GENERAL ANATOMY

1.INTRODUCTION

ANATOMICAL POSITION (SA)

The anatomical position is of importance in anatomy because it is the position of reference for anatomical nomenclature.

The criteria of anatomical position of the body are

- Body in Erect position
- Head and eyes facing forwards
- Upper limbs hung by the side of the body
- Palms and fingers facing forwards

2. SKELETON

SESAMOID BONE(SE)

A sesamoid bone is a bone embedded within a tendon or a muscle.

It is derived from the Latin word "sesamum" (sesame seed), due to the small size of most sesamoid bones.

Functions

- Sesamoid bones act like pulleys, providing a smooth surface for tendons to slide over.
- They increase the tendon's ability to transmit or alter the direction of muscular forces.

Charecteristics of sesamoid bones

They do not have Haversian system

They do not possess periosteum.

They ossify after birth by multiple centers

The surface in contact with related bone is covered with articular cartilage.

Examples of sesamoid bones are-

Patella related to the tendon of quadriceps femoris. It is the largest sesamoid bone.

Pisiform bone is one of the carpal bones and regarded as a sesamoid bone related to the tendon of flexor carpi ulnaris.

There may be two sesamoid bones below the head of first metatarsal bone related to the tendon od flexor hallucis brevis.

Applied anatomy

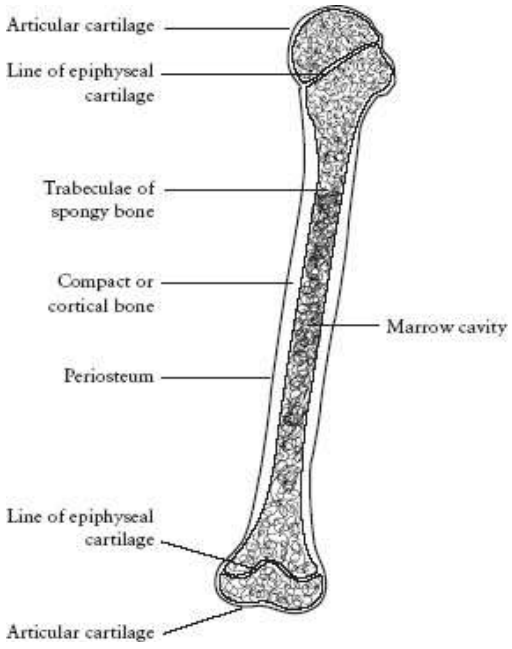
Fractures may occur in sesamoid bones.

Fractures are common in the sesamoid bones at the first metatarsal bone in athletes and ballet dancers.

Fracture of patella may occur in knee injuries.

PERIOSTEUM (SE)

Periosteum covers the outer surface of bone except the articulating surfaces.



Features

Layers of periosteum

Outer fibrous layer made up of dense connective tissue with fibrocytes

Inner osteogenic layer containing osteoprogenitor cells and osteoblasts.

The periosteum is anchored to the bone by periosteal fibres which enter the outer cortical bone called Sharpey's fibers.

Sesamoid bones are devoid of periosteum.

Functions

Protects the outer surface of bone.

Periosteum is richly supplied with blood vessels which also supply the outer cortical part of bone.

Provides attachments to muscles, ligaments, and tendons.

Clinical application

Periosteum is very sensitive to pain. Tear of periosteum is not uncommon in sports persons.

Periosteum plays an important role in healing of fractures.

PARTS OF GROWING LONG BONE (SE)

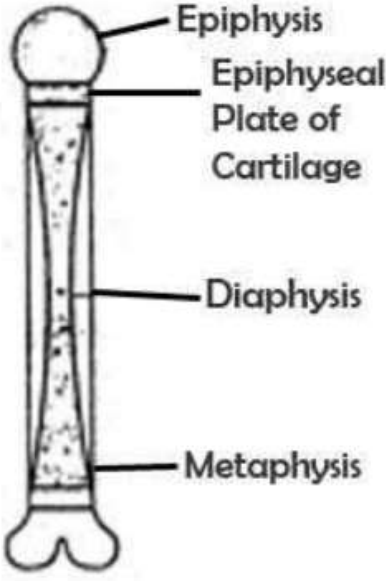
A growing long bone has the following parts

Diaphysis: part of the shaft ossified from the primary center of ossification.

Epiphysis: part of the ends of long bones ossified from secondary centers of ossification.

Epiphyseal plate: it is a plate of hyaline cartilage between the diaphysis and epiphysis.

Metaphysis: it is the region of diaphysis adjacent to the epiphyseal cartilage. It is metabolically active region.



Epiphyseal plate

It is a plate of hyaline cartilage which is necessary for longitudinal growth of bone.
Cartilage cells proliferate within the epiphyseal plate and move towards the epiphysis.
When epiphysis and diaphysis fuse the bone no longer grows in length.
Metaphysis
It is metabolically active zone. It is very vascular with end arteries forming hair pin bends close to the epiphyseal plate.
Bacteria and emboli may get trapped in these bends resulting in osteomyelitis.
Osteomyelitis is therefore common in children.
Once ossification is complete epiphyseal and diaphyseal vessels fuse.

