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**veterinary Anatomy :** it is one of anatomical science that study the form and structure of the principal domesticated animals.

To study the anatomical science there are three main methods.

1-Systematic anatomy

2-Topographic anatomy

3-Applied anatomy

**Anatomical Planes**

**Median plane:** a vertical plane which passes craniocaudally through the body to divide it into equal right and left halves.

**Sagittal Plane:** a plane parallel to the median plane.it divides the body into unequal parts: right and left.

**Transverse Plane:** a vertical plane which passes at right angle perpendicular to the median plane or sagittal plane.

**Frontal Plane:** a horizontal plane which passes at right angles to the median plane and transverse plane. It divides to body into dorsal (upper) and ventral (lower).

**Topographical Terms:**

Lateral x Medial Caudal x Cranial

Dorsal x Ventral Deep x Superficial

**Descriptive Term:**

Tuberosity , foramen , canal , crest , process ,

**Skeleton** Axial

 Appendicular

 Visceral

**Types of bones :**

1-Long bones 2-Short bones 3-Flat bones 4-Irregular bones (according to shape and function )

1-Compact bone 2-Spongy bone (according to structures)

**Bones Of The Thoracic Limb (Fore Limb)**

Thoracic limb consist of four chief segments.

1-**Shoulder Girdle: (Clavicle , Scapula , Coracoid).**

2-**The Arm: (Humerus).**

3-**Forearm:(Radius and Ulna)**

4-**Manus:(Carpus , Metacarpus , Digits)**

**The Scapula**

Flat triangular bone of the shoulder. It has 2surfaces, 3borders and 3angles

**The Lateral Surface:**

-Spine

-Supraspinous fossa

-Infraspinous fossa

-Nutrient foramen

**The Costal Surface:**

-Subscapular fossa

**The Cranial border**

**The Caudal border**

**The Vertebral border**

**The Cranial angle** is thin while **the caudal angle** is thicker.

**The Glenoid (Articular) angle**

-glenoid notch

- the tuber scapulae

-coracoid process

**Comparative Features**

-in equine scapula lack of **acromion process**

-**in bovine present of acromion process**

**The Humerus**

A long bone extending obliquely downward and backward from the shoulder to the elbow. It consists of a shaft and two extremities.

**The shaft ( body ):**

1-Lateral surface: - musclo-spiral groove

2-medial surface: -teres major tuberosity , nutrient foramen

3-cranial surface: -crest of humerus , deltoid tuberosity

4-caudal surface: is rounded from side to side and smooth .

**The proximal extremity :**

-Head -neck

-Greater tubercle (lateral tuberosity)

-lesser tubercle (medial tuberosity)

-intertuberal groove

**The distal extremity :**

-humeral condyle (medial condyle , lateral condyle )

-trochlea

-Radial fossa

-Olecranon fossa

**The Radius**

The is the larger bone of the forearm; it extends vertically from the elbow to the carpus . it consists of a shaft and two extremities .

**The shaft (2 surface and 2 borders)**

-cranial surface

-caudal surface ( inter osseous space )

-Medial border -Lateral border

**Proximal extremity**

-Humeral articular circumference

-Radial tuberosity

-Medial tuberosity

-Lateral tuberosity

**Distal extremity**

-Carpal articular surface (medial facet , lateral facet)

-Three grooves -Transverse crest

**The Ulna**

In the horse it is a long reduced bone situated behind the radius with which it is partly fused in adult animals . it consists of shaft and two extremities .

**The shaft :(three surface , three border)**

-cranial surface -medial surface -lateral surface

-lateral border -medial border -caudal border

**Proximal extremity:**

-Summit (Olecranon)

-Anconeal process

-Trochlear notch

-Medial coronoid process , Lateral coronoid process

**Distal extremity:** is pointed and is usually a little below the middle of the radius.

**Comparative features:** in bovine present **Styloid process**

**manus**

Distal parts of the thoracic limb consist of the:

**Carpus, Metacarpus, Phalanges (Digit) and three sesamoid bones**

**Carpus**

The part (region) between the forearm (radius& ulna) and (metacarpus)

The carpal bones consist of 7-8 bones arranged in two rows: proximal and distal.

**Proximal row**

Radial, Intermediate, Ulna and accessory carpal bones

Medial **Distal row** Lateral

 First, Second, Third and fourth carpal bones

**The Metacarpal bones**

The large metacarpal bone (third bone)

**Shaft:**

 **-**dorsal surface (convex from side to side)

-palmar surface (presents rough area for the small metacarpal bones 2, 4)

-nutrient foramen (proximal and middle thirds bone)

**Proximal extremity:**

-articular surface for the distal raw of the carpal bones third carpal bone

(Oblique lateral facet for the 4th carpal bone)

-two facets for the small metacarpals bones.

-metacarpal tuberosity

**Distal extremity:** medial and a smaller lateral condoyle separated by a sagittal ridge.

 **Large metacarpal in cow (3, 4 bone)** presents **dorsal-** **long tudinal sulcus.**

**Small metacarpal 5 bone.**

**The Phalanges (Digit)**

**Proximal phalanx** (is large bone)

**Shaft** –dorsal surface (smooth)

  **-**palmar surface (flat, triangular and rounded tubercle in middle)

 -medial and lateral border

**Proximal extremity:**

-articular surface (two glenoid cavities separated by sagittal groove, the medial cavity slightly larger)

-tow tuberosity on each side.

 **Distal extremity:**

-trochlear in shapes

-tow depression surrounded by tow tubercle in each side.

**Second or Middle Phalanx (**consist of four surface**)**

-proximal surface (articular, extensor process (dorsally) **)**

-distal surface :( trochlear in shape, articular with third phalanx & distal sesamoid bone).

-dorsal surface: tow depression of tow tubercle are them.

-palmar surface: smooth & flat end.

**Distal phalanx :(** is entirely enclosed in the hoof)

(3 surface, 3 border and 2 angles)

-articular surface: presents faces of the surface on the second phalanx& sesamoides articular surface (distal sesamoid bone).

-parietal (dorsal) surface: several foramen& dorsal groove.

-solar surface: divided in 2 unequal part by **(the semilunar crest) & the posterior area (flexor surface)**, solar groove.

-proximal (coronary) border: extensor process.

-solar border: thin, sharp and irregularly notched.

-dorsal border .

**Angles:** lateral& medial.

-the medial is shorter.

**The Sesamoid Bones:** it consists 2 proximal sesamoid bones and 1 distal sesamoid bone.

**The two proximal sesamoid bones** are situated behind the distal end of the large metacarpal bone and attached by ligaments to the first phalanx.

**The distal sesamoid (Navicular bone)** is situated behind the coffin joint,it is flattened oval and transversely elongated.