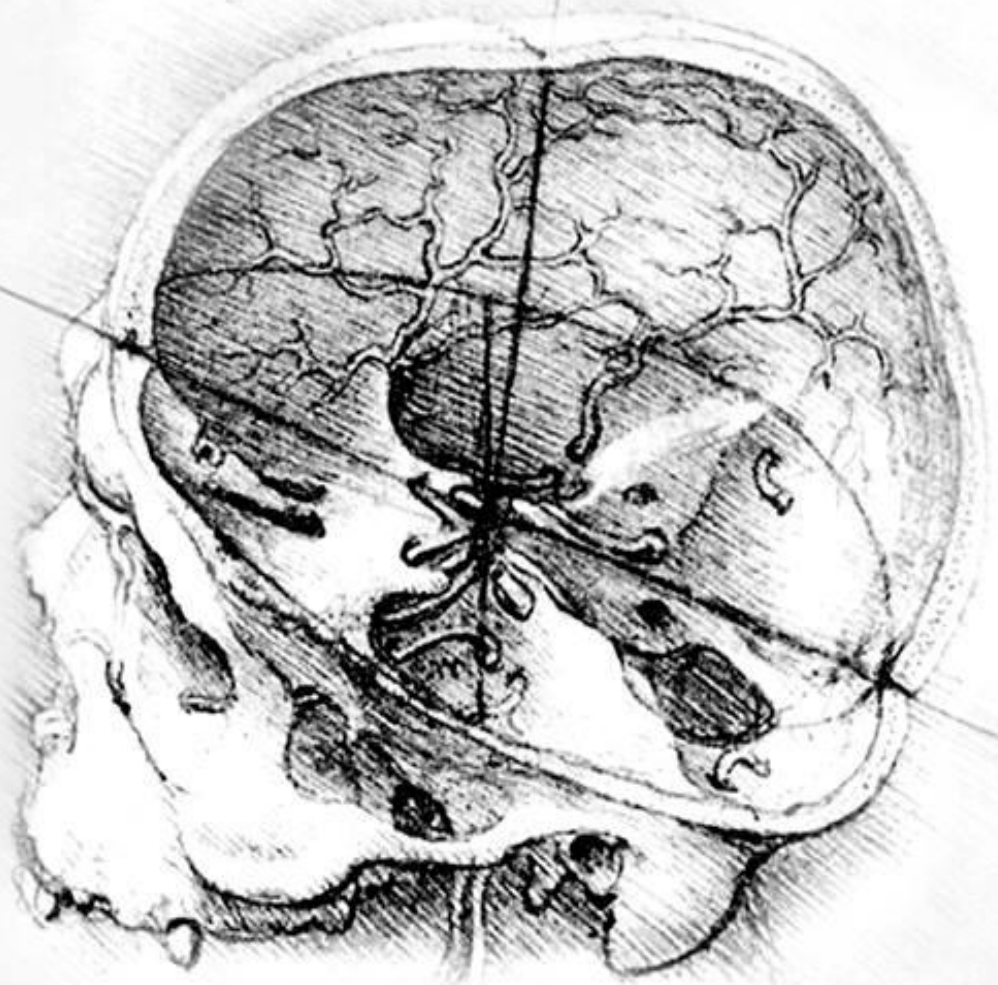
Medical Committee
The University Of Jordan

Anatomy & Embryology



LECTURE #: 2 DOCTOR: Mohammad Al-Mohtasib SHEET ■

DONE BY Ola Atif SLIDES □

#Anatomy#Lecture 2

Pectoral region and Brest

*Pectoral region has a pectoralis major muscle and below it a smaller muscle called pectoralis minor

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***NOTE** :

** the name of the muscle pectoralis major indicates its location (pectoral region) and its size (major means big)

**The name of the muscle pectoralis minor indicates its location (pectoral region) and its size (minor means small)

****Axilla :**

it is the armpit

#It has 4 walls : anterior wall , posterior wall , lateral wall , medial wall

#It's shape like a pyramid

#It has apex and base

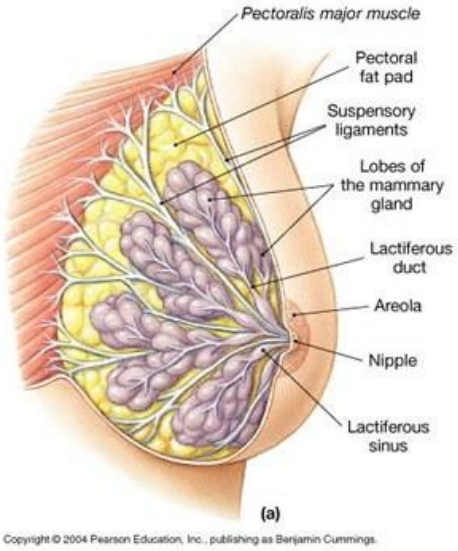
****The relation between the Axilla and the breast :**