EPIPHYSIS – DEFINITION, TYPES AND EXAMPLES (SE)/(SA)

Epiphyses are the ends of long bone which are ossified from the secondary center of ossification.

Types of epiphysis

Pressure epiphysis : it takes part in transmission of body weight. It is covered by articular cartilage.
e.g. head of femur, humerus and lower end of radius.
Traction epiphysis it is produced by strong muscular pull. It is non-articular.
e.g.greater and lesser tubercles of humerus.
Atavistic epiphysis: it is an independent bone in lower mammals. In man it gets fused to an adjacent bone to receive nutritution.
e.g. Coracoid process of scapula
Posterior tubercle of talus

Aberrant epiphysis

It is an epiphysis which appears at an unusual end of a short long bone.
e.g.epiphysis at the head of the first metacarpal bone.

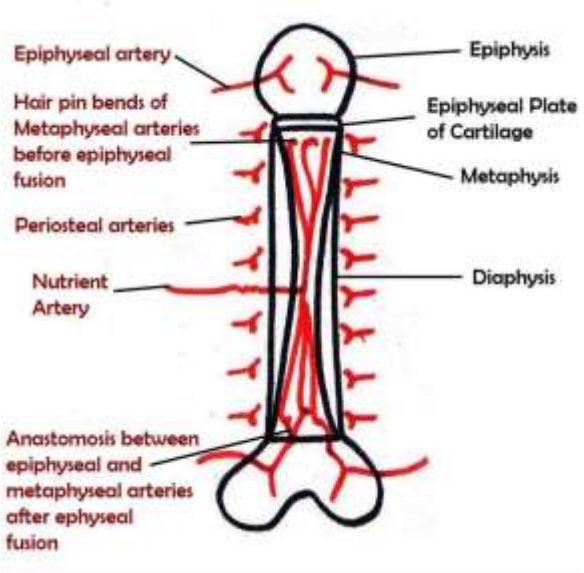
BLOOD SUPPLY OF LONG BONE (SE)

A long bone is supplied by four sets of arteries.
Nutrient artery
Epiphyseal arteries

Periosteal arteries
Metaphyseal arteries

Nutrient arteries

It enters the shaft of the long bone obliquely through the nutrient foramen. It divides into ascending and descending branches in the medullary cavity. It supplies the medullary cavity and inner two thirds of the compact bone.



Epiphyseal arteries

They enter the epiphysis and supply it until longitudinal bone growth occurs. Once the growth ceases the arteries anastomose with diaphyseal arteries.

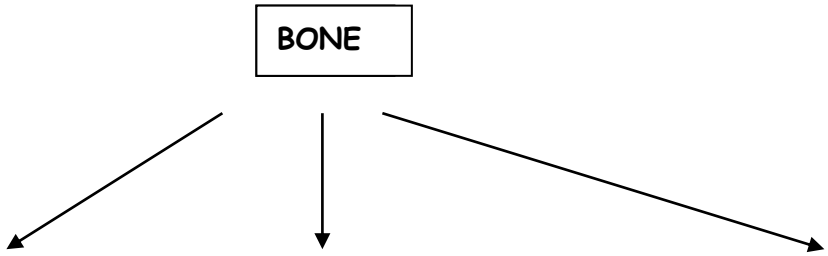
Periosteal arteries

They are multiple and supply the periosteum and and outer one third of the cortex.

Metaphyseal arteries

These arteries supply the metaphysis where they anastomose with diaphyseal arteries forming loops in the growing long bones.

CLASSIFICATION OF BONES(SA)



ACCORDING TO SHAPE

Long bones e.g. femur
Short bones e.g.carpal bones
Long short bones e.g.metacarpals
Flat bones e.g.parietal bone
Irregular bones e.g. vertebrae
Pneumatic bonese.g. maxilla

ACCORDING TO STRUCTURE

Compact bone
Spongy bone
Woven bone.

ACCORDING TO DEVELOPMENT

Membranous bones e.g. cranial vault
Cartilaginous bones e.g. vertebral colum
Membrano-cartilaginous bones e.g. mandible

PNEUMATIC BONES AND THEIR FUNCTIONAL SIGNIFICANCE (SA)

Pneumatic bones are bones containing air spaces.
They are irregular bones situated around the nasal cavity.
They are paired maxillae, frontal, ethmoidal and sphenoid bones.
The cavities within them are called paranasal air sinuses. They are lined by respiratory mucosa. Their secretions drain into meati in lateral wall of nose.

Functions

They make the skull light.
They add resonance to our voice.
Their mucous lining adds moisture and warmth to the inspired air.

SESAMOID BONES –FEATURES WITH EXAMPLES (SA)

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Charecteristics of sesamoid bones
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Two sesamoid bones below the head of first metatarsal bone related to the tendon of flexor hallucis brevis.

A sesamoid bone at the head of the first metacarpal bone in the tendon of flexor pollicis brevis.

LAMELLAE IN COMPACT BONE (SA)

Microscopic examination of transverse section of compact bone shows three types of lamellae.

