''बेटी बचाओ, बेटी पढ़ाओ''

JAYOTI VIDYAPEETH WOMEN'S UNIVERSITY, JAIPUR

Faculty of Pharmaceutical Science

Faculty Name - JV'n Sajal Agarwal

(Assistant Professor)

Program - I…Semester / Year

Course Name - B.PHARM……

Session No. & Name - 1.1 …….. (Name of the Session)

Academic Day starts with –

- Greeting with saying **'Namaste'** by joining Hands together following by 2-3 Minutes Happy session, Celebrating birthday of any student of respective class and **National Anthem**.

UNIT-II

TOPIC- SKELETAL SYSTEM

Developmental Anatomy and Growth of Bones

Ossification is the process through which bones grow. There are two ways that embryonic bone develops: If bone forms straight from mesenchymal tissue, the process is known as intra-membranous ossification. Examples include the skull's cranial vault, flat bones, and a portion of the clavicle. This kind of

ossification develops quickly from the center outward. Endochondrial ossification is the process through which bone tissue forms in place of hyaline cartilage. Although the procedure does not turn cartilage directly into bone, it does replace the cartilage with bone. Long bones and all other bones that are not generated by intra-membranous ossification are produced by endochondrial ossification.

Function of bone

- Supportive and protection of internal organs.
- The store house and main supply of reserve calcium and phosphate.
- The manufacture of red and white blood cell.

The Skeleton

Looking to the bone reveals the surface is not smooth but scarred with bumps, holes and ridges. These are surface markings where muscles, tendons and ligaments attached, blood & lymph vessels and nerves pass**.**

Depression and openings

Fissure narrow, cleft like opening between adjacent parts of bone. Example: Supra of orbital fissure.

Foramen, a bigger, round opening. Example: Foramen magnum.

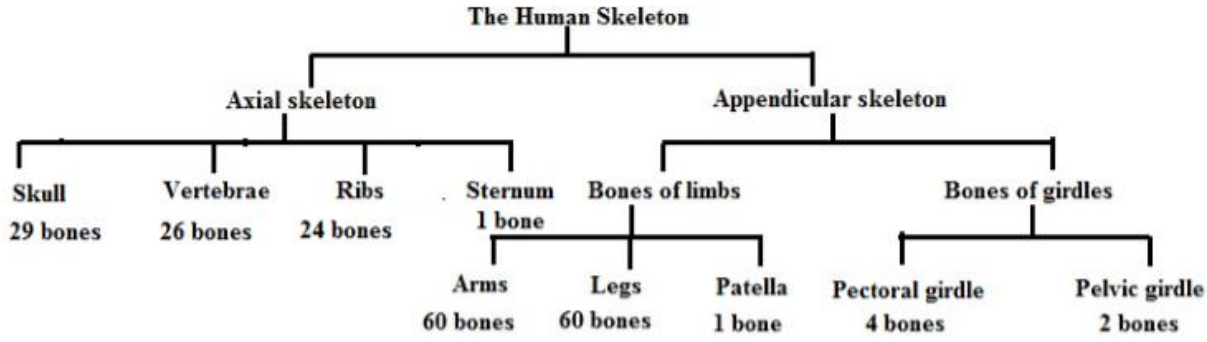
Meatus: a relatively narrow tubular canal. Example: External auditory meatus

Groves and sulcus: are deep furrow on the surface of a bone or other structure.

Division of the skeletal system

The 206 named bones in the adult human skeleton are divided into two main divisions. The axial and appendicular skeletons are those. The bones that surround the axis make up the axial skeleton. And the bones of the axial group

that make up the appendicular skeleton are body bones. They are annexes. Appendicular skeleton includes the bones of the upper and lower extremities as well as girdle bones.



* The number of skull bones is sometimes listed as 22, when the Ossicles of the ears (6 bones) and the single hyoid bone is counted separately. Technically, the hyoid bone is not part of the skull. +The thoracic vertebrae are sometimes included in this category. # Technically, the term arm refers to the upper extremity between the shoulder and elbow; the forearm is between the elbow and wrist. The upper part of the lower extremity, between the pelvis and knee, is the thigh; the leg is between the knees an ankle.

The Axial skeleton

The skull-It Contain 22 bones. The skull rests on the superior of vertebral column. It is composed of cranial and facial bones.

Description and function of Cranial Bones (Source: Carola, R., Harley,J.P., Noback R.C., (1992), Human anatomy and physiology, Mc Graw hill inc, New York, 2nd ed, pp 170)

Ethmoid (1)-Base of cranium, anterior to body of sphenoid. Made up of horizontal, cribriform plate, median perpendicular plate, paired lateral masses; contains ethmoidal sinuses, crista galli, superior and middle conchae. Forms roof of nasal cavity and septum, part of cranium floor; site of attachment for membranes covering brain.