The breast lies on the anterior wall of the axilla , that means it lies over the pectoralis major

****** The breast**

***Parts of the beast :**

1- It has nipple
2- Areola : small area surrounding the nipple , it is dark in color
3- it has 15 – 25 lobes which has lobules inside it



*most of the breast lies over the pectoralis major and small part lies on serratus anterior muscle (its origin : upper 8 rips)

*breast is : specialized accessory gland of the skin , secretes the milk

*breast found in males and females , it is the same size and structure in both before property age

* after property due to secretion of six hormone: estrogen and progesterone specially in females , the breast become enlarge and spherical in shape

* breast mainly consists of lobes which has lactiferous duct , it transfer milk to nipple

* breast are composed of large amount of fat that's why it is soft (adipose tissue)

* between lobes we have septum, which is connective tissue ligaments (suspensory ligaments or cooper ligaments) , this ligament extent from the skin to deep part of the breast.

*If an abscess happened in the lobe , when it swallows it stretches the septum

*no . of septum = no. of lobes = 15 – 25

**Location (site) of the breast :

* it extend from the second rip to the sixth rip.

*Medially it lies at the edge of sternum , laterally it lies at the medaxillary line

**NOTE : medaxillary line : the line from the apes of the axilla to the side of the chest

*It lies on superficial fascia (the layer which is deep to the skin)

Layers of skin

Skin

_____

Superficial fascia

_____

Deep fascia (anterior and deep to the muscle)

*The breast has a tail which called (axillary process)

* The tail is in deep fascia and passes in the axilla and it is one of the content of the axilla

*** axilla consist of :**

1- tail of the breast
2- axillary vessels (artery and vein)
3- cords of brachial plexus
4- lymphatic vessels and axillary lymph nods .

**** to look again to the breast :**

* Areola has tubercles

*(sinus or ampulla of lactiferous duct): the dinamation before the opening of the lactiferous duct in nipple

* lactiferous ducts 15-25 according to the no. of lobes

*lactiferous duct directs towards the nipple

* the type of lactiferous duct in histology compound tubuloalveioli

*before the breast reach the deep fascia there is space called : retromammary (retro : means behind) and it contains loose areole connective tissue

*breast lobules : alveolar cells , it forms the secretion of the milk

*cooper's ligament : suspensory ligaments , between the skin and deep fascia

*lactiferous duct 2-4.5 cm long

*the opening in the nipple 0.5 mm diameter

****the areola changes in girls:**

#before marriage: light in color / small breast

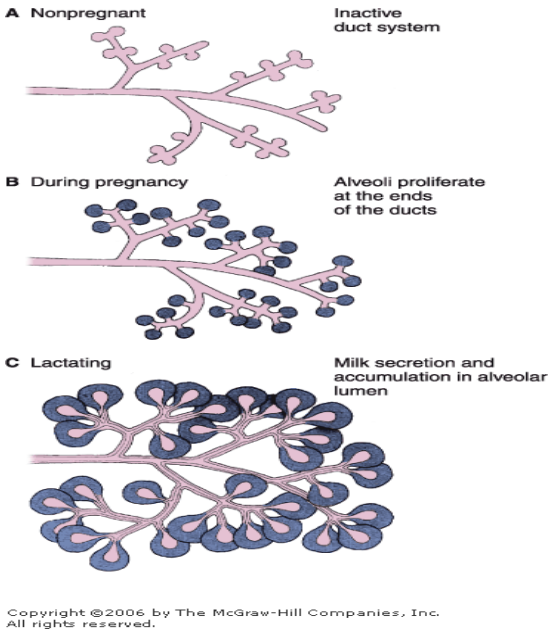
#after marriage and pregnancy or lactation : deep color due to reception of melanocyte cells ….. due to sexual hormones (estrogen and progesterone) changes happen on the lactiferous duct as proliferation of cells to make milk

**** changes on lactiferous duct**

no pregnancy : just lactiferous duct without *cells (inactive)

***during pregnancy** : all the lactiferous duct get proliferation (activation) alveoli proliferate at the ends of the ducts no formation of milk