Concentric lamellae—these lamellae surround the Haversian canal in a concentric manner.

Circumfrential lamellae---they are present along the circumference of the bone.

Interstitial lamellae--- bone is active and dynamic tissue and therefore old osteons are removed and replaced by new ones from time to time. The lamellae that belong to older osteons is seen in between the newly formed osteons which are called interstitial lamellae.

PERIOSTEUM (SA)

Periosteum covers the outer surface of bone except the articulating surfaces.

Features:

Layers of periosteum

Outer fibrous layer made up of dense connective tissue with fibrocytes

Inner osteogenic layer containing osteoprogenitor cells and osteoblasts.

Functions

Protects the outer surface of bone.

Periosteum is richly supplied with blood vessels which also supply the outer cortical part of bone.
Provides attachments to muscles, ligaments, and tendons.
Provides oseoblasts during fracture repair and maintenance of bone.

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GROWING END OF LONG BONE (SA)

In most long bones the epiphyses do not fuse at the same time. One fuses earlier than the other. The end of long bone where the epiphysis fuses later is known as the growing end of the bone.

Characteristics:

The ossification center appears first in the epiphysis of the growing end.
The growing end is opposite to the direction of nutrient foramen in all long bones except in fibula where it is towards the growing end.

Growing ends of limb bones

In upper limb it is towards the elbow
In lower limb it is away from knee joint.

METAPHYSIS (SA)

Metaphysis is a part of diaphysis adjacent to the epiphyseal plate.
It is metabolically active zone. It is very vascular with end arteries forming hair pin bends close to the epiphyseal plate.
Bacteria and emboli may get trapped in these bends resulting in osteomyelitis.
Osteomyelitis is therefore common in children.

Once ossification is complete epiphyseal and diaphyseal vessels fuse.

TRACTION EPIPHYSIS (SA)

Traction epiphysis is produced by the pull of muscles,e.g. greater and lesser trochanters of femur and greater and lesser tubercles of humerus.

It is always nonarticular and provides attachment to muscles.

It ossifies after the ossification of pressure epiphysis.

BLOOD SUPPLY OF LONG BONE

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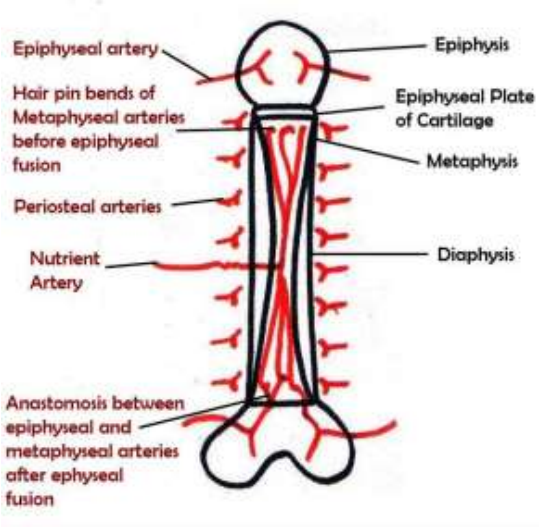

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Metaphyseal arteries These arteries supply the metaphysis where they anastomose with diaphyseal arteries forming loops in the growing long bones.

LAWS OF OSSIFICATION (SA)

Epiphyseal center(secondary center) that appears first unites last.

The epiphyseal center that appears later fuses earlier. An exception is fibula where the epiphyseal center appears first at the lower end, but fusion also takes place earlier at the lower end. The epiphysis for the upper end appears later and fuses also later.

Primary center of ossification appears before birth.