Frontal (1) -Anterior and superior parts of cranium, forehead, brow areas. Shaped like large scoop; frontal squama forms forehead; orbital plate forms roof of orbit; supraorbital ridge forms brow ridge; contains frontal sinuses, supraorbital foramen. Protects front of brain; contains passageway for nerves, blood vessels.

Occipital (1)-Posterior part of cranium, including base. Slightly curved plate, With turned- up edges; made up of squamous, base, and two lateral parts; contains foramen magnum, occipital condyles, hypo-glossal canals, atlanto-occipital joint, external occipital crest and protuberance. Protects posterior part of brain; forms foramina for spinal cord and nerves; site of attachment for muscles, ligaments.

Parietal (2) -Superior sides and roof of cranium, between frontal and occipital bones. Broad, slightly convex plates; smooth exteriors and internal depressions. Protect top, sides of brain, passageway for blood vessels.

Sphenoid (1)- Base of cranium, anterior to occipital and temporal bones. Wedge-shaped; made up of body, greater and lesser lateral wings, pterygoid processes; contains sphenoidal sinuses, sella turcica, optic foramen, superior orbital fissure, foramen ovale, foramen rotundum, foramen spinosum Forms anterior part of base of cranium; houses pituitary gland; contains foramina for cranial nerves, meningeal artery to brain.

Temporal (2)-Sides and base of cranium at temples. Made up of squamous, petrous, tympanic, mastoid areas; contain zygomatic process, mandibular fossa, ear Ossicles, mastoid sinuses. Form temples, part of cheekbones; articulate with lower jaw; protect ear ossicles; site of attachments for neck muscles.

Sutures- Meaning to stitch, are immovable joint found between skull bones. There are four main sutures in the skull.

a) Coronal suture: between the frontal & the two-parital bone.

b) Sagital suture: between the two parietal bones.

c) Lambdoidal suture: between parietal & occiputal bone.

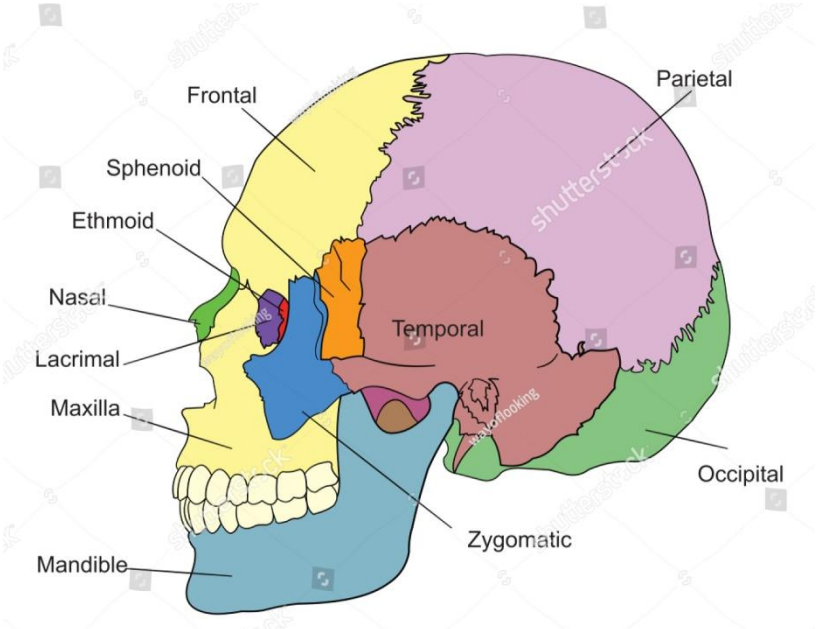
d) Squamosal suture: between parietal bone and temporal bone.

Fontanels

A developing embryo's skeleton is made of cartilage or fibrous membrane structures, which are gradually replaced by bone in a process known as ossification. Fontanels are membrane-filled cavities on the skull that exist at birth. They are located between the bones of the skull.

Function

- They enable skull of the fetus to compress as it pass through the birth canal
- Permit rapid growth of brain during infancy
- Serves as a landmark (anterior fontanel) for withdrawal of blood from the superior sagital sinus
- Aid in determination of fetal position prior to birth.



- University Library Reference-
- Human Anatomy And Physiology by Ross and Willson.

Online Refrences-

Description and function of Cranial Bones (Source: Carola, R., Harley, J.P., Noback R.C., (1992), Human anatomy and physiology, Mc Graw hill inc, New York, 2nd ed, pp 170)

Academic Day ends with-

National song' Vande Mataram'