

Quadrant II – Transcript and related Material

Programme: Bachelor of science (Second year)

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Unit: Unit 02 Skeletal System

Module Name: Vertebral Column and Vertebrae – Part II

Module No: 20

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Notes:

INTRODUCTION

A typical vertebra consist of two major part , anteriorly Vertebral body and posteriorly vertebral arch .Vertebral body and vertebral arch together forms the vertebral foramen.Vertebral arch is made up of a pair of pedicles , a pair of lamina and seven processes ie 4 articular processes , 2 transverse processes and 1 spinous process. Spinous and transverse processes: work as levers and serve as attachment sites for back muscles. Articular processes : fits with an adjacent vertebra.

Various kinds of projections or apophyses arise from a vertebra, they are: Zygapophyses which consist of prezygapophyses which are articular processes facing upwards and post zygapophyses are the articular processes facing downwards. Both arise from the basal region of neural arch.Transverse processes consist of Diapophyses, parapophyses , basopophyses and pleuropophyses. Hypapophysis is a mid ventral projection from centrum.

Vertebrae of fishes -Amphicoelous vertebrae. Vertebrae are lightweight yet strong. Ribs attached to the spine .

Vertebrae of tetrapods-

Cervical vertebrae-1st two cervical vertebrae are unique from the rest cervical vertebrae and it forms the framework of neck region and also supports skull. They are small in size and show the presence of foramen in each transverse process.

Thoracic vertebrae –the main function of the thoracic spine is to hold the rib cage.

In many whales, moles and armadillos the cervical vertebrae fuse together. Ribs are fused to cervical vertebrae. Thoracic vertebrae bear ribs and Caudal vertebrae are variable in the number there being 16-18 in rabbit, 20-23 in dogs, 15-21 in horse, 3-4 in man which unite to form a single Coccyx.

RIBS - Ribs are cartilaginous or bony structures which protect internal organs of the organism. Ribs are generally fused to or articulate with vertebrae. 1 pair of ribs to each vertebra and forms the rib cage.

Ribs are 3 types

Vertebrosteral are also called as true ribs (1st 7 pairs), Vertebrochondral or False ribs (next 3 pairs) and Vertebral or Floating ribs (last 2 pairs)

STERNUM- is also termed as Breastbone it connects to the ribs through cartilage and forms the front of the rib cage and protect the heart, lungs, and major blood vessels from injury. There is no sternum in fishes, occurs in tetrapods and articulates with pectoral girdle and also articulates with ribs to form thoracic basket. Proteus, Amphiuma, caecilians, snakes, turtles and limbless lizards do not have sternum. In amphibians sternum has two parts, anterior to the clavicle is the episternum and posterior to the coracoids is mesosternum. In reptiles sternum is a rhomboidal plate. Birds sternum is a broad, triangular bone. The mid-ventral portion is drawn out into a carina or keel in flying birds. It forms a T-shaped girdle to bear the weight. Running birds have rounded sternum with no keel. In mammals the sternum is divided into 3 regions i.e. manubrium which articulates with the clavicle and first rib, mesosternum which is a series of segments, sternabrae, to which the true ribs are attached and metasternum which forms the xiphoid cartilage.