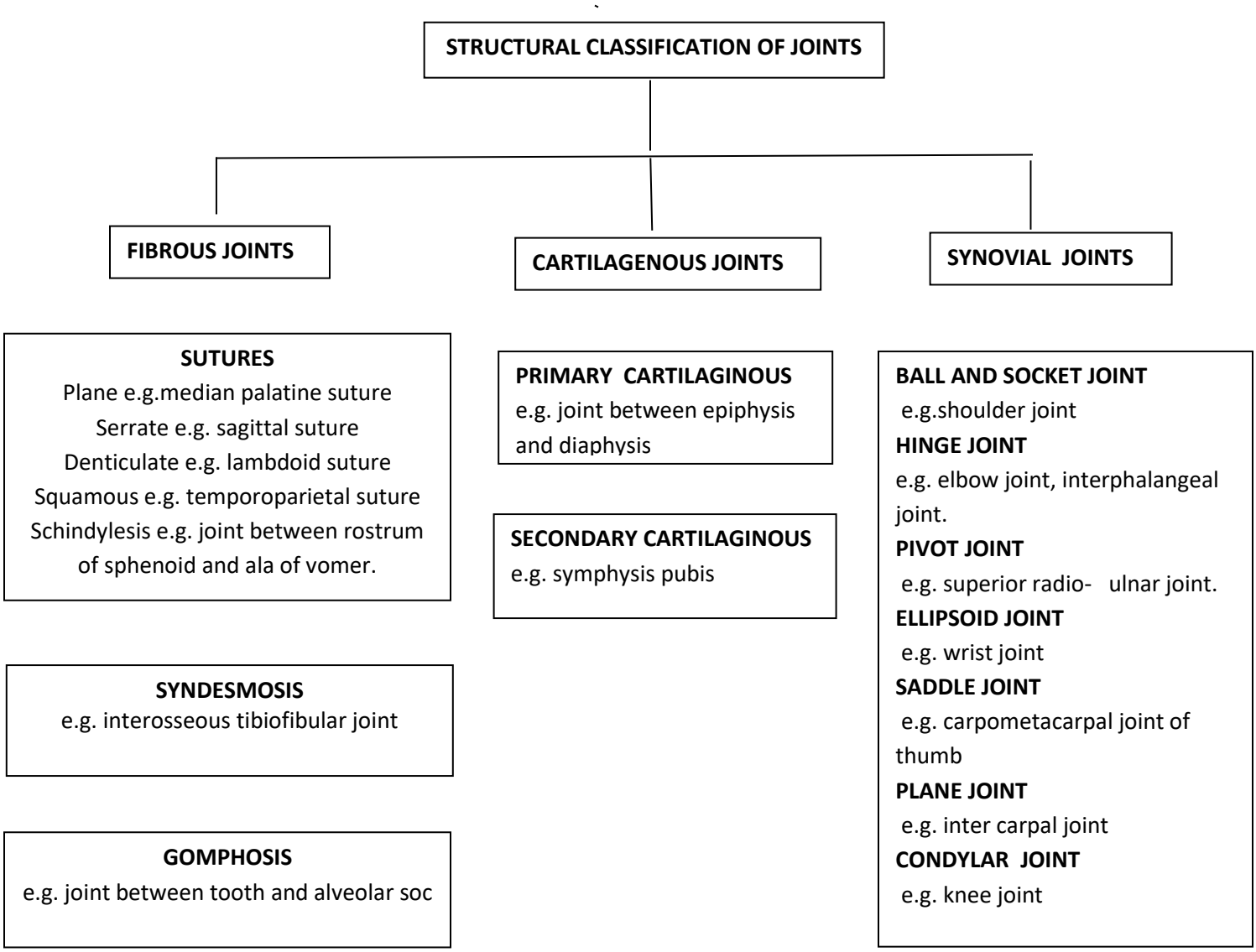
Secondary center of ossification appears after birth except lower end of femur and upper end of tibia where the secondary center appears at birth.

3. JOINTS

CLASSIFICATION OF JOINTS (SE)

A joint is a junction between two bones.

Joints can be classified according to structure and function



FUNCTIONAL CALSSIFICATION

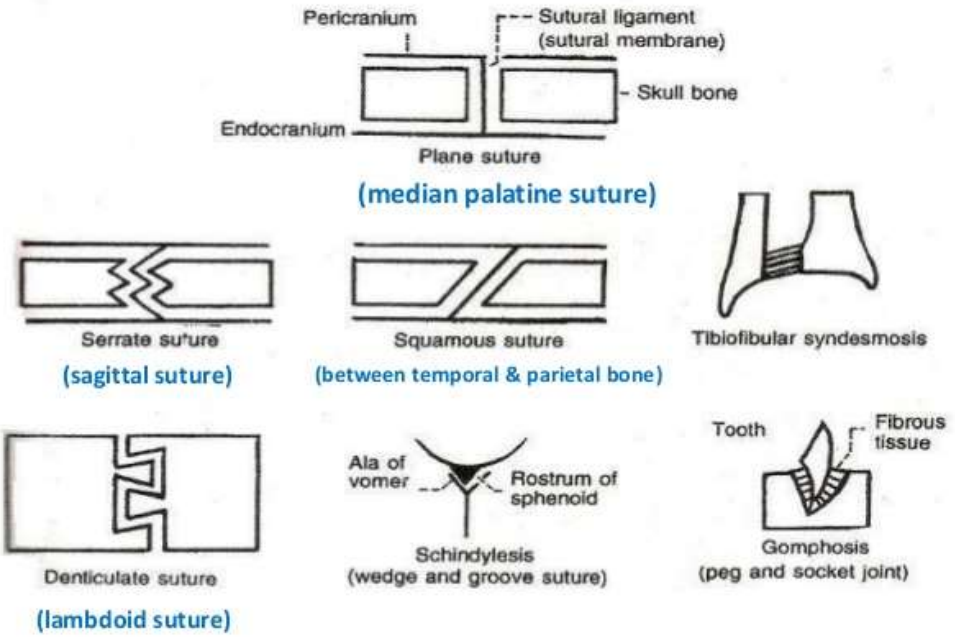
IMMOVABLE JOINTS	SLIGHTLY MOVABLE	FREELY MOOVABLE
e.g. sutures	Secondary cartilaginous joints	e.g. synovial joints

FIBROUS JOINT (SE)

Fibrous joints are immovable joints. The joints are connected by fibrous connective tissue.

These joints lack a joint cavity.