*when the women reaches to 8th and 9th , the pituitary gland secrete lactate hormone , that's happen after simulation for alveoli or the cells which has proliferation



*lactating : milk secretion and accumulation in alveolar lumen

*The baby sucking stimulate , the milk secretes and go to nipples

*Histology for the lactiferous duct :

simple cuboidal epithelial tissue → stratified cuboidal epithelial tissue → stratified squamous epithelial tissue

going deep →

* the cells in lactiferous duct become active under influence of secreation of the hormones from pituitary gland and ovary

*The lining of lactiferous duct and terminal duct is formed of simple cuboidal epithelial tissue covered by myoepithelial cells

* myoepithelial cells : small cells contain fibrous ,the contraction happened there to execrete the milk , it found in basal membrane for the alveoli

* connective tissue surrounding alveoli contains lymphocytes (important in immunity) and plasma cells (give antibodies)

* the milk contains large amount of fat and protein , and in the first week of lactation it contains large amount of lymphocytes and plasma cells

* colostrums : milk after birth , it is thick , contains large amount of protein and small amoun of fats , and immunoglobulins (IgA)

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* abscess : an area full of germ cells which can infect the other cells and lead to death !

* the incision of the breast is radial (towards the nipple and parallel to lactiferous duct) , it is NOT transverse because it will cut all the lactiferous duct

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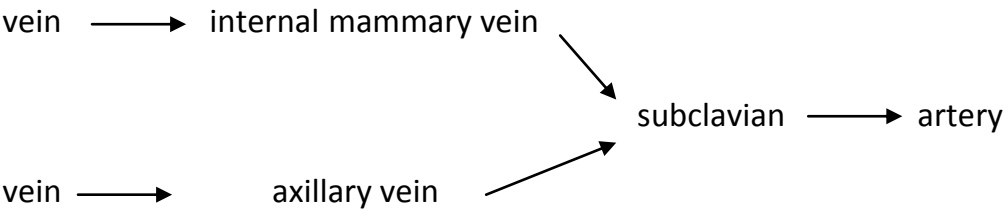
** Blood supply to the breast

1- two branches from the axillary artery (exist in axilla) :
   a) Lateral thoracic
   b) Thoracoacromial

2- The branches to the breasts include the perforating branches of the internal thoracic artery

** veins draining :



** Lymphatic draining :

*Breast cancer happened in male and females , but it is common if females and rare in males

*Cancer spread throw lymphatic vessels and lymphatic nodes

*The lateral side of the breast drain into anterior axillary or pectoral lymph nods

NOTE : anterior axillary (it is in the anterior wall of the axilla) or pectoral(it is near to pectoralis major) lymph nods

*the medial half of the breast drain into internal thoracic lymph nodes which exist near to sternum around thoracic vessels

* then the drain continues in this way :

Central lymph nods → **apical lymph nods** → **thoracic duct** → **superior vena cava** → **heart**

* another draining :

1- by anterior abdominal wall (anterior part of the breast) to the liver

2- to posterior wall of the axilla (subscapular lymph nodes)

* in some cases of breast cancer we might find metastasis in liver

* some vessels communicate with the lymph vessels of the opposite breast and with those of the anterior abdominal wall

*Ladies must check their breast while taking a shower to make sure that there is no lumps

*these lumps are painless

* when breast cancer is diagnosed early , the doctors can do a surgery , so the woman can live for 30 years

*cancer spread by lymph then blood then directly to the surrounding tissue

**MUSCLES :

* each muscle we take in this coarse you showed know it's (origin , insertion , nerve supply , action)

* types of muscles :
1- smooth muscle
2- cardiac muscle
3- skeletal muscle (striated muscle or voluntary muscle)

* voluntary muscle : the muscle that we can control , for example : doing flexion and extension

*every striated muscle has origin (usually fleshy) and insertion (strong tendon)
*when we do contraction the tendon (insertion) goes towards the origin . (what happens is shortening of the fibers of the muscle)

*for example : the muscle :gastrocnemius (it's location : in the calf)

The origin : condyle of fermur

The insertion : tendo Achilles (or tendo calcanealus)

The function : important in running and walking

*Types of insertion in muscles :

1-Tendon ……. Example : in gastrocnemius

2-Aponeurosis (broad connective tissue) ……. Example : in external oblique

3-Raphe …… Example : mylohyoid

*histology of skeletal muscle :

myofibers → contains → myofibrils → contains → myofilaments (actin and myosin)