Fibrous joints are classified into three subtypes.



Sutures (present in skull bones). Bones are connected by fibrous tissue.

Serrate suture e.g. sagittal suture

Denticulate suture e.g lambdoid suture

Squamous e.g. between squamous temporal and parietal

Plane sutures e.g. between palatine processes of maxilla

Schindylesis e.g. suture between rostrum of sphenoid and ala of vomer.

Syndesmosis- Bones are connected by inter osseous membrane

e.g. Interosseous tibio-fibular joint.

Gomphosis – It is peg and socket type of joint.

e.g. tooth and its alveolar socket.

TYPES OF CARTILAGINOUS JOINTS (SE)

Cartilaginous joints are bound by cartilage. They are functionally classified as slightly movable joints.

There are two types of cartilaginous joints- primary and secondary.

Primary cartilaginous joints

The bones are united by plate of hyaline cartilage and is immovable

They are temporary in nature. Cartilage helps in longitudinal bone growth.

e.g. joint between epiphysis and diaphysis of a growing bone.

Secondary cartilaginous joint

The articular surfaces are covered by hyaline cartilage which in turn is united by a disc of fibrocartilage.

They are permanent joints.

They are occur in the median plane of the body.

e.g. intervertebral joints and manubriosternal joints.

TYPICAL SYNOVIAL JOINT (SE)

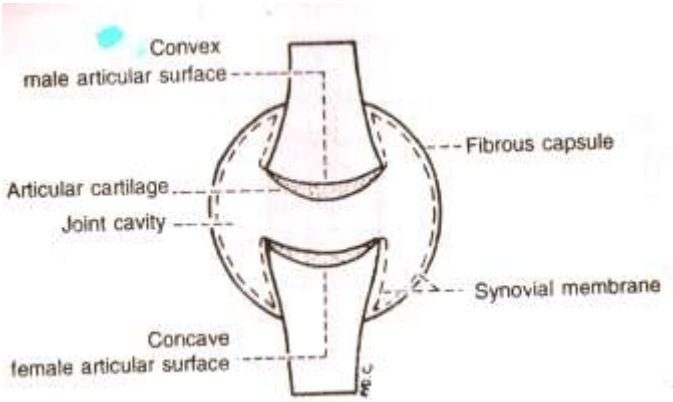
Synovial joints are freely movable joints. Most joints in the body are synovial type.

They possess a synovial cavity. e.g. shoulder joint , knee joint.

The articulating surfaces of the bones are covered by hyaline cartilage or articular cartilage.

Only in a few joints between membrane bones e.g.sternoclavicular joint, the articulating surfaces are covered by fibrocartilage.

Cartilage provides smooth surface for joint movement.



The joint is covered by an fibrous capsule .made up of tough fibrous tissue. It is strengthened at certain regions forming ligaments. The joint cavity lies within the fibrous capsule.

The cavity is lined by a synovial membrane, except at the articular surfaces.

The joint cavity is filled with synovial fluid secreted by the synovial membrane.

Synovial fluid is an excellent lubricant.

SYNOVIAL JOINT (SA)

Six types of synovial joints

BALL AND SOCKET JOINT

e.g.shoulder joint

HINGE JOINT

e.g. elbow joint, interphalangeal joint.

PIVOT JOINT

e.g. superior radio- ulnar joint.

ELLIPSOID JOINT

e.g. wrist joint

SADDLE JOINT

e.g. carpometacarpal joint of thumb

PLANE JOINT

e.g. inter carpal joint

CONDYLAR JOINT

e.g. knee joint

TYPES OF FIBROUS JOINT (SA)

Fibrous joint are of three types

SUTURES

Plane e.g.median palatine suture

Serrate e.g. sagittal suture

Denticulate e.g. lambdoid suture

Squamous e.g. temporoparietal suture

Schindylesis e.g. joint between rostrum of sphenoid and ala of vomer.

SYNDESMOSIS

e.g. interosseous tibiofibular joint

GOMPHOSIS

e.g. joint between tooth and alveolar socket.

SYNDESMOSIS(SA)

A syndesmosis is a truly fibrous connection between bones.

It may be represented by an interosseous ligament e.g.inferior tibiofibular joint, a slender fibrous cord, or a more dense interosseous membrane e.g.interosseous membrane between radius and ulna and between tibia and fibula.

Slight movement is permitted at this type of joint.

Pronation and supination involves the syndesmosis between radius and ulna.

SUTURAL JOINTS(SA)

Sutures (present in skull bones). Bones are connected by fibrous tissue.

Serrate suture e.g. sagittal suture

Denticulate suture e.g lambdoid suture

Squamous e.g. between squamous temporal and temporal

Plane sutures e.g. between palatine processes of maxilla

Schindylesis e.g. suture between rostrum of sphenoid and ala of vomer.

Cartilaginous joints are bound by cartilage. They are functionally classified as slightly movable joints.

CARTILAGINOUS JOINT (SA)

There are two types of cartilaginous joints- primary and secondary.

Primary cartilaginous joints

The bones are united by plate of hyaline cartilage and is immovable

They are temporary in nature. Cartilage helps in longitudinal bone growth.

e.g. joint between epiphysis and diaphysis of a growing bone.

Secondary cartilaginous joint

The articular surfaces are covered by hyaline cartilage which in turn is united by a disc of fibrocartilage.

They are permanent joints.

They are occur in the median plane of the body.

e.g. intervertebral joints and manubriosternal joints.

DEFINE SYMPHYSIS. GIVE TWO EXAMPLES (SA)

Secondary cartilaginous joints are also called Symphyses or fibrocartilaginous joints.

In Symphyses the articulating ends are covered by a thin layer of hyaline cartilage, and united by a disc of fibrocartilage ,persist throughout life and found in the median plane of the body.

e.g. symphysis pubis, manubriosternal joint, intervertebral joints between vertebral bodies

TWO EXAMPLES OF PIVOT JOINT (SA)

Pivot joint is a type of synovial joint. it has a bony pivot (peg) which is surrounded by a osseocartilaginous ring.movement is around a vertical axis.

e.g. Superior radioulnar joint and median atlanto axial joint.

4. MUSCLES

BURSA AND ITS FUNCTIONS (SA)

A bursa is a small fluid-filled sac lined by synovial membrane .

Bursae are filled with capillary layer of synovial fluid

They are found around most major joints of the body.
Bursae may be subcutaneous, subfascial, submuscular, or subtendinous.
Some bursae communicate with joint cavity. Such bursae are called communicating bursae.

FUNCTION:

It provides a cushion between bones and tendons and/or muscles around a joint.
This helps to reduce friction between the bones and allows free movement.
Eg: Suprapatellar bursa of knee joint.

CLINICAL APPLICATION

Bursitis: Prepatellar bursitis can become inflamed from direct trauma to the front of the knee.This commonly occurs when maintaining a prolonged kneeling position (housemaid's knee).

TYPES OF PENNATE MUSCLES (SA)

According to the direction of fascicles of muscles they can be classified as follows

Unipennate,

in which the fascicles insert into only one side of the tendon, as in the extensor digitorum longus muscle of the leg.

Bipennate,

in which the fascicles insert into the tendon from opposite sides so the muscle resembles a feather. The rectus femoris of the thigh is bipennate.

Multipennate,

which looks like many feathers side by side, with all their quills inserted into one large tendon. The deltoid muscle, which forms the roundness of the shoulder is multipennate.

5. CARDIOVASCULAR SYSTEM

COLLATERAL CIRCULATION (SA)

If a main vascular channel is occluded, smaller alternate channels can usually increase in size in a relatively short time, providing a collateral circulation that ensures the blood supply to structures distal to the blockage.

They are usually insufficient to compensate for sudden occlusion or ligation.

Occlusion may due

Compression,
The position of a joint,
Pathology,
Surgical ligation.

EXAMPLES:

Anastomosis between the vertebral and internal carotid arteries at the base of brain forming the circle of Willis.

Porta-caval anastomosis between the branches of portal vein and systemic veins.

END ARTERIES (SA)

Arteries that do not anastomose with adjacent arteries are anatomical true terminal or end arteries.

Occlusion of an end artery interrupts the blood supply to the structure or segment of an organ it supplies.

Eg: of True terminal arteries:

Retina, where occlusion will result in blindness.

While functional terminal arteries posses potential anastomosis between very small branches.

These channels can provide collateral circulation only if the occlusion is very gradual.

Eg: segments of the brain, liver, kidneys, spleen, and intestines and the heart.

TYPES OF CAPILLARIES (SA)

Capillaries are the smallest blood vessels in the body made up of endothelial cells resting on a basement membrane.

They are responsible for microcirculation in the tissues.

Types of capillaries-

Continuous
Fenestrated
Discontinuous

Continuous capillary

The endothelial cells form continuous lining with no interruptions with tight junctions.

This type is found in areas of the body such as the CNS, skeletal muscles, and skin.

Fenestrated capillary

Fenestrated capillaries contain very small pores or openings called fenestra. They are most commonly found in the endocrine glands of the body **e.g**. the pituitary and thyroid.

Discontinuous capillary

It is also known as the sinusoidal capillary. They are larger and irregular. There are gaps between the endothelial cells in these vessels.

They are found in organs such as the liver and spleen.

6. NERVOUS SYSTEM

SPINAL SEGMENT (SA)

Spinal segment is the part or segment of the spinal cord from which a single spinal nerve arises.

Six to eight motor nerve rootlets branch out from ventral part of the spinal cord segment on the right and left sides. Nerve rootlets combine to form nerve roots.

Likewise, sensory nerve rootlets enter the dorsal part of the spinal cord segment on the right and left sides to form sensory nerve roots.

The ventral (motor) and dorsal (sensory) roots combine to form spinal nerves.

There are 31 spinal cord segments-8 cervical, 12thoracic, 5 lumbar, 5 sacral and 1 coccygeal.