Biceps → 2 heads

triceps → 3 heads

quadriceps → 4 heads

} numbers of heads = numbers of origins

Digastrics muscle

Omohyoid

} 2 bellies → insertion in the middle

*Some muscle fibers have conversion (the origin is broad and the insertion is narrow)

* the opposite of conversion is diversion

*strait : means that fibers are parallel

*rectus : means that fibers are longituge

****Naming of muscles :**

* according to its origin and insertion (e.g : sternocleidomastoid)
  the origin :sternum and calvicle , the insertion: mastoid process
*according to its size and site (e.g : pectorakise major)
* according to its action (e.g : flexors and extensors)
* according to its shape (e.g : rhomboidial major)

****Characters for skeletal muscle :**

1-excitability (irritability) : it has a nerve supply
2-conductivity
3- Contractility : slighting the actin over myosin
4- Extensibility: extended or stretched muscle like: biceps and triceps (one of them contracts and the other relaxed at the same time)
5- Elasticity

* when we cut a nerve supply from a muscle , it will paralysis and atrophy , so its size and shape will change (it will be smaller)

****Skeletal Muscle Action :**

1-prime mover
*brachialis is responsible of flexion
*biceps is responsible of supination
*quadriceps is responsible of extension

2-Antagonist :

* Any muscle that opposes the action of the prime mover is an antagonist , for example : The biceps and triceps are an agonist-antagonist pair, as one muscle flexes the arm, and the other muscle extends the arm.

3-fixator :

*when you do an action on a muscle the other muscles do fixation to the joint , for example : pectoralise major muscle does flexion and medial

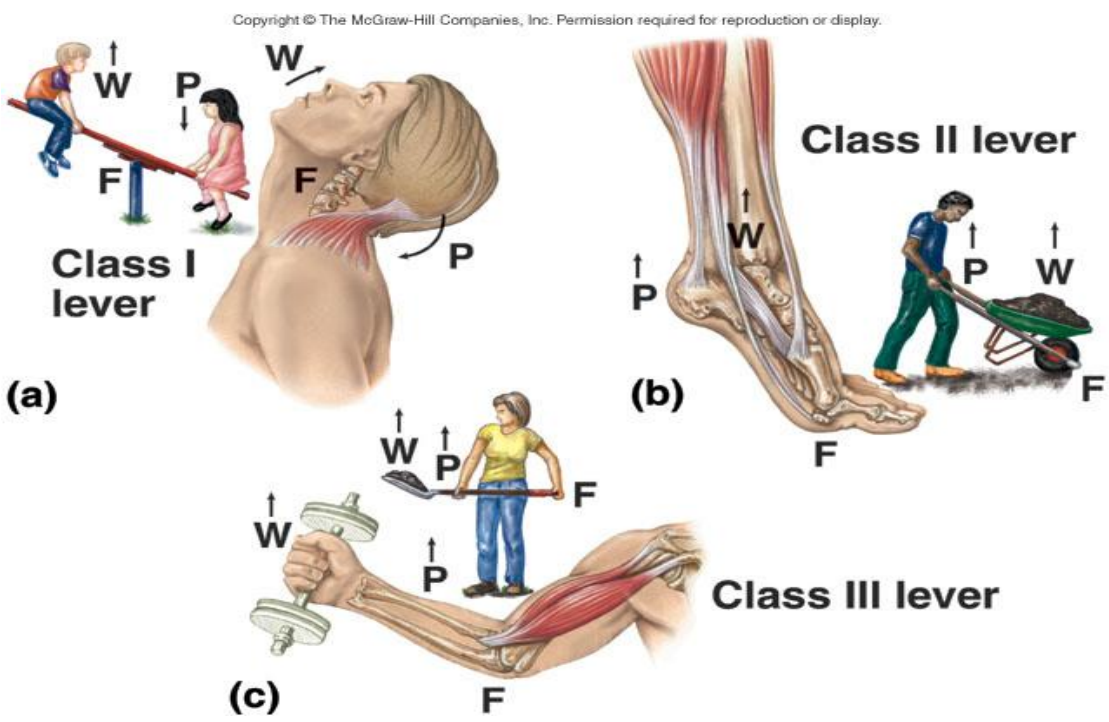
rotation , other muscles around the shoulder joint does fixation like : deltoid , to keep the head of humerus inside the glenoid cavity

4-Synergist :

*some muscles keep the intermediate joints in its natural position and to prevent unwanted movements in this joint
*the main muscle which does extension in index called extensor digitorum (its insertion : distal phalanges)

**How does muscles work ?

*it works on joint and bones and bones work as a lever for contraction of muscle



Done by :Ola Atif
Best wishes