Applied anatomy

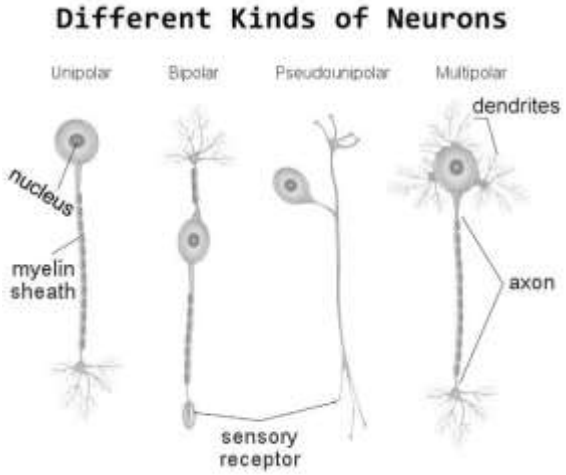
The length of the spinal cord is shorter than the vertebral column. Hence the spinal cord segment level and the vertebral level do not correspond. This has to be kept in mind while managing spinal injuries.

DIFFERENCES BETWEEN AXON AND DENDRITE (SA)

Neurons posess a body or perikaryon, and processes called axon and dendrites.

Sl/no	FEATURES	AXON	DENDRITES	
1	Number	Usually single process	Multiple processes	
2	Electrical impulse	Away from the perikaryon(efferent)	Towards the perikaryon(afferent)	
3	Nissl granules	Absent	present	
4	Axon hillock	Present	absent	
5	Branches	Terminal	Branches along the dendrite profusely	
6	Node of Ranvier	Present	Absent	

TYPES OF NEURONS (SA)



Neurons are classified according to structure and function.
According to structure it is classified as

According to function it is classified:

Motor neuron
Sensory neuron
Intermediate neuron.

TYPES OF NEUROGLIA (SA)

Neuroglia are supporting cells of central nervous system.
They are not electrically active in the same way as neurons.
.There are two major classes of neuroglia; MACROGLIA AND MICROGLIA.

MACROGLIA

There are 3 types of macroglia in the CNS;

Astrocytes,
oligodendrocytes
ependymal cells.

Astrocytes- (Gr. Astron, star)
Astrocytes are stellate cells with a number of radiating processes
. Astrocytes in the white matter have long processes, and are therefore called fibrous astrocytes.
Some have short, branched processes called protoplasmic astrocytes
Oligodendrocytes– (Gr.oligos, small+dendron+kytos, cell)
Oligodendrocytes are small rounded cells with few processes. They are the myelin laying cells of the CNS, and are therefore counterparts of the Schwann cells of the PNS
Ependymal cells -
Ependymal cells line the ventricles, central canal and choroid plexus, with a simple epithelium. Ependymal cells facilitate neuropeptides to pass from neurons and blood vessels to the CSF.

MICROGLIA

Microglia are small, elongated cells with short irregular processes..
Microglia are derived from monocytes present in circulating blood.
They take part in CNS defense by active phagocytosis and also as antigen presenting cells (APC's).

SYNAPSES AND NEUROTRANSMITTERS (SA)

Neuronal synapse (Gr. Synapses, union)

Synapses are sites of functional contact formed between two neurons, involving the perikaryon, axons or dendrites.

The various combinations are listed below

Axo-axonic
Dendro-dendritic
Somato-somatic
axo-somatic
somato-dendritic
Axo-denritic

Synapses can also be classified as:-

1. Chemical (neurotransmitters) synapse
2. Electrical synapse

CHEMICAL SYNAPSE-

A synapse is formed by

pre-synaptic terminal',
post synaptic terminal' and
synaptic cleft between them

Neurotransmitters are stored in the presynaptic region. When an electrical impulse (depolarization) arrives at this end, neurotransmitter is released (by exocytosis) into the synaptic cleft. Receptors present at the postsynaptic region react with neurotransmitters to initiate another transient impulse.

Neurohormones

Neurohormones have neurotransmitter like activity. They are synthesized in the neurons but released into blood circulation. The effect will be more widespread compared to neurotransmitters. Neuromodulators

ELECTRICAL SYNAPSE

Electrical synapses are areas of close approximation of cell membranes of two neurons (4 nm gap). A protein called connexins, which is in the form of tubes, traverses between the apposed cell membranes. Transmission across these synapses is very rapid, as there is direct ionic coupling

INTEROSSEOUS MEMBRANE. (SE)

Interosseous membrane is a syndesmosis type of joint made up of tough but flexible fibrous membrane.

FUNCTIONS

Creating compartments to separate different muscle groups,
Distributing the impact of forces and preventing fractures
Separating joints.
Provides stability to the bones connected by it.

In the leg, the membrane extends between the tibia and the fibula, running along the crests of the bones.
The muscles in the forearm and leg are separated into anterior and posterior compartments in the front and back of this membrane..
The interosseous membrane in the arm extends between the radius and ulna, in the forearm.
It stabilizes the lower arm bones for strength, durability, and flexibility.

APPLIED ANATOMY:

Twisting of bones with an attached interosseous membrane in an abnormal or extreme position can damage the membrane, as well as creating a fracture in one or both bones.
The connection to the joint can potentially create associated damage in the joint as a result of these kinds of injuries as well.
Tears in the membrane can occur as a result of severe trauma and may also be created during surgery.

7. SKIN

FUNCTIONS OF SKIN (SA)

Skin performs the following functions:

Protection: an anatomical barrier from pathogens

Sensation: contains a variety of nerve endings that react to heat and cold, touch, pressure, vibration,

Heat regulation: Dilated blood vessels increase perfusion and heat loss, while constricted vessels greatly reduce cutaneous blood flow and conserve heat.

Control of evaporation: the skin provides a relatively dry and semi-impermeable barrier to fluid loss. Aesthetics and communication: others see our skin and can assess our mood, physical state and attractiveness.

Storage and synthesis: acts as a storage center for lipids and water, as well as a means of synthesis of vitamin D

Excretion: sweat contains urea which is an excretory product

Water resistance: The skin acts as a water resistant barrier so essential nutrients aren't washed out of the body.

APPENDAGES OF SKIN (SA)

The appendages of skin are:

Sweat gland- is made up of coiled gland in dermis and duct which passes through dermis and opens on the surface of epidermis.

Hair –consists of hair root and shaft. It is also embedded in the dermis.

Sebaceous glands- are holocrine glands associated with hair follicle.

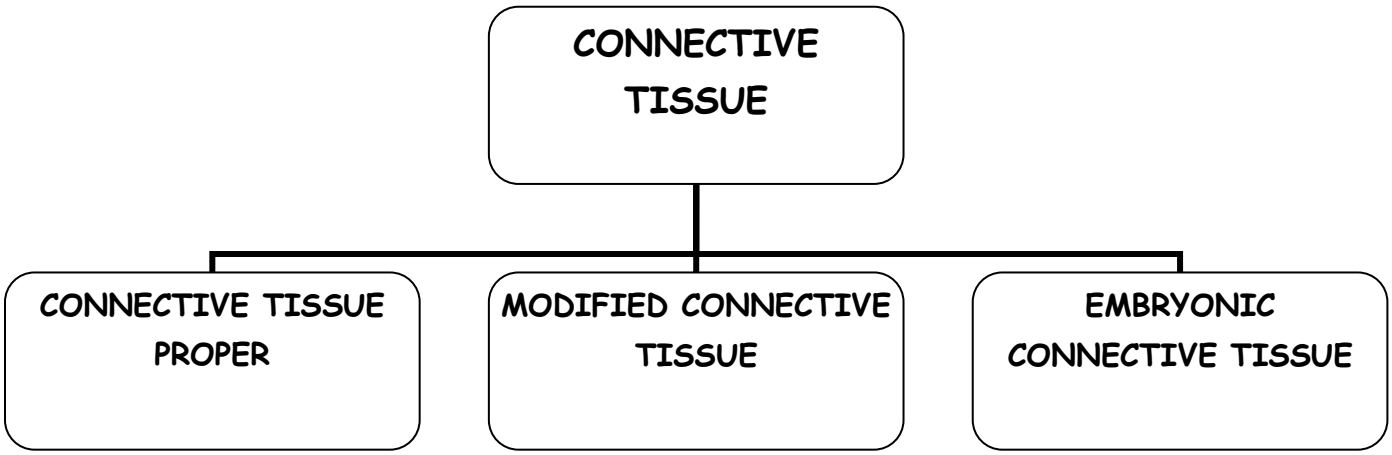
Arrector pili muscle- smooth muscle associated with hair follicle.

Nails- The nail consists of the nail plate, the nail matrix and the nail bed below it, and the grooves surrounding it.

8. CONNECTIVE TISSUE

CLASSIFCATION OF CONNECTIVE TISSUE (SA)

There are four types of connective tissue, most of which are divided into subclasses:



Loose connective tissue
Areolar eg: sub mucosa of gut
Adipose eg: subcutaneous
Reticular eg: spleenic parenchyma
Dense connective tissue
Regular eg: tendon
Irregular eg: dermis
Elastic eg: ligamentum nuchae

Cartilage
Hyaline eg: trachea
Elastic eg: pinna
White fibro eg: intervertebral disc
Bone tissue
Blood
Contains blood cells and plasma

Mucoid connective tissue
eg: whartons jelly in umbilical cord

CELLS OF CONNECTIVE TISSUE(SA)

FIBROBLASTS

These are the least specialised of all the cells. They are mainly responsible for secreting the non-rigid extracellular matrix including the fibres: collagen, elastin or fibronectin.

Mature fibroblasts are known as fibrocytes

ADIPOCYTES.

These are fat storing cells, which are thought to derive from fibroblastic like cells.

MACROPHAGES

These are all types of immune cell. Macrophages are a type of white blood cell that engulfs and digests cellular debris, foreign substances, microbes, and cancer cells,

MAST CELLS

Mast cells contain many granules rich in histamine and heparin. They are best known for their role in allergy and anaphylaxis.

PLASMA CELLS

They are activated lymphocytes and mainly responsible for producing antibodies.

PIGMENT CELLS

They are occasionally present